# Comprehensive Exhibit List for Entry into Hearing Record

| Hearing I.D. # | Witness | I.D. # As Filed | Exhibit Description | Entered |
|---|---|---|---|---|
| *Staff* | | | | |
| 1 | | Exhibit List | Comprehensive Exhibit List | ✓ |
| *Public Hearing Exhibits (Gainesville – December 9, 2009)* | | | | |
| 2 | Richard Selwach | Public Hearing Exhibit #2 | Draft Environmental Policy filed with the Gainesville City Commission | ✓ |
| 3 | Robert W. Brinkman | Public Hearing Exhibit #3 | Comments of Robert W. Brinkman | ✓ |
| 4 | Dian R. Deevey | Public Hearing Exhibit #4 | Testimony of Dian R. Deevey | ✓ |
| 5 | Tom Bussing | Public Hearing Exhibit #5 | Comments of Tom Bussing, former Mayor of Gainesville | ✓ |
| 6 | Tom Cunilio | Public Hearing Exhibit #6 | Minutes of North-Central Florida Renewable Resource Conservation and Development Council, 4/28/08 and 6/6/08 | ✓ |
| *Staff* | | | | |
| 7 | Staff | Staff's Composite Exhibit - 2 stipulated | **Interrogatories**<br><br>1. GRU/GREC LLC's Responses to Staff's First Set of Interrogatories (Nos. 1-8) *[Bates Nos. 000001-000007]*<br><br>2. GRU/GREC LLC's Responses to Staff's Second Set of Interrogatories (Nos. 9-70) *[Bates Nos. 000008-000108]* | ✓ |

DOCUMENT NUMBER-DATE
00473 JAN 20 ⊆
FPSC-COMMISSION CLERK

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 1
COMPANY Florida Public Service Comm. Staff
WITNESS Exhibit List
DATE 12/16/09

| Comprehensive Exhibit List for Entry into Hearing Record | | | | |
|---|---|---|---|---|
| **Hearing I.D. #** | **Witness** | **I.D. # As Filed** | **Exhibit Description** | **Entered** |
| | | | 3. GRU/GREC LLC's Responses to Staff's Third Set of Interrogatories (Nos. 71-79) *[Bates Nos. 000109-000155]*<br><br>**Request for Production of Documents**<br><br>4. GRU/GREC LLC's Responses to Staff's First Request for Production of Documents (No. 1, items 1-5 and 7; No. 2, items 2-6; and Nos. 3-8) *[Bates Nos. 000156-000367]*<br><br>5. GRU/GREC LLC's Supplemental Response to Staff's First Request for Production of Documents (No. 1) *[Bates Nos. 000368-000446]*<br><br>6. GRU/GREC LLC's Responses to Staff's Second Request for Production of Documents (No. 12) *[Bates Nos. 000447-000460]*<br><br>7. GRU/GREC LLC's Responses to Staff's Third Request for Production of Documents (No. 14, item 1 and 3-5) *[Bates Nos. 000461-000496]* | |

| Comprehensive Exhibit List for Entry into Hearing Record | | | | |
|---|---|---|---|---|
| **Hearing I.D. #** | **Witness** | **I.D. # As Filed** | **Exhibit Description** | **Entered** |
| ***GRU/GREC LLC (DIRECT)*** | | | | |
| 8 | Edward J. Regan | EJR-1 | Resumé of Edward J. Regan | ✓ |
| 9 | Edward J. Regan | EJR-2 | Summary of GRU's existing residential and non-residential DSM programs | ✓ |
| 10 | Edward J. Regan | EJR-3 | Summary of GRU's recent base rate and fuel adjustments | ✓ |
| 11 | Todd Kamhoot | TK-1 | Resumé of Todd Kamhoot | ✓ |
| 12 | Todd Kamhoot | TK-2 | Summary of GRU's current load forecasts | ✓ |
| 13 | Richard D. Bachmeier | RDB-1 | Resumé of Richard D. Bachmeier | ✓ |
| 14 | Richard D. Bachmeier | RDB-2 | Initial recommendations made to the Gainesville City Commission by GRU evaluation staff and the final approved factor weights for use in evaluating biomass proposals | ✓ |
| 15 | Richard D. Bachmeier | RDB-3 | FRCC's letter approving interconnection of the GREC | ✓ |
| 16 | Joshua H. Levine | JHL-1 | Resumé of Joshua H. Levine | ✓ |
| 17 | Bradley E. Kushner | BEK-1 | Resumé of Bradley E. Kushner | ✓ |
| 18 | Bradley E. Kushner | BEK-2 | Confidential Exhibit summarizing the economics of the GRU power purchase agreement (PPA) with GREC LLC compared to supply-side alternatives | ✓ |

| Comprehensive Exhibit List for Entry into Hearing Record | | | | |
|---|---|---|---|---|
| **Hearing I.D. #** | **Witness** | **I.D. # As Filed** | **Exhibit Description** | **Entered** |
| 19 | Bradley E. Kushner | BEK-3 | Confidential Exhibit summarizing the economics of the GRU PPA with GREC LLC compared to supply-side alternatives at higher capacity factors than represented in Confidential Exhibit No. __ [BEK-2] | ✓ |
| 20 | Bradley E. Kushner | BEK-4 | Confidential Exhibit summarizing the economics of the GRU PPA with GREC LLC to supply-side alternatives across a range of capacity factors | ✓ |
| 21 | Bradley E. Kushner | BEK-5 | Confidential Exhibit summarizing the economics of the GRU PPA with GREC LLC to supply-side alternatives over a shorter evaluation period than represented in Confidential Exhibit No. __ [BEK-2] | ✓ |
| 22 | Bradley E. Kushner | BEK-6 | Confidential Exhibit presenting the results of all of the economic evaluations represented in Confidential Exhibit No. __ [BEK-2] through Confidential Exhibit No. __ [BEK-5]. | ✓ |
| 23 | Tom Bussing | | Bpp re: natural gas from shale | ✓ |
| 24 | staff | | Staff's summary packet | ✓ |
| 25 | staff | | Chart re: rate impact | ✓ |
| 26 | Richard Bachmeier | | corrected ROG responses 54, 56, 57, 60 | ✓ |

***HEARING EXHIBITS***

| Exhibit Number | Witness | Party | Description | Moved In/Due Date of Late Filed |
|---|---|---|---|---|
| 27 | various | GRU | Application Need for Power | ✓ |
| 28 | | GRU | Notice of Publication | ✓ |
| 29 | | GRU | Power Point presentation from 12.9.09 public hrg | ✓ |
| 30 | | GRU | Excerpted Climate Change Aggreement | ✓ |
| 31 | LFE | ~~GRU~~ | Monthly Rate Impact per ~~kWh~~ bill 831 ~~kWh~~ kWh (2 pp) | ✓ |
| | Regan/Bachmeier | | | |
| 32 | | GRU | composite errata to exhibit 27 + testimony | ✓ |
| | | | | |
| | | | | |
| | | | | |

entered by errata noted ↓ handle after conclusion of testimony

File with Clerk of City Commission 2/2/06

[redacted] with clerk 2/2/06 Revised

Refiled 10/10/09

Selwach - Exh 2

DRAFT ENVIRONMENTAL POLICY SUBMITTED By Witness Selwach

DRAFT

**Alachua County and City of Gainesville**

Board of County & City Commissioners

Ordinance 06-

ALACHUA COUNTY ENVIRONMENTAL POLICY (ACEP),
CITY OF GAINESVILLE ENVIRONMENTAL POLICY (CGEP),
JOINT CITY OF GAINESVILLE & ALACHUA COUNTY ENVIRONMENTAL POLICY (JCGACEP) [redacted], heraftер known as "THE ENVIRONMENTAL POLICY"

An ordinance establishing a county & city policy for the environment, and for other purposes.

PURPOSE

**Sec. 2.** The purposes of this ordinance are: To declare a county & city policy which will encourage productive and enjoyable harmony between mankind and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of mankind; to enrich the understanding of the ecological systems and natural resources important to the city, county and the Nation; to require environmental impact statements on all planned projects

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 2
COMPANY Public Hearing Exhibits (Gainesville – 12/09/09)
WITNESS Richard Selwach -Public Hearing Exhibit #2
DATE 12/16/09

or programs that might seriously affect the environment; and, to make provisions for economic impact and environmental benefits of a project or program on the citizens and the environment of our county & city including the impacts on the county, city, and local governmental agencies.

## DECLARATION OF ALACHUA COUNTY AND CITY OF GAINESVILLE ENVIRONMENTAL POLICY

**Sec. 101.** (a) The Alachua County & City of Gainesville Commissions, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Alachua County & City of Gainesville Commissions, in cooperation with State, local, and Federal government, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this ordinance, it is the continuing

responsibility of the Alachua County & City of Gainesville Commissions to use all practicable means and resources to the end so that the county & city may--

1. fulfill the responsibilities of each generation as trustees of the environment for succeeding generations;

2. assure for all citizens safe, healthful, productive, and

esthetically and culturally pleasing surroundings;

3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, whenever possible, an environment which supports diversity, and variety of individual choices;

5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

6. enhance the quality of renewable resources and approach the maximum attainable recycling of ~~delectable~~ depletable resources.

(c) The Alachua County & City Commissions recognize that each person should enjoy a healthful environment and that each person has a responsibility to contribute to
the preservation and enhancement of the environment.

**Sec. 102.** The Alachua County & City Commissions accept, authorizes and directs that, to
the fullest extent possible: (1) The policies, regulations, and public laws of the United States
shall be interpreted and administered in accordance with the policies set forth in this ordinance,
and (2) The Alachua County & City Board of commissioners and all agencies and

departments of its government, shall -

(a) Utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment;

(b) Identify and develop methods and procedures which will ensure that presently unqualified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations;

( c) Include in every recommendation or report on proposals, programs, projects, and other actions that might significantly affect the quality of the human environment,
detailed and current site specific statements by the responsible agencies officials (local, State or

Federal, Departments of Environmental Protection, Agriculture, Health, or Center for Disease
Control and Prevention) on -

(i) The environmental impact of the proposed action,

(ii) Any adverse environmental affects which cannot be avoided should the proposed project be implemented,

(iii) Alternatives to the proposed action,

(iv) The relationship between local short-term productivity, and the maintenance and enhancement of long-term productivity, and

(v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

(d) Acknowledge that no special use permits will be granted until all environmental, economic, and health impact statements have been obtained by the appropriate
(local, State or Federal) agencies;

(e) Disallow any private, local, State, or Federal program or project that might seriously affect the environment from entering into Alachua County and the City of Gainesville that does not have a current site-specific analysis or recent environmental impact statement concerning the affects on the area, wildlife, and human life;

(f) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal or project which involves unresolved conflicts
concerning alternative uses of available resources;

(g) Recognize the world-wide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend
appropriate support to initiatives, resolutions, and programs designed to maximize international
cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(h) Make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(i) Initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(j) Acknowledge that no public body should vote on any matter affecting the environment without the biologists report being available to the people and the press prior to the vote.

[redacted]

[redacted]

Sec. 103 **Repealing Clause.** All ordinances or portions thereof in conflict herewith are, to the extent of the conflict, hereby repealed.

Sec. 104 **Severability.** It is the declared intent of the Board of County & City Commissioners that, if any section, clause, phrase, or provision of this ordinance is held invalid or unconstitutional in a court of competent jurisdiction, such invalidity or unconstitutionality shall not be construed as to render invalid or unconstitutional the remaining provisions of this ordinance.

Sec. 105 **Ordinance to the Liberally Construed.** This ordinance shall be liberally construed in order to effectively carry out the purposes which are deemed to be in the best interest of the public health, safety and welfare of the citizens and residents of Alachua County, Florida and the City of Gainesville.

Sec. 106 **Effective Date.** A certified copy of this ordinance shall be filed with the Department of State by the Clerks of the Board of County & City Commissioners within (10) days after enactment by the Board of County & City

Commissioners, and shall take effect upon filing with the Department of State.

This policy has been drafted after the National Environmental Policy Act of 1969 (NEPA), [redacted]

Duly adopted in Special Session, this _____ day of _____ 2006 A.D.

BOARD OF COUNTY COMMISSIONERS OF ALACHUA COUNTY, FLORIDA.
BOARD OF CITY OF GAINESVILLE COMMISSIONERS

Department Approval as to Correctness _____

Richard Drummond, Director of Alachua County Department of Growth Management

ATTEST:

_____

Buddy K. Irby, Clerk of the Court

Approval as to Form _____

David Wagner. Attorney for Alachua County Board of County Commissioners

[redacted]

_____

Mike Byerly, Chairman

Alachua County Board of Commissioners

_____

City of Gainesville MAYOR

[redacted] Pegeen Hanrahan

Approved as to form and legality:

By_____

Marion J. Radson, City Attorney

ATTEST:

Clerk of The City Commission

Kurt M. Lannon

[redacted]

This instrument prepared by:

Richard Selwach, President

EARTH ACTION RECYCLERS

[redacted]

2/2/06

# FLORIDA DEPARTMENT OF STATE

**Katherine Harris**
Secretary of State

February 21, 2000

EARTH ACTION RECYCLERS, INC.
523 N.W. 3RD AVE
GAINESVILLE, FL 32601

SUBJECT: EARTH ACTION RECYCLERS, INC.
DOCUMENT NUMBER: N92000000339

In compliance with the request on your 2000 Annual Report/Uniform Business Report, the certificate of status for the subject corporation is enclosed.

Should you have any questions regarding this matter, please telephone (850) 488-9000.

Division of Corporations

/PR

# State of Florida

## Department of State

I certify from the records of this office that EARTH ACTION RECYCLERS, INC. is a corporation organized under the laws of the State of Florida, filed on November 16, 1992.

The document number of this corporation is N92000000339.

I further certify that said corporation has paid all fees and penalties due this office through December 31, 2000, that its most recent annual report/uniform business report was filed on February 7, 2000, and its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capitol, this the Twenty-first day of February, 2000

Katherine Harris

Katherine Harris
Secretary of State

CR2EO22 (1-99)

12

# The United States of America

Nº 1831673

## CERTIFICATE OF REGISTRATION

This is to certify that the records of the Patent and Trademark Office show that an application was filed in said Office for registration of the Mark shown herein, a copy of said Mark and pertinent data from the Application being annexed hereto and made a part hereof,

And there having been due compliance with the requirements of the law and with the regulations prescribed by the Commissioner of Patents and Trademarks,

Upon examination, it appeared that the applicant was entitled to have said Mark registered under the Trademark Act of 1946, as amended, and the said Mark has been duly registered this day in the Patent and Trademark Office on the

PRINCIPAL REGISTER

to the registrant named herein.

This registration shall remain in force for TEN years unless sooner terminated as provided by law.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent and Trademark Office to be affixed this nineteenth day of April 1994.

Bruce Lehman

Commissioner of Patents and Trademarks

PTO-130
(Rev. 8-89)

6/26/04 File w/ Clerk of Court Commissi

Int. Cl.: 42

Prior U.S. Cl.: 100

# United States Patent and Trademark Office

Reg. No. 1,831,673
Registered Apr. 19, 1994

## SERVICE MARK
## PRINCIPAL REGISTER

EARTH ACTION RECYCLERS, INC. (FLORIDA CORPORATION)
507 N.W. 5TH AVENUE
GAINESVILLE, FL 32601

FOR: PROMOTING THE ENVIRONMENTAL AWARENESS OF THE PUBLIC, IN CLASS 42 (U.S. CL. 100).
FIRST USE 0-0-1992; IN COMMERCE 0-0-1992.

NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO USE THE INTERNATIONAL RECYCLING SYMBOL, APART FROM THE MARK AS SHOWN.

SER. NO. 74-372,794, FILED 3-29-1993.

R. G. COLE, EXAMINING ATTORNEY

2/2/06 File copy with City of Gainesville Clerk of Commission.

[redacted]

Exh 3

Why Gainesville Needs a Biomass Plant:
Comments of Robert W. Brinkman to be given at the PSC customer service hearing in Gainesville on 12/9/2009

Re: Docket No. 090451-EI

I have been directly involved in the community discussion over the last six years of Gainesville's future energy supply. During that time I founded a local organization, Citizens for Affordable Renewable Energy, specifically to oppose a 220 MW coal plant and advocate for renewable options. I have also served two terms on the Gainesville Energy Advisory Committee (GEAC) serving as chair for about two years. GEAC was created by the Gainesville City Commission as settlement of litigation by the Sierra Club of the proposal for Gainesville's first coal plant, Deerhaven 2. I also served two terms during this time period on the Alachua County Environmental Protection Advisory Committee serving several years as chair. I currently serve as chair of the Suwannee St. John's group of the Sierra Club Florida. However the following comments are to be taken as solely my view and not necessarily that of any of the above entities.

Over the last couple of years since the Gainesville City Commission directed GRU staff to pursue a biomass power plant rather than the original coal plant that had been proposed I have been asked several times such questions as is biomass really renewable? Or is it really carbon neutral, and what about the pollution from this plant? Several have also asked if we should not first invest all we can in conservation and then build another power plant if it is needed.

By definition a renewable energy resource must be replaced by natural processes and thus does not diminish in supply availablity over time. Biomass represents stored energy from the sun through the process of photosynthesis. Indeed the Stewardship Incentive Plan for Biomass Procurement, part of the contract between GRU and American Renewables, specifies that suppliers must reforest their land. There is also an innovative certification incentive program which provides a premium payment of $1.00/ wet ton for Forest Stewardship Council certification. The plan also bans the use of whole trees unless as part of a pre-approved forest management plan, such as to restore long leaf pine forests.

Some people assert that only carbon free power sources are truly renewable or clean, often there is a misunderstanding of carbon neutrality. I like to compare the use of fossil fuels to the transport of ancient carbon dioxide ($CO_2$) from millions of years ago into the present day atmospheric carbon cycle. It is this temporal transport of $CO_2$ that increases the concentration of atmospheric $CO_2$ that we have been experiencing for the last 250 years. Burning biomass does release $CO_2$ but it does not increase the atmospheric concentration of $CO_2$ because the $CO_2$ released was taken up from the atmosphere as the biomass grew.

While other pollutants are emitted as biomass is burned in a power plant, more pollution particularly particulates, is released currently by the open burning of much of the biomass which will be used for fuel in the proposed plant. Indeed according to a presentation given by Ed Regan of GRU to GEAC several years

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 3
COMPANY Public Hearing Exhibits (Gainesville – 12/09/09)
WITNESS Robert W. Brinkman - Public Hearing Exhibit #3
DATE 12/16/09

ago burning biomass in a power plant emits only ten percent of the particulate pollution as does open burning of biomass.

GRU already contracts with Progress Energy (PEF) for 50 MW of baseload power from the PEF generation mix, primarily coal and nuclear sources. While GRU has enough generation to supply all of its native load and a 15% reserve margin for reliability without purchasing additional baseload capacity form PEF the use of much more costly natural gas generation would be required more of the time. This would increase the cost of electricity for GRU customers. Biomass represents the least cost form of renewable energy available to GRU in sufficient quantity to meet the need for additional baseload power. Gainesville has also committed to meeting the Kyoto Protocols target of a 7% reduction below 1990 emissions. To the best of my knowledge Gainesville is the only city in Florida which will come even close to meeting this target. Indeed Mayor Hanrahan is currently in Copenhagen where I am sure she is telling all who will listen what Gainesville is doing to meet the Kyoto targets.

The problem is despite the extraordinary efforts of Gainesville to reduce its carbon footprint; the Kyoto Protocols were always intended to be merely the starting point of the efforts needed to reduce global greenhouse gas emissions. Much more urgently needs to be done if disastrous climate disruption is to be avoided. While GRU initially plans to sell 50 MW of the capacity to other utilities the almost certainty of renewable portfolio standards and the regulation of GHG emissions would make this biomass power plant a wise investment as GRU could sell excess credits to other utilities offsetting some of the rate impact to GRU customers, of not only the biomass plant but the solar feed in tariff as well.

While solar power enjoys near universal support the perception that Gainesville could with enough investment generate all of its power from solar is simply not possible. First there is only enough un-shaded roof area in Gainesville to support somewhere around 80 MW of solar capacity. However this is no where near as much energy as the 100 MW biomass plant will produce primarily because solar panels only produce at near rated output for about 20% of the time where as the biomass plant is capable of producing power about 90% of the time. There is also the perception that it simply requires energy storage systems to alleviate the limitation on the hours that solar is available. The problem is energy storage systems reduce, not increase the total amount of energy available for use, there is after all no free lunch.

Gainesville needs the proposed biomass plant to reduce our carbon footprint fulfilling our commitment made in 2005 to meet the Kyoto targets for GHG emissions. We need economical cost effective base load energy to control costs and allow us to invest even more in other forms of renewable energy such as solar. We need this plant as a hedge against future regulations of GHG emissions. We need it to reduce particulate and other emissions in the region from open burning of biomass as a disposal method. This biomass plant will reduce pollution, save money, create jobs and help to provide a cleaner safer future.

s/" Robert W. Brinkman

EXH 4

Testimony of Dian R. Deevey

I live in Gainesville and I am a GRU customer.

I will testify tonight about three concerns about the proposed biomass generator, all of which boil down to concerns that the costs of the proposed system may be far higher than GRU's strategists believe, and our community will suffer much higher prices than an alternative unit such as a 50 MW combined cycle natural-gas fired generator were under consideration.

My three concerns are:

GRU and American Renewables have seriously underestimated the future cost of woody biomass by ignoring increased demand that will result from caps on carbon emissions and legislation requiring the use of renewable fuels;

GRU has greatly overestimated carbon credits because they do not understand the important requirement that all projects satisfy the Kyoto "additionality" requirement; and

Carbon caps will be imposed on woody biomass fuels if they are not grown in a fully sustainable fashion whereby all forests produced burned to generate fuel are replaced by new forest growth.

Unknown Cost Effects of Competition for Woody Biomass

GRU's source of cost information used by American Renewables and other bidders that responded to GRU's request for proposals is a report that (a) assumes that there are only 3 40-MW biomass-fueled generators in North Florida competing for available woody biomass, and (b) is based on a dissertation that used cost figures from 2005.[1] However, given a state requirement for the use of renewable fuels including woody biomass, and the expected ACES legislation, one could anticipate that there would be far more competition than assumed by the study conducted for GRU and that prices could be much higher, since the supply of woody biomass in the state is not elastic.

Recognizing that it might be difficult to insure sustainable use of Florida's wood resources if they were used for power generation, the state legislature authorized a study to be conducted by the Florida Department of Agriculture in 2008. That study will be completed and released to the legislature and the public on March 1, of next year. I am sure that it will clarify most of the

[1] This study was commissioned by GRU through the University of Florida, School of Forest Resources and Conservation, Institute of Food and Agricultural Sciences (IFAS) in 2007, with Dr. Douglas R. Carter as the principal investigator, and Dr. Matthew Langholtz as the co-principal investigator. The final report was entitled "Biomass Resource Assessment Part I: Availability and Cost Analysis of Woody Biomass For Gainesville Regional Utilities." (Page 8-11 of GREC Application Document 09700-09-App.



FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 4
COMPANY Public Hearing Exhibits (Gainesville – 12/09/09)
WITNESS Dian R. Deevey - Public Hearing Exhibit #4
DATE 12/16/09

relevant issues and provide a firmer basis on which to judge the adequacy of American Renewables cost estimates than is now available.

GRU's Carbon "Offsets"

The application and prehearing testimony contain a list of carbon "offsets" that are expected the city's effective carbon emissions by a an annual total of 205,685 metric tons of Carbon equivalents in 2008 and subsequent years and by 711, 075 metric tons of CO2 equivalents.

Examination of this list of "offsets" suggests that few of them will in fact qualify as offsets, because only a few of them satisfy the strict Kyoto for "additionality". According to the Kyoto rules, projects can qualify only if they are undertaken solely for the purpose of reducing Green House gas emissions and would not otherwise have been implemented. Kyoto also allows no projects or actions undertaken prior to 1990. Projects that were implemented to improve efficiency, save money, or for any other reason than reducing greenhouse gas emissions do not qualify under Kyoto's rules, which have been incorporated into the rules for carbon offsets used proposed in California, and those use in the RGGI states.

Few utilities seem to understand this requirement, and one often see optimistic lists of "offsets" that in fact will not qualify under Kyoto or any other serious program. I do not believe any of the items on GRU's list would qualify with the exception of the biomass generator's CO2 emissions, and there are reasons for doubting that all of those would qualify or will escape a carbon cap. The table below lists the non-qualifying projects in GRU's list.

| GRU's Carbon "Offset" That Lack Additionality: | | |
|---|---|---|
| Project | Metric Tons Carbon Equivalents/Yr | |
| | 2008 | 2013 |
| Repowering Kelly Unit 8 | 36,134 | 31,801 |
| Energy Conservation | 131,031 | 177,650 |
| LED Traffic Signals | 1,036 | 2,967 |
| SW Energy Center | 0 | 22,557 |
| Solar PV | 435 | 7,682 |
| Traffic light synchronization | 0 | 87,701 |
| Totals | 168,636 | 330,358 |

"Carbon Neutrality" of CO2 Emissions from the Proposed Generator

The American Clean Energy Security Act passed in the House (H.R. 2454) requires that emissions of CO2 derived from the burning of fossil fuels be capped and that utilities and other covered entities that release more than their allowed caps must purchase emissions allowances. The cost of these allowances increases the effective cost of fossil fuel used. The GREC application discusses the costs added to fossil fuels under variety assumptions regarding the details of the final ACES legislation, which has not been passed in the Senate.

I have found no explicit statement in the application or associated testimony to the effect that GRU assumes that there will be no need to purchase emission allowances for the planned generator, although this assumption appears to be implicit in the various comparisons offered by representatives of Black& Veatch and others.

While the H.R. 2454 places no restrictions on the use of wood to fire generators, or the conditions under which it is grown, such restrictions are in fact needed and are likely to be applied before any carbon regulation takes place in this country.

The fact is that while wood is a renewable fuel, wood that is burned for electricity generation must actually be renewed if the CO2 is to be really "carbon neutral". If a forest is cut and burned the CO2 produced adds to the burden in the atmosphere as surely as does the combustion of coal or oil. Only when the forest is actually replanted and new growth equals the amount removed and burned can one say the carbon added to the atmosphere has been effectively removed from it. To be sustainable, the amount of wood removed from the forests must be replaced by new growth every year.

Burning of tropical forests in Indonesia and Brazil and elsewhere now accounts for 17% of the CO2 annually derived from human activities. Because they do not replant their forests, Indonesians and Brazilians are damaging the planet as surely as if they were burning fossil fuels.

GRU has established a Forest Stewardship Plan to provide an incentive for growers who sell wood for GRU's biomass plant to manage forests sustainably and employ good management practices. Growers who are willing to commit to replant the trees harvested for use by GRU and employ recognized best management practices will gain an additional fifty cents to one dollars per million Btu of wood supplied for the generator. .

I do not know what kinds of wood resources American Renewables plans to buy for this generator. This information is regarded by GRU as a trade secret, and it has not disclosed to us residents. The fuel sources are described in as follows on page 9.4 of the Application:

> "The primary fuels for the GREC will be forest residue, mill residue, precommercial tree thinnings, used pallets, and urban wood waste which includes woody tree trimmings that are generated by landscaping contractors, power line clearance contractors, and other non-forestry related sources of woody debris. Supplementary fuels could include herbaceous plant matter, agricultural residues, diseased trees, woody storm debris, whole tree chips, and pulpwood chips.[2]

At the present time, only about 20 to 25% of harvested forests in Florida are being replanted, so it is possible that much of the forest residue purchased by American Renewables will not be harvested sustainably and there is risk that it emissions from this source will be capped. Forest

[2] Forest residue is the residue remaining after logging roundwood or pulpwood.

residues constitute the largest source of available "waste" wood in Florida.[3] It is likely that precommercial tree thinning will qualify as carbon neutral, because the growing forest will compensate for their removal. But used pallets, urban wood waste, and tree trimmings from power line clearance are probably cannot be certified as sustainably harvested and also will not qualify as carbon neutral.

I conclude that there is a serious risk that the fuels used in the new generator will not all escape carbon caps, and if so then the fuel may become very costly.

I believe that this 100 MW biomass-fueled generator is a gamble, and that there is a serious risk that the costs of its fuel will be much higher than are planners expect. I do not know whether retail customers are protected from high costs by the PPA, and I look to the PSC commissioners and staff to guard our interests in this matter.

Dian R. Deevey

1702 SW 35th Place

Gainesville FL 32608

352-373-0181

diandv@bellsouth.net

[3] Mulkey, S, A Alavalapati, A Hodges, A Wilkie and S Grunwald, "Opportunities for Greenhouse Gas Reduction through Forestry and Agriculture in Florida"; SNRE April 2008.

Exh 5
BUSSING

(p1)

When you try to read the City's contract with "Nagcogdoches," massive areas are blacked out, as "Trade Secrets."

**"Contract Prices." - 1 ½ pages, all blacked out.**
**"Fuel Procurement." – 2 of 3 pages blacked out.**
**"Operating Performance Standards." – 1 page, blacked out.**
**"Performance and Security." – 1 plus pages, blacked out.**
**"Schedule Guarantees and Liquidated Damages." – All blacked out.**
**"Purchaser's Option to Purchase Facility." – 2 ½ pages, all blacked out.**

Altogether, about 8 full pages of 38 in this contract are censored as "Trade Secrets."

It is generally known in the "biomass" burning business that when your supply of wood has a moisture content of 40% or so, you have to mix in drier material to keep a good flame. "C&D" waste, with enough dried wood and asphalt shingles, will keep your fire going. Operationally, you want the freedom to mix waste.

A reasonable person would have to wonder if there is in fact a clause or two, among these outrageously censored City documents, that would allow "Nagcogdoches" or who-ever-they-sell-to, to burn just as little or as much waste as they feel like, in their $500 million incinerator.

Unless someone can get a judge to open up that contract for scrutiny, we won't know until it happens. Unless we have transparency in this, the public is being deprived of knowledge important to our right to a secure future.

If any of the deleted language bears on our concerns, the decision to approve this monstrosity should be remanded to the City to reconsider, in the light of full disclosure.

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 5
COMPANY Public Hearing Exhibits (Gainesville –
WITNESS Tom Bussing - Public Hearing Exhibit #5
DATE 12/16/09

TOM BUSSING
375-8572
former MAYOR, City of Gainesville

# TABLE OF CONTENTS

**Page**


1. GENERATION AND SALE OF PRODUCTS ..... 1

1.1 Generation and Sale of Test Power Products ..... 1
1.2 Generation and Sale of Products ..... 1

2. DELIVERY TERM ..... 1

2.1 Effective Date ..... 1
2.2 Delivery Term ..... 1
2.3 Renewal Option ..... 2
2.4 Survival ..... 2

3. CONTRACT PRICES ..... 2

3.1 Contract Prices ..... 2
3.2 Change in Law ..... 2
[redacted] ..... [redacted]

4. FUEL PROCUREMENT ..... 3

4.1 Fuel Procurement Responsibilit[redacted] ..... 3
4.2 Impact on Facility Operation ..... 4
4.3 Minimum Sustainability Standa[redacted] for Forest-Produced Biomass ..... 4
4.4 Fuel Specification ..... 4
4.5 Fuel Procurement [redacted] ..... 5
4.6 Forest Stewardship Ince[redacted]ments ..... 6
[redacted] ..... [redacted]

5. TAXES AND FE[redacted] ..... 7

5.1 Selle[redacted]o Pay ..... 7
5.2 Purchase[redacted] to Pay ..... 7
5.3 Co[redacted]eration ..... 7
5.4 Re[redacted]medies ..... 7

6. [redacted]IVERY, TITLE, AND RISK OF LOSS ..... 7

6.1 D[redacted]very ..... 7
6.2 [redacted]er Responsibility for Delivery ..... 7
6.3 Tra[redacted]fer of Title and Risk of Loss ..... 7
6.4 Seller's Covenant of Title and Freedom from Liens ..... 7
6.5 Defense of Title or Other Interests Warranted ..... 8
6.6 Purchaser's Covenant of Title and Freedom from Liens ..... 8

7. METERING ..... 8

7.1 General ..... 8
7.2 Metering Point ..... 8
7.3 Telemetering Equipment and Data Transmission Equipment ..... 8


REDACTED

TABLE OF CONTENTS


Page

1. GENERATION AND SALE OF PRODUCTS ..... 1
   1.1 Generation and Sale of Test Power Products ..... 1
   1.2 Generation and Sale of Products ..... 1
2. DELIVERY TERM ..... 1
   2.1 Effective Date ..... 1
   2.2 Delivery Term ..... 1
   2.3 Renewal Option ..... 2
   2.4 Survival ..... 2
3. CONTRACT PRICES ..... 2
   3.1 Cointract Prices ..... 2
   3.2 Change in Law ..... 2
   3.3 XXXXX .....
   3.4 XXXXX .....
4. FUEL PROCUREMENT ..... 3
   4.1 Fuel Procurement Responsibility ..... 3
   4.2 Impact on Facility Operation ..... 4
   4.3 Minimum Sustainability Standards for Forest-Produced Biomass ..... 4
   4.4 Fuel Specification ..... 4
   4.5 Fuel Procurement XXXXXX ..... 5
   4.6 Forest Stewardship Incentive Payments ..... 6
   ***4.7*** ***XXXXXXXXXXXXXXXXXXXXXXXX***
5. TAXES AND FEES ..... 7
   5.1 Seller to Pay ..... 7
   5.2 Purchaser to Pay ..... 7
   5.3 Cooperation ..... 7
   5.4 Remedie.... ..... 7
6. DELIVERY, TITLE, AND RISK OF LOSS ..... 7
   6.1 Delivery ..... 7
   6.2 Responsibility for Delivery ..... 7
   6.3 Transfer of Title and Risk of Loss ..... 7
   6.4 Seller's Covenant of Title and Freedom from Liens ..... 7
   6.5 Defense of Title or Other Interests Warranted ..... 8
   6.6 Purchaser's Covenant of Title and Freedom from Liens ..... 8
7. METERING ..... 8
   7.1 General ..... 8
   7.2 Metering Point ..... 8
   7.3 Telemetering Equipment and Data Transmission Equipment ..... 8
   7.4 Testing and Inspection of Metering Equipment ..... 8
8. BILLING AND PAYMENT ..... 9
   8.1 Billing ..... 9
   8.2 Contents of Billing Statement ..... 9
   8.3 Estimated Information ..... 10
   8.4 Payment ..... 10
   8.5 Billing Disputes ..... 10
   8.6 Late Payment ..... 10

9. STANDBY, SUPPLEMENTAL AND STARTUP POWER. ..... 10

9.1 Standby, Supplemental and Startup Power Agreement ..... 10

9.2 Supply of Standby, Supplemental and Startup P ower ..... 10

10. DISPATCH AND SCHEDULING ..... 10

10.1 Scheduling by Purchaser ..... 10

10.2 Designation of Operating Representatives ..... 10

10.3 Schedules and Forecasts ..... 11

10.4 Outages ..... 11

10.5 Good Utility Practice ..... 13

***10.6 XXXXXXXXXXX ..... 13***

***10.7 XXXXXXXXXXX ..... 13***

11. PRE-OPERATION PERIOD; COMMISSIONING AND TESTING ..... 14

11.1 Pre-Operation Period. ..... 14

11.2 Commissioning and Testing ..... 14

12. OPERATIONS , MAINTENANCE AND PERFORMANCE STANDARDS ..... 14

12.1 Reasonable Efforts to Maximize Performance ..... 14

12.2 Facility Upgrades ..... 14

12.3 Operating Performance Standards ..... 14

***12.4 XXXXX ..... 14***

12.5 Subcontracts ..... 14

13. PERFORMANCE AND SECURITY ..... 14

***13.1 XXXX XXXXX XXXXX X ..... .X***

***13.2 XXXX XXXXX XXXXX X ..... .X***

***13.3 XX XXXXX XXXXX XXX ..... . X***

***13.4 XXXX XXXXX XXXXX X ..... ....X***

14. SCHEDULE GUARANTEES AND LIQUIDATED DAMAGES ..... 16

***14.1 XXXXX XXXXX XXXXX XXXXX X***

15. EXCUSE FOR PERFORMANCE ..... 17

15.1 Force Majeure ..... 17

15.2 Purchaser Obligations ..... 17

15.3 Purchaser Delay ..... 17

16. COMPLIANCE WITH LEGAL REQUIREMENTS ..... 18

16.1 Governmental Jurisdiction and Regulatory Compliance ..... 18

16.2 Approvals, Licenses, and Permits for the Facility ..... 18

16.3 Renewable Energy Credits; Environmental Attributes ..... 18

16.4 Provision of Support ..... 18

16.5 No Contractual Zoning; No Contracting of Police Powers ..... 19

17. INDEMNIFICATION ..... 19

17.1 Seller's Indemnities ..... 19

17.2 Purchaser's Indemnity ..... 19

17.3 Defense ..... 20

18. INSURANCE ..... ..... ..... .....20
18.1 Insurance by the Seller..... ..... ..... .....20
18.2 Purchaser's Approval of Insurance ..... ..... .....21
18.3 Seller's Certificates of Insurance ..... ..... ..... 22
18.4 Insurance by the Purchaser ..... ..... ..... 22
18.5 Seller and Purchaser Insurance ..... ..... ..... 22
18.6 Purchaser's Certificates of Insurance ..... ..... ..... 22
19. REPRESENTATIONS AND WARRANTIES ..... ..... ..... .....23
19.1 Seller's Representations and Warranties..... 23
19.2 Purchaser's Representations and Warranties..... 24
20. COVENANTS RELATING TO CONSTRUCTION FINANCING ..... ..... ..... 25
20.1 Cooperation ..... ..... ..... 25
20.2 Documents ..... ..... .....25
20.3 Notices ..... ..... .....26
21. ASSIGNMENT
21.1 Assignment by Seller ..... 26
21.2 Assignment by Purchaser .....26
21.3 Successors and Assigns ..... .....26

22. CONTRACT ADMINISTRATION, MONITORING ***X XXXXX XXXXX XXXXX XX*** ..... 26
22.1 Contract Administration; Reports and Records; Meetings ..... .....26
***22.2 XXXXXXXX ..... ..... ..... 26***
22.3 Access Rights ..... ..... ..... ..... 27

23. NOTICE ..... ..... ..... ..... .....27
23.1 Notices ..... 27
23.2 Receipt of Notice ..... 28
23.3 Address Changes ..... 28
23.4 Operational Notices .....
24. DISPUTE RESOLUTION ..... ..... ..... 28
24.1 Dispute Resolution Process.....
24.2 Arbitration Procedure.....
24.3 Performance During Dispute .....
24.4 Waiver of Jury Trial .....
25. DEFAULT; TERMINATION :..... ..... .....29
25.1 Seller Events of Default..... .....
25.2 Default by Seller.....
25.3 Purchaser Events of Default..... .....
25.4 Default by Purchaser ..... ..... ..... 32
25.5 Duty/Right to Mitigate ..... .... ..... ..... 32
26. LIMITATION OF LIABILITY ..... ..... ..... 32
26.1 Limitation on Liability ..... ..... ..... 32
26.2 No Implied Warranties ..... ..... ..... 32
26.3 No Recourse; Limited Liability..... ..... 33

27. PURCHASER'S OPTION TO PURCHASE FACILITY ..... 33
27.1 XXXXX XXXXX XXXXXX ..... ..... .....X
27.2 XXXXX XXXXX XXXXXXXXXX..... ..... .....X X
27.3 XXXXX XXXXX XXXX..... ..... ..... .....X X
28. CHOICE OF LAW; CHOICE OF FORUM ..... 35
28.1 Applicable Law ..... ..... 35
28.2 Choice of Forum ..... 36
29. CONTRACT DOCUMENTS; INTERPRETATION ..... 36
29.1 Schedules and Appendices ..... 36
29.2 Entire and Complete Agreement ..... 36
29.3 Independent Contractor ..... 36
29.4 PartyBeneficiaries ..... 37
29.5 English Language ..... 37
29.6 EnglishUnits ..... 37
29.7 Gender and Plural ..... 37
29.8 Calendar Days ..... 37
29.9 Headings ..... 37
29.10 Complementary Reading ..... 37
29.11 Am endments ..... 37
29.12 Severability ..... 37
29.13 Waiver ..... 37
29.14 Consideration .....38
29.15 Confidentiality .....38

Schedule I Definitions .....i

Appendix I Facility ..... xi

Appendix II Products ..... xiii
Appendix III Contract Prices ..... xiv

Appendix IV Interconnection One Line Diagram ..... xvi
Appendix V Pre-Operation Period Standards .....xvii

Appendix VI Template of Operating Procedures.....xix
Appendix VII Standby, Supplemental and Startup Power Agreement.....xx

Appendix VIII Sustainabliity Standards.....[page xxvi ?? ]. ..... .....xxvi

Appendix IX Initial Testing and Operational Capacity Testing.....xxx

2.3 Renewal Option. This Agreement may be renewed and extended for one additional five-year period by mutual agreement and written confirmation of the Parties on the same terms and conditions as are applicable during the Delivery Term. Such written confirmation by both Parties must be received and agreed to no later than one hundred twenty (120) days before the end of the Delivery Term.

2.4 Survival. Applicable provisions of this Agreement shall continue in effect after termination to the extent necessary to provide for final billings and adjustments related to the period prior to termination, provided that each Party shall make commercially reasonable efforts to complete such billings and adjustments within one (1) year of termination. Section 29.15, *Confidentiality*, shall survive termination of this Agreement for a period of three (3) years.

3. CONTRACT PRICES

3.1 Contract Prices.

[redacted]

3.2 Change in Law.

[redacted]

REDACTED

[redacted]

FUEL PROCUREMENT

4.1 Fuel Procurement Responsibility. Seller shall manage fuel procurement activities for the Facility. [redacted]



*REDACTED*

[redacted]

4.2 Impact on Facility Operation. Fuel procurement shall be managed in a manner such that it shall not stop or otherwise impede the operations of the Facility.

[redacted]

4.3 Minimum Sustainability Standards for Forest-Produced Biomass. Seller and/or Purchaser, as applicable, shall use commercially reasonable efforts to ensure the Suppliers comply with the Minimum Sustainability Standards for Forest-Produced Biomass set forth in Appendix VIII, and Seller and/or Purchaser, as applicable, shall terminate contracts with Suppliers who do not comply with such standards.

4.4 Fuel Specification.

4.4.1 Seller covenants that the fuel utilized by the Facility to generate the Energy delivered to Purchaser shall consist of forest residue, waste pallets, municipal wood waste, agricultural residue, wood storm debris, whole tree chips, clean construction and demolition debris, and other clean sources of wood as well as small amounts of saw dust and fines from mill residues.

[redacted]

REDACTED

[redacted]

4.5 Fuel Procurement [redacted]

4.5.1 Seller shall hire an independent forestry consultant to conduct annual audits of Seller's compliance with the Minimum Sustainability Standards for Forest-Produced Biomass. The independent forestry consultant shall conduct inspections and visits to a randomly selected sample of harvesting sites no less than twice per calendar year.

4.5.2 Seller shall institute a documentation policy to ensure that Suppliers comply with biomass fuel supply contract terms.

4.5.3 Supply contracts for Forest-Produced Biomass fuel shall incorporate the Minimum Sustainability Standards for Forest-Produced Biomass and Suppliers shall agree to compliance with these standards.

4.5.4 Each supply contract for Forest-Produced Biomass must be signed by a professional forester representing the Supplier certifying that the professional forester has been engaged by the Supplier to ensure compliance with the Minimum Sustainability Standards for Forest-Produced Biomass and confirming the professional foresters understanding of and commitment to fulfill this responsibility..

4.5.5 Each delivered load of biomass fuel must be labeled by a unique identification number ("ID") corresponding to the supplier ID, contract ID, tract ID, crew, transport, date and time and be accompanied by a manifest signed by the harvesting foreman and driver listing such information. If possible, Seller shall seek to use electronic media to increase the accuracy of the information.

4.5.6 Seller shall record the delivery identification information.



REDACTED

REDACTED

Comellio Exh 6

**North-Central FL Renewable RC&D Council, Inc**
22004 County Hwy 2054 Alachua, FL 32615

# RECOMMENDATION TO THE GAINESVILLE CITY COMMISSION FOLLOWING ITS SPCIAL MEETING APRIL 28TH, 2008, AT 11:30

I. MEETING WAS CALLED TO ORDER AT 11:45 IN USDA/NRCS 2nd FL TRAINING ROOM.

II. VOTING MEMBERS PRESENT: DON POST, JOHN CHAMBERLAIN, MARK VAN SOESTBERGEN, DAVE BRUDERLY, TOM CUNILIO. ABSENTEE PROXIES FROM LEVEN GASTON, LARRY WATSON, BRIAN BECKER, CHRIS ETHERTON WERE GIVEN TO T. CUNILIO.

III. APPROVAL OF BIOMASS FACILITY WITH PROVISOS. MORE INFORMATION ON WOOD FUEL SUPPLY AND PROCUREMENT IS REQUESTED. COMMISSION SHOULD FULLY DISCLOSE REDACTED LANGUAGE UPON APPROVAL OF NAGADOCHES PROPOSAL.

IV. GIVE GRU POLICY DIRECTION TO WORK WITH NAGADOCHES AND THIRD PARTIES TO RECOVER AND MARKET 85%+ OF THERMAL ENERGY IN THE FEEDSTCK. UF J. KLAUSNER'S DISTILLED WATER TECHNOLOGY and D. HENDRICK' S SYNTHETIC DIESEL CORPORATE SPONSOR – FOTON ENERGY MERIT INVESTIGATION.

V. VOTING BY ITEMS ABOVE WAS UNANIMOUS. MINUTES BY T. CUNILIO, COORDINATOR

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 6
COMPANY Public Hearing Exhibits (Gainesville – 12/09/09)
WITNESS Tom Cunilio - Public Hearing Exhibit #6
DATE 12/16/09

PRESENT AT MEETING WITH AM. RENEWABLES AT GRU ON JUNE 6TH, 2008

1. Ari Mervis of American Renewables Power, LLC
2. Tony Wallace, Natural Resource Planning
3. Chris Etherton, Plum Creek, Lake Butler and Secretary of FL Renewable RC&D
4. Levin Gaston, Wood Resource Recovery, Gainesville (FLR RC&D)
5. Don Post, Southern Fuelwood, Newberry and Chairman of FL Renewable RC&D
6. Clyde Forbes, FL West Coast RR, Newberry (FLR RC&D)
7. Ed Carter, Rayonier Corp., Starke
8. Kyle W. Wehner, Rayonier, Starke
9. Bruce Gordon, Santa Fe Community College, Gainesville
10. Miles Andrews, Timber Management Co., Chiefland
11. Ernie Windsor, Watson Construction, Newberry (FLR RC&D)
11. Patrice Kafle, GRU
12. Tom Cunilio, FL Renewable RC&D Coordinator

SUMMARY OF STATEMENTS AND COMMENTS FROM PLAYERS

Nagadoches Power, LLC is a partnership between EMI and Bay Corp. Holdings. It is negotiating with GRU, a City of Gainesville-owned utility, to build a 100 MW wood-fired power plant using bubbling fluidized bed technology at Deerhaven and sell the electricity to GRU.

I. On May 12, 2008, Ed Regan of GRU, revealed a few of the redacted pieces of information from the binding proposal received by Nagadoches: 1) 1.073 green tons per year will be needed constituted by approx. 50% forest waste (logging debris) and pre-commercial thinning and a total of 120-140 trucks/day. 2) $75/MWh was the asking price meaning that GRU would be paying $0.075/kwh. 3) Nagadoches has taken all of the risk with this project which is one reason staff recommended it be accepted by the City Commission. 4) 49 jobs/MWh are projected or 490 jobs. 5) Heat rates between 1250 and 1450 are expected. 6) Mill residues are to be a prominent source of fuel.

II. On June 6th, Mr. Mervis gave some additional information from the proposal: 1) They now plan to have all the material chipped off site to 3.5" minus. 2) They will have 4 bleeds from their steam turbines leaving very little waste heat that could be used. 3) They seem to doubt that moisture content should be measured from each load; they wish to sell by the green ton. 4) They currently do not plan to use rail. 5) They believe that the pricing described in the Carter-Langholtz study is a bit high.

III. The questions from the Council focused on: 1) Using aged wood from landfills. 2) Using rail. 3) Using dryer wood instead of green. 4) Using waste heat. 5) Using research from the United States Forest Service. 6) Grinding wood at night when electricity is less expensive. 7) Coordinating activities with the Council. 8) Using waste heat to dry wood to be combusted. 8) Other ??

Notes by T. Cunilio on June 6th, 2008

EXHIBIT NO. _____

DOCKET NO: 090451-EM

WITNESS: VARIOUS

PARTY: GRU/GREC LLC

DESCRIPTION: STAFF'S STIPULATED COMPOSITE EXHIBITS - 7

DOCUMENTS:

**Interrogatories**

1. GRU/GREC LLC's Responses to Staff's First Set Interrogatories (Nos. 1-8) *[Bates Nos. 000001-0000007]*
2. GRU/GREC LLC's Responses to Staff's Second Set Interrogatories (Nos. 9-70) *[Bates Nos. 000008-000108]*
3. GRU/GREC LLC's Responses to Staff's Third Set Interrogatories (Nos. 71-79) *[Bates Nos. 000109-000155]*

**Request for Production of Documents**

4. GRU/GREC LLC's Responses to Staff's First Request for Production of Documents (No. 1, items 1-5 and 7; No. 2, items 2-6; and Nos. 3-8) *[Bates Nos. 000156-000367]*
5. GRU/GREC LLC's Supplemental Response to Staff's First Request for Production of Documents (No. 1) *[Bates Nos. 000368-000446]*
6. GRU/GREC LLC's Responses to Staff's Second Request for Production of Documents (No. 12) *[Bates Nos. 000447-000460]*
7. GRU/GREC LLC's Responses to Staff's Third Request for Production of Documents (No. 14, item 1 and 3-5) *[Bates Nos. 000461-000496]*

PROFFERED BY: STAFF

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 7
COMPANY Florida Public Service Comm. Staff
WITNESS Staff's Composite Exhibit - 2 stipulated
DATE 12/16/09

# 1

# GRU/GREC LLC's Responses to Staff's First Set of Interrogatories (Nos. 1-8)

## RESPONSES

1. **Regarding the economic parameters, how did Gainesville Regional Utilities (GRU) analyze and select 2.5 percent as the escalation rate, i.e., the general inflation rate?**

**Response to Interrogatory No. 1:**

GRU selected 2.5 percent for the general inflation and escalation rate because they were reasonable assumptions for evaluating the cost effectiveness of Gainesville Renewable Energy Center (GREC). The 2.5 percent inflation and escalation rate are consistent with the assumed escalation rates used by GRU in evaluating the proposed GREC project prior to filing the Petition for Determination of Need. The 2.5 percent rate is also consistent with general inflation and escalation rates used in recent determination of need filings that have been approved by the Florida Public Service Commission (for example, Docket No. 080614, for which the Final Order Granting Petition for Determination of Need was issued February 25, 2009). As an additional point of reference, the compound annual increase in the Implicit Price Deflator for Gross Domestic Product for the Gross National Product is 2.5 percent over the 10-year period from 1999 through 2008

2. **What is the basis for the 4.2 percent cost rate for new debt?**

**Response to Interrogatory No. 2:**

The 4.2 percent cost rate of new debt was selected based on GRU's average cost of debt.

3. **How does GRU use the 2.5 percent escalation rate in the evaluation process?**

**Response to Interrogatory No. 3:**

The 2.5 percent general escalation rate was used in the evaluation process for the following purposes:

- To convert the fuel and emissions allowance price projections that were developed in constant 2007 dollars to nominal dollars.
- To escalate capital cost estimates that were developed in overnight 2009 dollars in order to develop installed cost estimates in 2014 dollars.
- To convert fixed and variable O&M estimates for the alternatives to the proposed Gainesville Renewable Energy Center (GREC) biomass project from constant 2009 dollars to nominal dollars.
- To convert applicable costs associated with the proposed GREC biomass project from initial year (2014) dollars to nominal dollars.

**4. How does GRU use the 4.2 percent rate for interest during construction in the evaluation process?**

**Response to Interrogatory No. 4:**

The 4.2 percent interest during construction (IDC) rate was used to develop installed cost estimates for the generating units considered as alternatives to the proposed GREC biomass project based on the capital cost estimates that were developed in overnight 2009 dollars. The overnight 2009 dollar estimates were escalated to the mid-point of construction at the 2.5 percent escalation rate, and IDC was calculated for the remainder of the construction period using the 4.2 percent IDC rate.

**5. How does GRU use the 4.2 percent present worth discount rate in the evaluation process?**

**Response to Interrogatory No. 5:**

The 4.2 percent present worth discount rate (PWDR) was used to determine annual present worth factors for all years of the levelized cost of energy (LCOE) evaluations. The present worth factors were determined by the following formula:

$$\text{Present Worth Factor} = \frac{1}{(1+\text{PWDR})^{(n)}}$$

where "n" equals the number of years beyond the base year of the LCOE evaluations, which is 2014.

The annual present worth factors are applied to the corresponding annual costs to determine the present worth of that year's costs. These present worth costs were then summed up over all years of the evaluation, and the sum of the present worth costs divided by the sum of the annual present worth factors results in the LCOE.

**6. What is the basis for the 20 year 8.43 percent fixed charge rate, the 25 year 7.35 percent fixed charge rate, and the 30 year 6.66 percent fixed charge rate? Please discuss all assumptions and show all calculations.**

**Response to Interrogatory No. 6:**

Different generating technologies are assumed to have different economic lives and therefore different financing terms. For purposes of this analysis, simple cycle combustion turbines are assumed to have a 20 year financing term, combined cycle units are assumed to have a 25 year financing term, and coal-fired units are assumed to have a 30 year financing term. All levelized fixed charge rate calculations assume the 4.2 percent tax exempt municipal bond interest rate, a 2.0 percent bond issuance fee, an

assumed 0.50 percent annual property insurance cost, and a debt service reserve fund (DSRF) equal to twelve months of debt service requirement earning interest at an interest rate equal to the bond interest rate of 4.2 percent. The resulting 20 year fixed charge rate is approximately 8.43 percent, the 25 year fixed charge rate is approximately 7.35 percent, and the 30 year fixed charge rate is approximately 6.66 percent.

The levelized fixed charge rate is essentially the capital recovery factor, adjusted to include the bond issuance fee and the debt service reserve fund, plus 0.50 percent for property insurance, and was calculated as follows:

For the 20 year fixed charge rate where i = 4.2 percent, n = 20 years, DSRF = 1.0 year, bond issuance fees (fees) = 2.0 percent, and property insurance = 0.5 percent:

Capital Recovery Factor (CRF) =

$$\frac{i \times \left[(1+i)^n\right]}{\left[(1+i)^n - 1\right]} = \frac{0.042 \times \left[(1+0.042)^{20}\right]}{\left[(1+0.042)^{20} - 1\right]} = 0.07489 = 7.489 \text{ Percent}$$

Adjusted CRF (ACRF) =

$$\frac{(1 - (i \times DSRF)) \times CRF}{[1 - fees - (DSRF \times CRF)]} = \frac{(1 - (0.042 \times 1.0)) \times 0.07489}{[1 - 0.02 - (1.0 \times 0.7489)]} = 0.07927 = 7.927 \text{ Percent}$$

Levelized Fixed Charge Rate =
ACRF + property insurance = 0.07927 + 0.005 = 0.08427 = ~ 8.43 Percent

For the 25 year fixed charge rate where i = 4.2 percent, n = 25 years, DSRF = 1.0 year, bond issuance fees (fees) = 2.0 percent, and property insurance = 0.5 percent:

Capital Recovery Factor (CRF) =

$$\frac{i \times \left[(1+i)^n\right]}{\left[(1+i)^n - 1\right]} = \frac{0.042 \times \left[(1+0.042)^{25}\right]}{\left[(1+0.042)^{25} - 1\right]} = 0.06537 = 6.537 \text{ Percent}$$

Adjusted CRF (ACRF) =

$$\frac{(1 - (i \times DSRF)) \times CRF}{[1 - fees - (DSRF \times CRF)]} = \frac{(1 - (0.042 \times 1.0)) \times 0.06537}{[1 - 0.02 - (1.0 \times 0.06537)]} = 0.06847 = 6.847 \text{ Percent}$$

Levelized Fixed Charge Rate =
ACRF + property insurance = 0.06847 + 0.005 = 0.07347 = ~ 7.35 Percent

For the 30 year fixed charge rate where i = 4.2 percent, n = 30 years, DSRF = 1.0 year, bond issuance fees (fees) = 2.0 percent, and property insurance = 0.5 percent:

Capital Recovery Factor (CRF) =

Adjusted CRF (ACRF) =

$$\frac{(1-(i \times DSRF)) \times CRF}{[1 - fees - (DSRF \times CRF)]} = \frac{(1-(0.042 \times 1.0)) \times 0.05924}{[1 - 0.02 - (1.0 \times 0.05924)]} = 0.06164 = 6.164 \text{ Percent}$$

Levelized Fixed Charge Rate =
ACRF + property insurance = 0.06164 + 0.005 = 0.06664 = ~ 6.66 Percent

7. **How does GRU use the two fixed charge rates in the evaluation process?**

**Response to Interrogatory No. 7:**

The three levelized fixed charge rates were applied to all estimated capital expenditures in the economic analyses performed in the Gainesville Renewable Energy Center Need for Power Application. The levelized fixed charge rate, or FCR, represents the sum of a project's fixed charges as a percent of the initial investment cost. When the FCR is applied to the initial investment, the product equals the revenue requirements needed to offset the fixed charges during a given year. The resulting levelized capital cost was used in the determination of annual costs for each alternative evaluated. The levelized fixed charge rates were applied to all capital costs consistently throughout the Application. The 20 year fixed charge rate was applied to simple cycle combustion turbine alternatives, the 25 year fixed charge rate was applied to combined cycle alternatives, and the 30-year fixed charge rate was applied to coal-fired alternatives.

8. **Please provide the capital structure for this transaction for GRU.**

**Response to Interrogatory No. 8:**

GRU has entered into a 30-year power purchase agreement (PPA) with Gainesville Renewable Energy Center, LLC (GREC LLC) for capacity, energy, and environmental attributes from the proposed GREC biomass facility. This transaction is structured as a PPA with costs structured on a per MWh basis rather than GRU obtaining an equity share in the facility. GRU will pay for fixed costs on a $/MWh basis for available energy. GRU will have no capital invested in this facility.

**AFFIDAVIT**

STATE OF KANSAS)

COUNTY OF Johnson

I hereby certify that on this 12th day of October, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Bradley Kushner, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 3, 4, 5, 6, and 7 from STAFF'S FIRST SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 1-8) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 12th day of October, 2009.

Signature of Affiant

Notary Public
State of Kansas, at Large

My Commission Expires: 1-25-11

1-25-11

**AFFIDAVIT**

STATE OF FLORIDA)

COUNTY OF _ALACHUA_)

I hereby certify that on this _____15____ day of October, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Edward Regan, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 1, 2, and 8 from STAFF'S FIRST SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 1-8) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 15 day of October, 2009.

Edward J Regan
Signature of Affiant

Rita K. Strother

Notary Public
State of Florida, at Large

RITA K. STROTHER
Commission DD 767967
Expires May 12, 2012
Bonded Thru Troy Fain Insurance 800-385-7019

My Commission Expires:

# 2

# GRU/GREC LLC's Responses to Staff's Second Set of Interrogatories (Nos. 9-70)

## RESPONSES

9. **Please refer to page 4, lines 8-22 of Witness Regan's testimony. The witness discusses the statutory criteria that the Florida Public Service Commission must follow in making need determinations. In detail, please explain or describe which of these criteria should have the most weight in this proceeding.**

**Response to Interrogatory No. 9:**

The Florida Public Service Commission maintains the jurisdictional discretion to assign weighting factors it views as appropriate in considering the statutory criteria (403.519(3), Florida Statutes) that must be taken into account when making need determinations. For purposes of this proceeding, GRU and GREC LLC believe it is appropriate to place more emphasis on the statutory criteria that address the use of renewable energy sources and conservation, fuel diversity and supply reliability, and electric system reliability and integrity.

As a municipal utility over which the Florida Public Service Commission does not have ratemaking authority, GRU has made decisions that are in-line with what the citizens of Gainesville have indicated they view as important. In some instances, such actions result in placing less emphasis on near-term cost-effectiveness and more emphasis on promoting renewable energy technologies and conservation. The proposed Gainesville Renewable Energy Center (GREC) biomass project achieves the goal of promoting renewable energy technologies while also increasing GRU's fuel diversity and supply reliability and improving system reliability and integrity. These aspects of the proposed project are discussed in detail throughout the GREC Need for Power Application, Exhibit No. __ [GREC-1], as well as the direct testimony of various witnesses. GRU has and continues to demonstrate its commitment to energy conservation through the demand-side management programs offered to its customers (please refer to the response to Interrogatory No. 31 for more information on these programs).

It is the view of GRU and GREC LLC that the statutory criteria that must be considered by the Florida Public Service Commission should be weighted in the following order:

- Whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available.
- Whether there are conservation measures taken by, or reasonably available to, the applicant or its members that might mitigate the need for the proposed plant.
- The need for fuel diversity and supply reliability.
- The need for electric system reliability and integrity.
- The need for adequate electricity at a reasonable cost.
- Whether the proposed plant is the most cost-effective alternative available.

***Forecasted Load and Resources***

**10. Please refer to Witness Regan's Testimony, Page 5, Lines 13-15. The witness testifies that the capacity from Gainesville Renewable Energy Center (GREC) is needed to replace capacity from Gainesville Regional Utilities' (GRU's) Deerhaven Unit 2 during maintenance and forced outages. Please discuss whether or not the GREC Facility will be dispatched during other periods.**

**Response to Interrogatory No. 10:**

GREC is expected to be dispatched with a high level of utilization given its high order of merit in the dispatch stack.

**11. How much of an ownership share does GRU have in Progress Energy Florida's Crystal River 3 nuclear generating unit?**

**Response to Interrogatory No. 11:**

GRU owns a 1.4079 percent share of Progress Energy Florida's Crystal River 3 nuclear generating unit. This equates to a summer rating of 11.6 MW and a winter rating of 11.9 MW at the high side of the generator terminals.

**12. Please explain or describe whether GRU has any inefficient generating units that would provide a reliability and/or economic benefit if converted or upgraded into more efficient units? For example, some simple cycle combustion turbines could be converted into a more fuel efficient combined cycle unit.**

**Response to Interrogatory No. 12:**

J.R. Kelly Unit 8 was GRU's best fit for a combined cycle retrofit, and was therefore converted to combined cycle with commercial operation beginning in May 2001. J.R. Kelly Units 1, 2, and 3 are all too small, too old, and too inefficient to be considered for combined cycle conversion. Deerhaven gas turbine Units 1 and 2 are each too small, too old, and too inefficient to be considered for combined cycle conversion. Deerhaven gas turbine Unit 3 may be considered a candidate for combined cycle conversion; however, Deerhaven gas turbine Unit 3 is needed as a peaking unit to support GRU's system. Deerhaven steam turbine Unit 1 has been considered for combined cycle conversion but has been rejected as a poor fit to the available combustion turbines and the layout of the surrounding facilities. Deerhaven Unit 1 would be best matched with a 7FA class combustion turbine, which would allow for relatively little utilization of the capacity of the existing steam turbine generator, resulting in a relatively inefficient combined cycle. The resulting combined cycle would also be too large of a unit for GRU's system requirements and would not be competitive with the current combined cycle market.

**13. Please provide a chart, including the historic average customer usage by customer class for GRU by year, from 1998 to 2008, and the projected values for 2009 through 2018.**

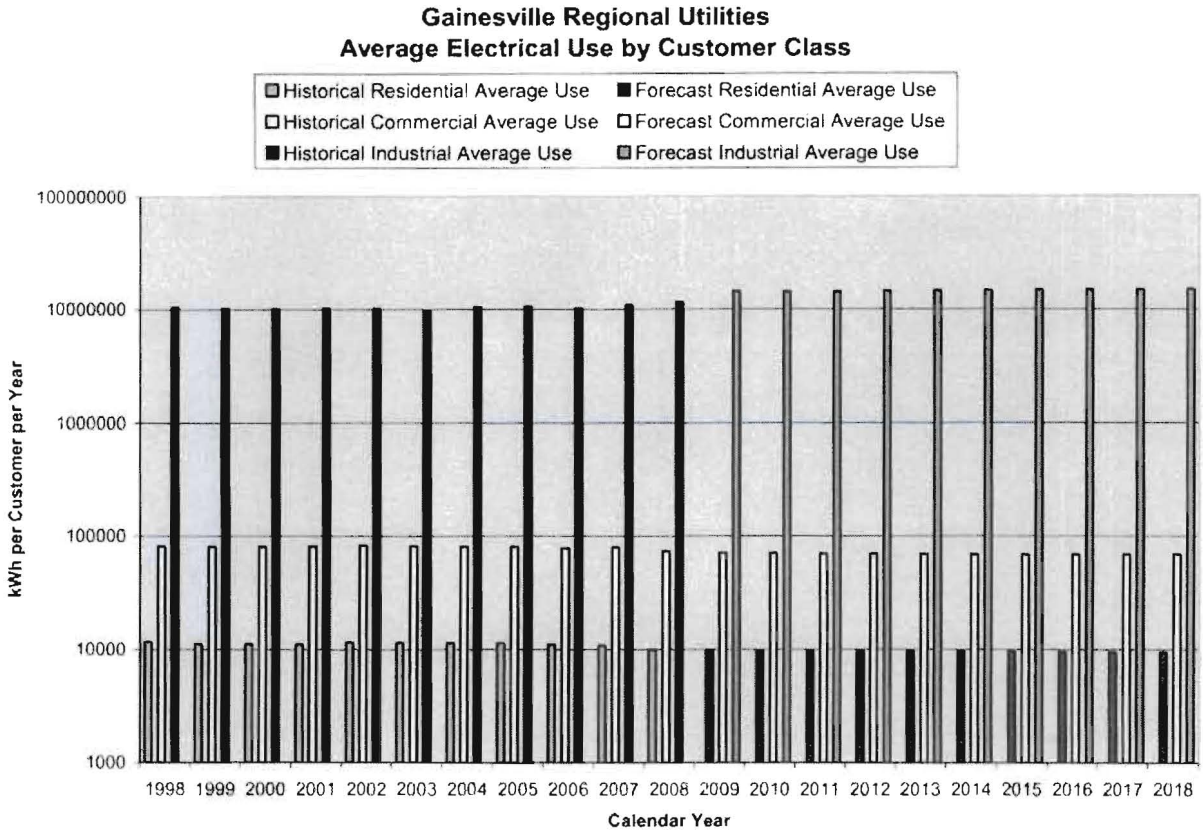
**Response to Interrogatory No. 13:**

Please see the chart below, which presents the requested information. The chart depicts declining average use in the residential sector in the forecast period reflecting the projected impacts of GRU's conservation measures.

In the commercial sector, use per customer is lower in the forecast period compared to the historical period for two primary reasons:

1) Approximately 400 cable television amplifiers that were previously bulk-billed, were reconfigured to be individually billed during 2008. This one-time infusion of new customer accounts causes the use per customer to be lower in the forecast period.
2) GRU's projected impacts from conservation measures offered to non-residential customers are also reflected in this forecast.

In the industrial sector, use per customer is higher in the forecast period compared to the historical period. This is the result of a policy change implemented in 2008 that determines which customers are billed in the large demand rate category. Approximately seven of a total 18 customers were shifted from the large demand (industrial) to the general service demand (commercial) rate category as a result of this change. The remaining 11 large demand customers represent the largest electrical loads from the original group, so the use per customer for this newer subset of customers is higher after 2008




**14. Please complete the table below regarding the historic performance of GRU's coal-fired Deerhaven Unit 2.**

| Year | Planned Outage Factor | Forced Outage Factor | Equivalent Availability Factor | Resulting Capacity Factor | Average Net Operating Heat Rate |
|---|---|---|---|---|---|
| | (%) | (%) | (%) | (%) | (BTU/kWh) |
| 1999 | | | | | |
| 2000 | | | | | |
| 2001 | | | | | |
| 2002 | | | | | |
| 2003 | | | | | |
| 2004 | | | | | |
| 2005 | | | | | |
| 2006 | | | | | |
| 2007 | | | | | |
| 2008 | | | | | |

**Response to Interrogatory No. 14:**

Please see the completed table below, which presents the requested information. The equivalent availability factor (EAF) presented below is different from the availability factor presented in response to Interrogatory No. 18 because EAF takes into account partial outages.

| Year | Planned Outage Factor | Forced Outage Factor | Equivalent Availability Factor | Resulting Capacity Factor | Average Net Operating Heat Rate |
|---|---|---|---|---|---|
| | (%) | (%) | (%) | (%) | (BTU/kWh) |
| 1999 | 19.99 | 5.86 | 70.09 | 53.9 | 10,895 |
| 2000 | 8.37 | 1.88 | 86.82 | 71.8 | 10,877 |
| 2001 | 8.41 | 5.71 | 84.51 | 71.4 | 10,833 |
| 2002 | 11.57 | 5.26 | 76.39 | 63.3 | 10,925 |
| 2003 | 16.37 | 0.18 | 80.43 | 67.5 | 11,021 |
| 2004 | 12.09 | 15.27 | 71.46 | 58.8 | 10,938 |
| 2005 | 0.07 | 3.69 | 94.19 | 77.3 | 10,915 |
| 2006 | 10.76 | 3.59 | 83.54 | 69.1 | 10,919 |
| 2007 | 7.97 | 11.04 | 78.94 | 66.5 | 11,078 |
| 2008 | 11.07 | 3.82 | 83.83 | 66.0 | 11,090 |

15. **Please complete the following table detailing GRU's projected summer (MW), winter (MW) and energy (GWH) net firm demand. Complete for each of the cases listed below.**

| Forecast: (Summer Demand (MW), Winter Demand (MW), or Annual Energy(GWh)) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: (Base, High Load, Low Load, or Regulated CO2) | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | | | | | | | | | |
| 2011 | | | | | | | | | |
| 2012 | | | | | | | | | |
| 2013 | | | | | | | | | |
| 2014 | | | | | | | | | |
| 2015 | | | | | | | | | |
| 2016 | | | | | | | | | |
| 2017 | | | | | | | | | |
| 2018 | | | | | | | | | |
| 2019 | | | | | | | | | |
| 2020 | | | | | | | | | |
| 2021 | | | | | | | | | |
| 2022 | | | | | | | | | |
| 2023 | | | | | | | | | |
| 2024 | | | | | | | | | |
| 2025 | | | | | | | | | |
| 2026 | | | | | | | | | |
| 2027 | | | | | | | | | |
| 2028 | | | | | | | | | |
| 2029 | | | | | | | | | |
| 2030 | | | | | | | | | |
| 2031 | | | | | | | | | |
| 2032 | | | | | | | | | |

**Response to Interrogatory No. 15:**

Please see the completed tables below, which present the requested information for the base, high, and low load forecasts. GRU does not develop a load forecast for a regulated $CO_2$ case. Note that GRU does not develop high and low load forecasts for winter peak demand.

| Forecast: Summer Demand (MW) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 478 | 46 | 393 | 0 | 0 | 23 | 0 | 16 | 439 |
| 2011 | 485 | 47 | 394 | 0 | 0 | 26 | 0 | 18 | 441 |
| 2012 | 492 | 48 | 395 | 0 | 0 | 28 | 0 | 21 | 443 |
| 2013 | 500 | 49 | 396 | 0 | 0 | 31 | 0 | 24 | 445 |
| 2014 | 508 | 50 | 398 | 0 | 0 | 34 | 0 | 26 | 448 |
| 2015 | 516 | 51 | 399 | 0 | 0 | 37 | 0 | 29 | 450 |
| 2016 | 523 | 52 | 401 | 0 | 0 | 39 | 0 | 31 | 453 |
| 2017 | 532 | 53 | 404 | 0 | 0 | 42 | 0 | 33 | 457 |
| 2018 | 539 | 54 | 406 | 0 | 0 | 44 | 0 | 35 | 460 |
| 2019 | 546 | 55 | 408 | 0 | 0 | 46 | 0 | 37 | 463 |
| 2020 | 552 | 55 | 410 | 0 | 0 | 48 | 0 | 39 | 465 |
| 2021 | 559 | 56 | 410 | 0 | 0 | 51 | 0 | 42 | 466 |
| 2022 | 565 | 57 | 411 | 0 | 0 | 53 | 0 | 44 | 468 |
| 2023 | 570 | 58 | 411 | 0 | 0 | 55 | 0 | 46 | 469 |
| 2024 | 577 | 59 | 412 | 0 | 0 | 58 | 0 | 48 | 471 |
| 2025 | 583 | 59 | 414 | 0 | 0 | 60 | 0 | 50 | 473 |
| 2026 | 589 | 60 | 415 | 0 | 0 | 62 | 0 | 52 | 475 |
| 2027 | 594 | 61 | 415 | 0 | 0 | 64 | 0 | 54 | 476 |
| 2028 | 601 | 62 | 416 | 0 | 0 | 67 | 0 | 56 | 478 |
| 2029 | 607 | 62 | 418 | 0 | 0 | 69 | 0 | 58 | 480 |
| 2030 | 612 | 63 | 418 | 0 | 0 | 71 | 0 | 60 | 481 |
| 2031 | 618 | 64 | 419 | 0 | 0 | 73 | 0 | 62 | 483 |
| 2032 | 624 | 65 | 419 | 0 | 0 | 76 | 0 | 64 | 484 |

| Forecast: Winter Demand (MW) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 409 | 45 | 314 | 0 | 0 | 42 | 0 | 8 | 359 |
| 2011 | 412 | 46 | 316 | 0 | 0 | 42 | 0 | 8 | 362 |
| 2012 | 416 | 47 | 319 | 0 | 0 | 42 | 0 | 8 | 366 |
| 2013 | 421 | 48 | 323 | 0 | 0 | 42 | 0 | 8 | 371 |
| 2014 | 425 | 49 | 326 | 0 | 0 | 42 | 0 | 8 | 375 |
| 2015 | 430 | 50 | 330 | 0 | 0 | 42 | 0 | 8 | 380 |
| 2016 | 434 | 51 | 333 | 0 | 0 | 42 | 0 | 8 | 384 |
| 2017 | 437 | 52 | 335 | 0 | 0 | 42 | 0 | 8 | 387 |
| 2018 | 441 | 53 | 338 | 0 | 0 | 42 | 0 | 8 | 391 |
| 2019 | 445 | 54 | 341 | 0 | 0 | 42 | 0 | 8 | 395 |
| 2020 | 448 | 55 | 343 | 0 | 0 | 42 | 0 | 8 | 398 |
| 2021 | 451 | 55 | 346 | 0 | 0 | 42 | 0 | 8 | 401 |
| 2022 | 453 | 56 | 347 | 0 | 0 | 42 | 0 | 8 | 403 |
| 2023 | 456 | 57 | 349 | 0 | 0 | 42 | 0 | 8 | 406 |
| 2024 | 458 | 58 | 350 | 0 | 0 | 42 | 0 | 8 | 408 |
| 2025 | 461 | 59 | 352 | 0 | 0 | 42 | 0 | 8 | 411 |
| 2026 | 464 | 59 | 355 | 0 | 0 | 42 | 0 | 8 | 414 |
| 2027 | 467 | 60 | 357 | 0 | 0 | 42 | 0 | 8 | 417 |
| 2028 | 469 | 61 | 358 | 0 | 0 | 42 | 0 | 8 | 419 |
| 2029 | 472 | 62 | 360 | 0 | 0 | 42 | 0 | 8 | 422 |
| 2030 | 475 | 62 | 363 | 0 | 0 | 42 | 0 | 8 | 425 |
| 2031 | 477 | 63 | 364 | 0 | 0 | 42 | 0 | 8 | 427 |
| 2032 | 480 | 64 | 366 | 0 | 0 | 42 | 0 | 8 | 430 |

**Forecast: Annual Energy (GWh)**
**Case: Base**

| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Energy for Load |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 2,219 | 201 | 1,761 | na | na | 121 | na | 54 | 2,044 |
| 2011 | 2,249 | 205 | 1,774 | na | na | 128 | na | 60 | 2,061 |
| 2012 | 2,285 | 210 | 1,791 | na | na | 134 | na | 66 | 2,085 |
| 2013 | 2,323 | 215 | 1,810 | na | na | 141 | na | 72 | 2,110 |
| 2014 | 2,360 | 219 | 1,830 | na | na | 147 | na | 78 | 2,135 |
| 2015 | 2,398 | 224 | 1,850 | na | na | 154 | na | 84 | 2,160 |
| 2016 | 2,433 | 227 | 1,869 | na | na | 160 | na | 90 | 2,183 |
| 2017 | 2,467 | 231 | 1,886 | na | na | 166 | na | 96 | 2,205 |
| 2018 | 2,503 | 235 | 1,904 | na | na | 173 | na | 102 | 2,228 |
| 2019 | 2,536 | 238 | 1,921 | na | na | 179 | na | 108 | 2,249 |
| 2020 | 2,564 | 242 | 1,933 | na | na | 186 | na | 113 | 2,265 |
| 2021 | 2,591 | 245 | 1,944 | na | na | 192 | na | 119 | 2,280 |
| 2022 | 2,619 | 249 | 1,954 | na | na | 199 | na | 125 | 2,295 |
| 2023 | 2,646 | 252 | 1,965 | na | na | 205 | na | 131 | 2,310 |
| 2024 | 2,674 | 256 | 1,976 | na | na | 212 | na | 137 | 2,325 |
| 2025 | 2,702 | 259 | 1,988 | na | na | 218 | na | 143 | 2,341 |
| 2026 | 2,730 | 263 | 1,999 | na | na | 225 | na | 149 | 2,356 |
| 2027 | 2,757 | 266 | 2,011 | na | na | 231 | na | 154 | 2,372 |
| 2028 | 2,785 | 270 | 2,021 | na | na | 238 | na | 160 | 2,387 |
| 2029 | 2,812 | 273 | 2,033 | na | na | 244 | na | 166 | 2,402 |
| 2030 | 2,840 | 276 | 2,044 | na | na | 251 | na | 172 | 2,417 |
| 2031 | 2,866 | 279 | 2,055 | na | na | 257 | na | 178 | 2,431 |
| 2032 | 2,894 | 282 | 2,066 | na | na | 264 | na | 184 | 2,446 |

**Forecast: Summer Demand (MW)**
**Case: High**

| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Firm Demand |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 517 | 50 | 425 | 0 | 0 | 25 | 0 | 17 | 475 |
| 2011 | 526 | 51 | 427 | 0 | 0 | 28 | 0 | 20 | 478 |
| 2012 | 535 | 52 | 430 | 0 | 0 | 30 | 0 | 23 | 482 |
| 2013 | 545 | 53 | 432 | 0 | 0 | 34 | 0 | 26 | 485 |
| 2014 | 554 | 55 | 434 | 0 | 0 | 37 | 0 | 28 | 489 |
| 2015 | 564 | 56 | 436 | 0 | 0 | 40 | 0 | 32 | 492 |
| 2016 | 574 | 57 | 440 | 0 | 0 | 43 | 0 | 34 | 497 |
| 2017 | 584 | 58 | 444 | 0 | 0 | 46 | 0 | 36 | 502 |
| 2018 | 593 | 59 | 447 | 0 | 0 | 48 | 0 | 39 | 506 |
| 2019 | 602 | 61 | 449 | 0 | 0 | 51 | 0 | 41 | 510 |
| 2020 | 610 | 61 | 453 | 0 | 0 | 53 | 0 | 43 | 514 |
| 2021 | 621 | 62 | 455 | 0 | 0 | 57 | 0 | 47 | 517 |
| 2022 | 627 | 63 | 456 | 0 | 0 | 59 | 0 | 49 | 519 |
| 2023 | 634 | 65 | 457 | 0 | 0 | 61 | 0 | 51 | 522 |
| 2024 | 644 | 66 | 459 | 0 | 0 | 65 | 0 | 54 | 525 |
| 2025 | 651 | 66 | 462 | 0 | 0 | 67 | 0 | 56 | 528 |
| 2026 | 658 | 67 | 464 | 0 | 0 | 69 | 0 | 58 | 531 |
| 2027 | 667 | 68 | 466 | 0 | 0 | 72 | 0 | 61 | 534 |
| 2028 | 675 | 70 | 467 | 0 | 0 | 75 | 0 | 63 | 537 |
| 2029 | 683 | 70 | 470 | 0 | 0 | 78 | 0 | 65 | 540 |
| 2030 | 691 | 71 | 472 | 0 | 0 | 80 | 0 | 68 | 543 |
| 2031 | 699 | 72 | 474 | 0 | 0 | 83 | 0 | 70 | 546 |
| 2032 | 708 | 74 | 475 | 0 | 0 | 86 | 0 | 73 | 549 |

| Forecast: Annual Energy (GWh) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: High | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Energy for Load |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 2,378 | 215 | 1,887 | na | na | 130 | na | 58 | 2,190 |
| 2011 | 2,416 | 221 | 1,905 | na | na | 138 | na | 64 | 2,214 |
| 2012 | 2,460 | 226 | 1,929 | na | na | 144 | na | 71 | 2,245 |
| 2013 | 2,507 | 232 | 1,953 | na | na | 152 | na | 78 | 2,277 |
| 2014 | 2,552 | 237 | 1,979 | na | na | 159 | na | 84 | 2,309 |
| 2015 | 2,600 | 242 | 2,007 | na | na | 167 | na | 91 | 2,342 |
| 2016 | 2,644 | 247 | 2,030 | na | na | 174 | na | 98 | 2,372 |
| 2017 | 2,687 | 252 | 2,053 | na | na | 181 | na | 105 | 2,401 |
| 2018 | 2,732 | 256 | 2,079 | na | na | 189 | na | 111 | 2,432 |
| 2019 | 2,773 | 261 | 2,100 | na | na | 196 | na | 118 | 2,459 |
| 2020 | 2,811 | 265 | 2,119 | na | na | 204 | na | 124 | 2,483 |
| 2021 | 2,847 | 269 | 2,136 | na | na | 211 | na | 131 | 2,505 |
| 2022 | 2,884 | 274 | 2,152 | na | na | 219 | na | 138 | 2,527 |
| 2023 | 2,920 | 278 | 2,168 | na | na | 226 | na | 145 | 2,549 |
| 2024 | 2,956 | 283 | 2,185 | na | na | 234 | na | 151 | 2,571 |
| 2025 | 2,994 | 287 | 2,203 | na | na | 242 | na | 158 | 2,594 |
| 2026 | 3,033 | 292 | 2,221 | na | na | 250 | na | 166 | 2,617 |
| 2027 | 3,068 | 296 | 2,238 | na | na | 257 | na | 171 | 2,640 |
| 2028 | 3,108 | 301 | 2,255 | na | na | 266 | na | 179 | 2,663 |
| 2029 | 3,145 | 305 | 2,274 | na | na | 273 | na | 186 | 2,686 |
| 2030 | 3,182 | 309 | 2,290 | na | na | 281 | na | 193 | 2,708 |
| 2031 | 3,220 | 313 | 2,309 | na | na | 289 | na | 200 | 2,731 |
| 2032 | 3,257 | 318 | 2,325 | na | na | 297 | na | 207 | 2,753 |

| Forecast: Summer Demand (MW) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: Low | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 439 | 42 | 361 | 0 | 0 | 21 | 0 | 15 | 403 |
| 2011 | 443 | 43 | 360 | 0 | 0 | 24 | 0 | 16 | 403 |
| 2012 | 449 | 44 | 360 | 0 | 0 | 26 | 0 | 19 | 404 |
| 2013 | 455 | 45 | 360 | 0 | 0 | 28 | 0 | 22 | 405 |
| 2014 | 462 | 45 | 362 | 0 | 0 | 31 | 0 | 24 | 407 |
| 2015 | 468 | 46 | 362 | 0 | 0 | 34 | 0 | 26 | 408 |
| 2016 | 473 | 47 | 363 | 0 | 0 | 35 | 0 | 28 | 410 |
| 2017 | 480 | 48 | 364 | 0 | 0 | 38 | 0 | 30 | 412 |
| 2018 | 486 | 49 | 365 | 0 | 0 | 40 | 0 | 32 | 414 |
| 2019 | 489 | 49 | 366 | 0 | 0 | 41 | 0 | 33 | 415 |
| 2020 | 494 | 49 | 367 | 0 | 0 | 43 | 0 | 35 | 416 |
| 2021 | 499 | 50 | 366 | 0 | 0 | 46 | 0 | 37 | 416 |
| 2022 | 502 | 51 | 365 | 0 | 0 | 47 | 0 | 39 | 416 |
| 2023 | 507 | 52 | 365 | 0 | 0 | 49 | 0 | 41 | 417 |
| 2024 | 510 | 52 | 365 | 0 | 0 | 51 | 0 | 42 | 417 |
| 2025 | 515 | 52 | 366 | 0 | 0 | 53 | 0 | 44 | 418 |
| 2026 | 519 | 53 | 365 | 0 | 0 | 55 | 0 | 46 | 418 |
| 2027 | 523 | 54 | 365 | 0 | 0 | 56 | 0 | 48 | 419 |
| 2028 | 527 | 54 | 365 | 0 | 0 | 59 | 0 | 49 | 419 |
| 2029 | 530 | 54 | 365 | 0 | 0 | 60 | 0 | 51 | 419 |
| 2030 | 534 | 55 | 365 | 0 | 0 | 62 | 0 | 52 | 420 |
| 2031 | 537 | 56 | 364 | 0 | 0 | 63 | 0 | 54 | 420 |
| 2032 | 542 | 56 | 364 | 0 | 0 | 66 | 0 | 56 | 420 |

| Forecast: Annual Energy (GWh) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Case: Low | | | | | | | | | |
| Year | Total | Wholesale | Retail | Interruptible | Residential | | Commercial/Industrial | | Net Energy for Load |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2010 | 2,059 | 186 | 1,635 | na | na | 112 | na | 50 | 1,897 |
| 2011 | 2,082 | 190 | 1,642 | na | na | 118 | na | 56 | 1,908 |
| 2012 | 2,110 | 194 | 1,653 | na | na | 124 | na | 61 | 1,925 |
| 2013 | 2,139 | 198 | 1,667 | na | na | 130 | na | 66 | 1,943 |
| 2014 | 2,168 | 201 | 1,681 | na | na | 135 | na | 72 | 1,961 |
| 2015 | 2,197 | 205 | 1,695 | na | na | 141 | na | 77 | 1,979 |
| 2016 | 2,222 | 208 | 1,707 | na | na | 146 | na | 82 | 1,994 |
| 2017 | 2,247 | 211 | 1,718 | na | na | 151 | na | 87 | 2,009 |
| 2018 | 2,275 | 213 | 1,731 | na | na | 157 | na | 93 | 2,025 |
| 2019 | 2,298 | 216 | 1,740 | na | na | 162 | na | 98 | 2,038 |
| 2020 | 2,317 | 219 | 1,747 | na | na | 168 | na | 102 | 2,047 |
| 2021 | 2,335 | 221 | 1,752 | na | na | 173 | na | 107 | 2,055 |
| 2022 | 2,354 | 223 | 1,757 | na | na | 179 | na | 112 | 2,063 |
| 2023 | 2,372 | 226 | 1,762 | na | na | 184 | na | 117 | 2,071 |
| 2024 | 2,389 | 229 | 1,766 | na | na | 189 | na | 122 | 2,078 |
| 2025 | 2,408 | 231 | 1,772 | na | na | 194 | na | 127 | 2,087 |
| 2026 | 2,427 | 234 | 1,777 | na | na | 200 | na | 132 | 2,095 |
| 2027 | 2,445 | 236 | 1,783 | na | na | 205 | na | 137 | 2,103 |
| 2028 | 2,462 | 238 | 1,788 | na | na | 210 | na | 141 | 2,111 |
| 2029 | 2,479 | 241 | 1,792 | na | na | 215 | na | 146 | 2,118 |
| 2030 | 2,497 | 243 | 1,797 | na | na | 221 | na | 151 | 2,125 |
| 2031 | 2,513 | 245 | 1,802 | na | na | 225 | na | 156 | 2,132 |
| 2032 | 2,531 | 247 | 1,806 | na | na | 231 | na | 161 | 2,139 |

**16. Please complete the table below regarding GRU's Energy Requirements by Scenario and Case.**

| Scenario: (GREC with Resale, GREC without Resale, or No New Construction until 2023) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: (Base or Regulated CO2) | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | | | | | | | | | | | |
| Coal | | | | | | | | | | | |
| Oil | | | | | | | | | | | |
| Natural Gas | | | | | | | | | | | |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | | | | | | | | | | | |
| GREC PPA | | | | | | | | | | | |
| Other PPA | | | | | | | | | | | |
| Total Purchased Power | | | | | | | | | | | |
| Total | | | | | | | | | | | |

**Response to Interrogatory No. 16:**

Please see the completed tables below, which present the requested information.

| Scenario: GREC with Resale | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,335 | 1,355 | 1,365 | 1,383 | 1,381 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 222 | 256 | 248 | 268 | 265 | 285 | 296 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 394 | 394 | 395 | 394 | 394 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 186 | 196 | 429 | 429 | 430 | 429 | 429 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.
2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.

| Scenario: GREC without Resale | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,091 | 1,108 | 1,117 | 1,138 | 1,143 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 222 | 256 | 98 | 120 | 118 | 136 | 139 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 788 | 788 | 790 | 788 | 788 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 186 | 196 | 823 | 823 | 826 | 823 | 823 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.
2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.

090451 Hearing Exhibit - 000019

| Scenario: No New Construction until 2023 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,559 | 1,567 | 1,572 | 1,578 | 1,583 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 222 | 256 | 418 | 450 | 453 | 484 | 487 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 186 | 196 | 35 | 35 | 35 | 35 | 35 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.

2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.

| Scenario: GREC with Resale | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,331 | 1,352 | 1,361 | 1,380 | 1,380 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 216 | 251 | 252 | 271 | 269 | 288 | 296 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 157 | 167 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 394 | 394 | 395 | 394 | 394 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 192 | 202 | 429 | 429 | 430 | 429 | 429 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.

2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.

090451 Hearing Exhibit - 000020

| Scenario: GREC without Resale | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,088 | 1,107 | 1,119 | 1,139 | 1,141 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 216 | 251 | 101 | 121 | 115 | 135 | 141 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 157 | 167 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 788 | 788 | 790 | 788 | 788 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 192 | 202 | 823 | 823 | 826 | 823 | 823 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.
2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.
3. Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

| Scenario: No New Construction until 2023 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | |
| Energy Requirements (GWh) | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | 99 | 81 | 105 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| Coal | 1,277 | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,549 | 1,560 | 1,565 | 1,574 | 1,574 |
| Oil | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural Gas | 339 | 220 | 143 | 218 | 216 | 251 | 428 | 456 | 460 | 488 | 497 |
| Purchased Power | | | | | | | | | | | |
| PEF PPA | 289 | 224 | 247 | 141 | 157 | 167 | 0 | 0 | 0 | 0 | 0 |
| GREC PPA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other PPA | 66 | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Total Purchased Power | 355 | 251 | 282 | 176 | 192 | 202 | 35 | 35 | 35 | 35 | 35 |
| Total | 2,079 | 2,045 | 2,044 | 2,061 | 2,085 | 2,110 | 2,135 | 2,160 | 2,183 | 2,205 | 2,228 |

1. Other PPA includes market purchases and landfill gas PPA purchases.
2. Excess generation due to modeling unit dispatch constraints reported as sales to market from natural gas units.
3. Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000021

**17. Please complete the table below regarding GRU's Fuel Requirements. Please provide information for each Scenario and Case listed below.**

| Scenario: (GREC with Resale, GREC without Resale, or No New Construction until 2023) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: (Base or Regulated $CO_2$) | | | | | | | | | | | | |
| **Fuel Type** | **Units** | **Actual: 2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** |
| Nuclear | Trillion BTU | | | | | | | | | | | |
| Coal | 1000 Ton | | | | | | | | | | | |
| Residual | 1000 BBL | | | | | | | | | | | |
| Distillate | 1000 BBL | | | | | | | | | | | |
| Natural Gas | 1000 MCF | | | | | | | | | | | |
| Biomass | 1000 Ton | | | | | | | | | | | |

**Response to Interrogatory No. 17:**

Please see the completed tables below, which present the requested information. For all cases, biomass will be acquired by GREC LLC at approximately 1 million green tons per year.

| Scenario: GREC with Resale | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.97 | 615.03 | 538.45 | 545.30 | 549.08 | 555.45 | 554.85 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,380.98 | 2,745.30 | 2,723.23 | 2,928.13 | 2,916.51 | 3,128.14 | 3,252.89 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Scenario: GREC without Resale | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.97 | 615.03 | 449.93 | 455.87 | 459.15 | 466.58 | 468.53 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,380.98 | 2,745.30 | 1,702.28 | 1,865.43 | 1,870.55 | 1,967.15 | 1,979.82 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

090451 Hearing Exhibit - 000023

| Scenario: No New Construction until 2023 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.97 | 615.03 | 620.07 | 622.38 | 624.64 | 626.65 | 628.56 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,380.98 | 2,745.30 | 4,566.12 | 4,928.89 | 4,934.29 | 5,301.58 | 5,302.37 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Scenario: GREC with Resale | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.93 | 614.91 | 537.02 | 544.18 | 547.67 | 554.45 | 554.51 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,331.18 | 2,701.12 | 2,759.59 | 2,961.07 | 2,961.27 | 3,157.19 | 3,249.78 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

090451 Hearing Exhibit - 000024

| Scenario: GREC without Resale | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.93 | 614.91 | 448.59 | 455.40 | 459.91 | 466.79 | 467.79 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,331.18 | 2,701.12 | 1,740.20 | 1,873.02 | 1,847.15 | 1,961.31 | 2,002.41 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

| Scenario: No New Construction until 2023 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | |
| Fuel Type | Units | Actual: 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Nuclear | Trillion BTU | 1.01 | 0.80 | 1.05 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 | 1.08 | 1.22 |
| Coal | 1000 Ton | 550.41 | 593.33 | 601.97 | 619.93 | 617.93 | 614.91 | 616.17 | 620.16 | 622.17 | 625.14 | 625.20 |
| Residual | 1000 BBL | 14.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Distillate | 1000 BBL | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas | 1000 MCF | 3,854.18 | 2,191.81 | 1,484.15 | 2,325.95 | 2,331.18 | 2,701.12 | 4,714.80 | 4,997.70 | 5,014.34 | 5,358.22 | 5,463.27 |
| Biomass | 1000 Ton | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

090451 Hearing Exhibit - 000025

**18. Please complete the following chart regarding each of GRU's generating units, using actual data from 2008. For units which utilize more than one fuel type, list values for both fuels separately.**

| Plant | Unit # | Fuel Type | Net Capacity | Annual Generation | Capacity Factor | Availability Factor | Average Heat Rate | Fuel Burned | Fuel Cost | Fuel Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MW | MWh | % | % | BTU/kWh | MMBTU | $/MMBTU | cents/kWh |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Response to Interrogatory No. 18:**

Please see the completed table below, which presents the requested information.

| Plant | Unit # | Fuel Type | Net Capacity | Annual Generation | Capacity Factor | Availability Factor | Average Heat Rate | Fuel Burned | Fuel Cost | Fuel Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ave. MW | MWh | % | % | BTU/kWh | MMBTU | $/MMBTU | cents/kWh |
| Deerhaven | 1 | Nat Gas | 83 | 126,346.3 | 17.330 | 91.71 | 13,562 | 1,713,553 | 10.71 | 14.520 |
| (a) | | FO6 | 83 | 7,566.7 | 1.038 | 91.71 | 12,285 | 93,390 | 7.56 | 9.335 |
| Deerhaven | 2 | Coal | 228.4 | 1,277,016.7 | 63.651 | 85.1 | 11,047 | 14,106,666 | 3.83 | 4.229 |
| | | Nat Gas | 228.4 | 46,868.4 | 2.336 | 85.1 | 12,266 | 574,897 | 10.77 | 13.209 |
| Coal Yard Dozers | | diesel | - | - | - | - | - | 2,610 | 22.91 | 0.047 |
| Deerhaven | GT1 | Nat Gas | 18.75 | 737.2 | 0.448 | 98.79 | 25,587 | 18,862 | 9.81 | 25.103 |
| (b) | | FO2 | 18.75 | 3.7 | 0.002 | 98.79 | 1,672 | 6 | 4.45 | 0.750 |
| Deerhaven | GT2 | Nat Gas | 18.75 | 1,862.1 | 1.131 | 98.28 | 20,087 | 37,404 | 11.03 | 22.154 |
| (b) | | FO2 | 18.75 | 15.6 | 0.009 | 98.28 | 2,646 | 41 | 4.45 | 1.174 |
| Deerhaven | GT3 | Nat Gas | 78 | 18,190.9 | 2.655 | 81.16 | 13,052 | 237,437 | 10.19 | 13.299 |
| | | FO2 | 78 | 383.8 | 0.056 | 81.16 | 15,894 | 6,100 | 4.45 | 7.073 |
| J. R. Kelly | 7 (c) | Nat Gas | 23.2 | (53.4) | (0.026) | 94.93 | (440,576) | 23,544 | 12.42 | (547.657) |
| | | FO6 | 23.2 | 0.0 | 0.000 | 0.00 | - | 0 | - | - |
| J. R. Kelly | CC1 | Nat Gas | 115 | 145,323.7 | 14.386 | 84.46 | 12,539 | 1,350,324 | 11.27 | 10.474 |
| | | FO2 | 115 | 556.4 | 0.055 | 84.46 | 14,917 | 6,150 | 18.71 | 20.685 |
| J. R. Kelly | GT1 | Nat Gas | 14.5 | 85.8 | 0.067 | 95.34 | 70,006 | 6,006 | 9.38 | 65.688 |
| | | FO2 | 14.5 | 71.7 | 0.056 | 95.34 | 22,221 | 1,593 | 18.71 | 41.583 |
| J. R. Kelly | GT2 | Nat Gas | 14.5 | 49.7 | 0.039 | 90.65 | 120,776 | 6,003 | 9.68 | 116.949 |
| | | FO2 | 14.5 | 46.1 | 0.036 | 90.65 | 22,412 | 1,033 | 18.71 | 41.941 |
| J. R. Kelly | GT3 | Nat Gas | 14.5 | 10.3 | 0.008 | 85.65 | 706,776 | 7,280 | 8.90 | 628.994 |
| | | FO2 | 14.5 | 105.1 | 0.083 | 85.85 | 19,924 | 2,094 | 18.71 | 37.284 |
| Crystal River | 3 | Nuclear | 11.66 | 98,554.2 | 96.212 | 93.45 | 10,259 | 1,011,019 | 0.37 | 0.379 |
| - | - | disposal | - | - | - | - | - | - | - | 0.049 |

(a) Deerhaven Unit #1 Fuel Oil #2 used for Fuel Oil #6 maintenance on start-up, no net output (flushing the fuel lines); Fuel Oil #2 & #6 combined for this table.
(b) The low heat rate reported on DHGTs #1 & #2 are due to small usage levels coupled with the expansion of the fuel volume during the Winter-Spring transition resulting in a lower reported fuel consumption reported
(c) J. R. Kelly #7 when on spinning reserve duty often results in auxiliary power exceeding gross generation. Also, similar duty for the smaller GTs results in negative net MWh and/or exceptionally high $/MWh production costs.
(d) Availability factor presented in this table differs from the equivalent availability factor (EAF) presented in response to Interrogatory No. 14 because EAF takes into account partial outages.

**19. Please complete the following table regarding GRU's generating units and projected use data. Extend the table out through 2032. Please provide information for each Scenario and Case listed below.**

| Scenario: (GREC with Resale, GREC without Resale, or No New Construction until 2023) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: (Base or Regulated $CO_2$) | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | ... | 2032 |
| | | | | Capacity | MW | | | | | | | | | | |
| | | | | Generation | GWh | | | | | | | | | | |
| | | | | Cap. Factor | % | | | | | | | | | | |
| | | | | Availability | % | | | | | | | | | | |
| | | | | Capacity | MW | | | | | | | | | | |
| | | | | Generation | GWh | | | | | | | | | | |
| | | | | Cap. Factor | % | | | | | | | | | | |
| | | | | Availability | % | | | | | | | | | | |
| | | | | Capacity | MW | | | | | | | | | | |
| | | | | Generation | GWh | | | | | | | | | | |
| | | | | Cap. Factor | % | | | | | | | | | | |
| | | | | Availability | % | | | | | | | | | | |

**Response to Interrogatory No. 19:**

Please refer to the attachment labeled *Response to Interrogatory No. 19* for the requested information.

***Reserve Margin***

**20. Please refer to Witness Regan's Testimony, Page 5, Lines 4-10. The witness testifies that GRU does not forecast the need to construct capacity only to maintain a 15 percent reserve margin until 2023. Please explain or describe other reasons or scenarios that may require GRU to construct additional capacity.**

**Response to Interrogatory No. 20:**

The projection of adequate reserve margins until 2023 is based upon GRU's current base load forecast, existing and planned generating resources, and the current schedule of unit retirements. Changes to any of these factors, on their own or in combination with one another, may accelerate the timing of the initial need for additional capacity to maintain the 15 percent reserve margin. Additionally, the timing of this need may be affected by future legislation related to renewable energy standards and/or regulation of carbon dioxide ($CO_2$) emissions, as compliance with such regulations may necessitate the construction of additional capacity for reasons other than satisfying reserve margin requirements.

21. **Please refer to Witness Regan's Testimony, Page 9, Lines 4-12. The witness testifies that GRU uses a 15 percent reserve margin criterion, while Florida's investor-owned utilities use a stipulated 20 percent reserve margin criterion. If GRU were to adopt a 20 percent reserve margin requirement, similar to Florida's Investor-owned utilities, please explain or describe whether that would have any impact upon the timing of units based on capacity need.**

**Response to Interrogatory No. 21:**

Based on GRU's base load forecast and assumptions related to existing and future available capacity resources, adoption of a 20 percent reserve margin would increase the magnitude of capacity required in 2023 to satisfy reserve margin requirements, but would not accelerate the timing of the initial need for capacity.

22. **Please refer to Witness Regan's Testimony, Page 5, Lines 15-18. The witness testifies that Deerhaven 2 serves a large portion of demand, and due to aging, its availability is expected to decrease. Given that Deerhaven Unit 2 represents a significant portion of the capacity on GRU's system, please explain or describe whether GRU believes that a reserve margin of 15 percent is sufficient for reliability purposes.**

**Response to Interrogatory No. 22:**

A 15 percent planning reserve margin is sufficient for reliability purposes. For short term contingency outages, spinning reserve requirements pursuant to FRCC standards, given the relatively small size of GRU's load and its robust interconnections to the bulk power grid, are able to support the import of emergency power and maintain voltage and frequency even under the loss of Deerhaven 2 while at full load and under peak demand conditions. In the event of a long term outage of Deerhaven 2, GRU is a participant in the Mutual Aid Agreement for Extended Generation Outages. This is a contractual agreement among the larger consumer owned generating utilities in which the members pledge to provide baseload capacity at a pre-determined price (indexed to natural gas) to replace the committed capacity of a designated unit if the unit has an unplanned outage of more than 30 days. Participants include the City of Tallahassee, Florida Municipal Power Agency, GRU, JEA, City of Lakeland, Orlando Utilities Commission, Municipal Electric Authority of Georgia, and Seminole Electric Cooperative Inc. Deerhaven 2 is GRU's designated unit in the Mutual Aid Agreement with a capacity commitment of 100 MW. This agreement provides replacement power for up to twelve months after the onset of the unplanned outage, which helps mitigate the effect of a loss of Deerhaven 2.

23. **Please complete the following table to regarding the estimated impact on GRU's Summer Reserve Margin. Please provide information for each Case listed below.**

| GRU's Summer and Winter Reserve Margin | | | | | | |
|---|---|---|---|---|---|---|
| Case: (Base, High Load, Low Load, or Regulated CO2) | | | | | | |
| Year | GREC with Resale | | GREC without Resale | | No New Construction | |
| | (MW) | (%) | (MW) | (%) | (MW) | (%) |
| 2010 | | | | | | |
| 2011 | | | | | | |
| 2012 | | | | | | |
| 2013 | | | | | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |

**Response to Interrogatory No. 23:**

Please see the completed tables below, which present the requested information. As discussed in response to Interrogatory No. 15, GRU does not develop a load forecast for a regulated $CO_2$ case, and GRU does not develop high and low load forecasts for winter peak demand.

| GRU's Summer Reserve Margin | | | | | | |
|---|---|---|---|---|---|---|
| Case: Base Load | | | | | | |
| | GREC with Resale | | GREC without Resale | | No New Construction | |
| Year | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) |
| 2010 | 274 | 62.4 | 274 | 62.4 | 274 | 62.4 |
| 2011 | 225 | 51.0 | 225 | 51.0 | 225 | 51.0 |
| 2012 | 235 | 53.1 | 235 | 53.1 | 235 | 53.1 |
| 2013 | 234 | 52.6 | 234 | 52.6 | 234 | 52.6 |
| 2014 | 211 | 47.1 | 261 | 58.3 | 161 | 35.9 |
| 2015 | 210 | 46.6 | 260 | 57.8 | 160 | 35.5 |
| 2016 | 208 | 45.9 | 258 | 56.9 | 158 | 34.8 |
| 2017 | 205 | 45.0 | 255 | 56.0 | 155 | 34.1 |
| 2018 | 189 | 41.1 | 239 | 51.9 | 139 | 30.2 |
| 2019 | 159 | 34.3 | 209 | 45.1 | 109 | 23.5 |
| 2020 | 157 | 33.9 | 207 | 44.6 | 107 | 23.1 |
| 2021 | 157 | 33.6 | 207 | 44.3 | 107 | 22.9 |
| 2022 | 156 | 33.3 | 206 | 44.0 | 106 | 22.6 |
| 2023 | 72 | 15.3 | 122 | 26.0 | 22 | 4.7 |
| 2024 | 121 | 25.7 | 121 | 25.7 | 21 | 4.5 |
| 2025 | 120 | 25.3 | 120 | 25.3 | 20 | 4.2 |
| 2026 | 119 | 25.0 | 119 | 25.0 | 19 | 4.0 |
| 2027 | 83 | 17.4 | 83 | 17.4 | (17) | (3.6) |
| 2028 | 82 | 17.1 | 82 | 17.1 | (18) | (3.8) |
| 2029 | 76 | 15.9 | 76 | 15.9 | (24) | (4.9) |
| 2030 | 75 | 15.6 | 75 | 15.6 | (25) | (5.2) |
| 2031 | 73 | 15.2 | 73 | 15.2 | (27) | (5.5) |
| 2032 | (160) | (33.0) | (160) | (33.0) | (260) | (53.6) |
| 2033 | (161) | (33.2) | (161) | (33.2) | (261) | (53.8) |
| 2034 | (163) | (33.4) | (163) | (33.4) | (263) | (53.9) |
| 2035 | (164) | (33.6) | (164) | (33.6) | (264) | (54.0) |
| 2036 | (166) | (33.8) | (166) | (33.8) | (266) | (54.2) |
| 2037 | (181) | (36.8) | (181) | (36.8) | (281) | (57.2) |
| 2038 | (183) | (37.0) | (183) | (37.0) | (283) | (57.3) |
| 2039 | (184) | (37.2) | (184) | (37.2) | (284) | (57.4) |
| 2040 | (186) | (37.4) | (186) | (37.4) | (286) | (57.5) |
| 2041 | (187) | (37.6) | (187) | (37.6) | (287) | (57.7) |
| 2042 | (189) | (37.8) | (189) | (37.8) | (289) | (57.8) |
| 2043 | (190) | (38.0) | (190) | (38.0) | (290) | (57.9) |

| GRU's Winter Reserve Margin | | | | | | |
|---|---|---|---|---|---|---|
| **Case: Base Load** | | | | | | |
| | **GREC with Resale** | | **GREC without Resale** | | **No New Construction** | |
| **Year** | **Reserve Capacity (MW)** | **Reserve Margin (%)** | **Reserve Capacity (MW)** | **Reserve Margin (%)** | **Reserve Capacity (MW)** | **Reserve Margin (%)** |
| 2009/10 | 374 | 104.2 | 374 | 104.2 | 374 | 104.2 |
| 2010/11 | 323 | 89.3 | 323 | 89.3 | 323 | 89.3 |
| 2011/12 | 323 | 88.1 | 323 | 88.1 | 323 | 88.1 |
| 2012/13 | 327 | 88.2 | 327 | 88.2 | 327 | 88.2 |
| 2013/14 | 302 | 80.5 | 352 | 93.8 | 252 | 67.2 |
| 2014/15 | 299 | 78.7 | 349 | 91.9 | 249 | 65.6 |
| 2015/16 | 296 | 77.2 | 346 | 90.3 | 246 | 64.2 |
| 2016/17 | 293 | 75.6 | 343 | 88.5 | 243 | 62.7 |
| 2017/18 | 275 | 70.2 | 325 | 82.9 | 225 | 57.4 |
| 2018/19 | 257 | 65.0 | 307 | 77.7 | 207 | 52.4 |
| 2019/20 | 240 | 60.2 | 290 | 72.8 | 190 | 47.6 |
| 2020/21 | 238 | 59.3 | 288 | 71.8 | 188 | 46.8 |
| 2021/22 | 236 | 58.5 | 286 | 70.9 | 186 | 46.1 |
| 2022/23 | 151 | 37.2 | 201 | 49.5 | 101 | 24.9 |
| 2023/24 | 199 | 48.7 | 199 | 48.7 | 99 | 24.2 |
| 2024/25 | 197 | 47.9 | 197 | 47.9 | 97 | 23.6 |
| 2025/26 | 195 | 47.1 | 195 | 47.1 | 95 | 22.9 |
| 2026/27 | 153 | 36.7 | 153 | 36.7 | 53 | 12.7 |
| 2027/28 | 151 | 36.0 | 151 | 36.0 | 51 | 12.1 |
| 2028/29 | 144 | 34.2 | 144 | 34.2 | 44 | 10.5 |
| 2029/30 | 142 | 33.4 | 142 | 33.4 | 42 | 9.9 |
| 2030/31 | 139 | 32.6 | 139 | 32.6 | 39 | 9.2 |
| 2031/32 | (95) | (22.1) | (95) | (22.1) | (195) | (45.3) |
| 2032/33 | (97) | (22.5) | (97) | (22.5) | (197) | (45.6) |
| 2033/34 | (100) | (23.0) | (100) | (23.0) | (200) | (46.0) |
| 2034/35 | (102) | (23.4) | (102) | (23.4) | (202) | (46.3) |
| 2035/36 | (105) | (23.8) | (105) | (23.8) | (205) | (46.6) |
| 2036/37 | (120) | (27.1) | (120) | (27.1) | (220) | (49.7) |
| 2037/38 | (122) | (27.5) | (122) | (27.5) | (222) | (50.0) |
| 2038/39 | (125) | (27.9) | (125) | (27.9) | (225) | (50.2) |
| 2039/40 | (127) | (28.3) | (127) | (28.3) | (227) | (50.5) |
| 2040/41 | (130) | (28.7) | (130) | (28.7) | (230) | (50.8) |
| 2041/32 | (132) | (29.1) | (132) | (29.1) | (232) | (51.1) |
| 2042/43 | (135) | (29.5) | (135) | (29.5) | (235) | (51.3) |

| GRU's Summer Reserve Margin | | | | | | |
|---|---|---|---|---|---|---|
| Case: High Load | | | | | | |
| | GREC with Resale | | GREC without Resale | | No New Construction | |
| Year | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) |
| 2010 | 237 | 49.9 | 237 | 49.9 | 237 | 49.9 |
| 2011 | 187 | 39.2 | 187 | 39.2 | 187 | 39.2 |
| 2012 | 196 | 40.8 | 196 | 40.8 | 196 | 40.8 |
| 2013 | 194 | 40.0 | 194 | 40.0 | 194 | 40.0 |
| 2014 | 170 | 34.7 | 220 | 45.0 | 120 | 24.5 |
| 2015 | 168 | 34.0 | 218 | 44.2 | 118 | 23.9 |
| 2016 | 164 | 33.0 | 214 | 43.1 | 114 | 23.0 |
| 2017 | 160 | 32.0 | 210 | 41.9 | 110 | 22.0 |
| 2018 | 142 | 28.1 | 192 | 38.0 | 92 | 18.3 |
| 2019 | 111 | 21.8 | 161 | 31.5 | 61 | 12.0 |
| 2020 | 108 | 21.1 | 158 | 30.8 | 58 | 11.4 |
| 2021 | 106 | 20.6 | 156 | 30.3 | 56 | 10.9 |
| 2022 | 104 | 20.1 | 154 | 29.7 | 54 | 10.5 |
| 2023 | 19 | 3.7 | 69 | 13.2 | (31) | (5.9) |
| 2024 | 67 | 12.8 | 67 | 12.8 | (33) | (6.3) |
| 2025 | 65 | 12.2 | 65 | 12.2 | (35) | (6.7) |
| 2026 | 62 | 11.7 | 62 | 11.7 | (38) | (7.1) |
| 2027 | 25 | 4.7 | 25 | 4.7 | (75) | (14.0) |
| 2028 | 23 | 4.2 | 23 | 4.2 | (77) | (14.4) |
| 2029 | 16 | 3.0 | 16 | 3.0 | (84) | (15.5) |
| 2030 | 13 | 2.5 | 13 | 2.5 | (87) | (16.0) |
| 2031 | 10 | 1.9 | 10 | 1.9 | (90) | (16.4) |
| 2032 | (224) | (40.8) | (224) | (40.8) | (324) | (59.1) |
| 2033 | (227) | (41.1) | (227) | (41.1) | (327) | (59.3) |
| 2034 | (229) | (41.4) | (229) | (41.4) | (329) | (59.5) |
| 2035 | (232) | (41.7) | (232) | (41.7) | (332) | (59.7) |
| 2036 | (235) | (42.0) | (235) | (42.0) | (335) | (59.9) |
| 2037 | (252) | (44.8) | (252) | (44.8) | (352) | (62.5) |
| 2038 | (255) | (45.1) | (255) | (45.1) | (355) | (62.7) |
| 2039 | (257) | (45.3) | (257) | (45.3) | (357) | (62.9) |
| 2040 | (260) | (45.6) | (260) | (45.6) | (360) | (63.1) |
| 2041 | (263) | (45.8) | (263) | (45.8) | (363) | (63.3) |
| 2042 | (266) | (46.1) | (266) | (46.1) | (366) | (63.5) |
| 2043 | (269) | (46.4) | (269) | (46.4) | (369) | (63.6) |

| GRU's Summer Reserve Margin | | | | | | |
|---|---|---|---|---|---|---|
| Case: Low Load | | | | | | |
| | GREC with Resale | | GREC without Resale | | No New Construction | |
| Year | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) | Reserve Capacity (MW) | Reserve Margin (%) |
| 2010 | 310 | 77.0 | 310 | 77.0 | 310 | 77.0 |
| 2011 | 262 | 65.1 | 262 | 65.1 | 262 | 65.1 |
| 2012 | 274 | 67.7 | 274 | 67.7 | 274 | 67.7 |
| 2013 | 274 | 67.6 | 274 | 67.6 | 274 | 67.6 |
| 2014 | 252 | 62.0 | 302 | 74.3 | 202 | 49.7 |
| 2015 | 252 | 61.9 | 302 | 74.2 | 202 | 49.6 |
| 2016 | 252 | 61.4 | 302 | 73.6 | 202 | 49.2 |
| 2017 | 251 | 60.9 | 301 | 73.0 | 201 | 48.7 |
| 2018 | 235 | 56.9 | 285 | 69.0 | 185 | 44.8 |
| 2019 | 207 | 49.8 | 257 | 61.8 | 157 | 37.7 |
| 2020 | 206 | 49.7 | 256 | 61.7 | 156 | 37.6 |
| 2021 | 207 | 49.7 | 257 | 61.7 | 157 | 37.7 |
| 2022 | 207 | 49.8 | 257 | 61.8 | 157 | 37.7 |
| 2023 | 125 | 29.9 | 175 | 41.9 | 75 | 17.9 |
| 2024 | 175 | 41.9 | 175 | 41.9 | 75 | 18.0 |
| 2025 | 175 | 41.9 | 175 | 41.9 | 75 | 18.0 |
| 2026 | 175 | 41.9 | 175 | 41.9 | 75 | 18.0 |
| 2027 | 141 | 33.6 | 141 | 33.6 | 41 | 9.7 |
| 2028 | 141 | 33.6 | 141 | 33.6 | 41 | 9.7 |
| 2029 | 137 | 32.6 | 137 | 32.6 | 37 | 8.8 |
| 2030 | 137 | 32.5 | 137 | 32.5 | 37 | 8.7 |
| 2031 | 136 | 32.4 | 136 | 32.4 | 36 | 8.6 |
| 2032 | (96) | (22.7) | (96) | (22.7) | (196) | (46.5) |
| 2033 | (96) | (22.8) | (96) | (22.8) | (196) | (46.6) |
| 2034 | (96) | (22.8) | (96) | (22.8) | (196) | (46.6) |
| 2035 | (96) | (22.8) | (96) | (22.8) | (196) | (46.6) |
| 2036 | (96) | (22.9) | (96) | (22.9) | (196) | (46.6) |
| 2037 | (110) | (26.2) | (110) | (26.2) | (210) | (50.0) |
| 2038 | (111) | (26.3) | (111) | (26.3) | (211) | (50.0) |
| 2039 | (111) | (26.3) | (111) | (26.3) | (211) | (50.0) |
| 2040 | (111) | (26.3) | (111) | (26.3) | (211) | (50.0) |
| 2041 | (111) | (26.3) | (111) | (26.3) | (211) | (50.0) |
| 2042 | (111) | (26.4) | (111) | (26.4) | (211) | (50.1) |
| 2043 | (111) | (26.4) | (111) | (26.4) | (211) | (50.1) |

***Purchased Power***

24. **Please refer to page 13, lines 16-17 of Witness Regan's testimony. The witness discusses how the proposed GREC facility will be constructed on property leased from GRU on the Deerhaven power site. Please explain and provide detail whether payments to the leased property were included in the cost effective analyses.**

**Response to Interrogatory No. 24:**

The value of the leased property is accounted for in the negotiated pricing reflected in the power purchase agreement (PPA) between GRU and GREC LLC for the GREC facility and is therefore included in the cost-effectiveness analyses.

25. **Please refer to the bottom of page 13, lines 22-23 and the top of page 14, line 1 of Witness Regan's testimony. The witness discusses risk of construction cost overruns and changes in financing interest rates once the notice of commence is issued. Please explain and provide the expected issuance date for the notice to commence.**

**Response to Interrogatory No. 25:**

The non-fuel energy price per MWh and the fixed O&M cost per MWh were set in the PPA between GREC LLC and GRU. Any change in projected financing and fixed O&M costs are borne solely by GREC LLC. The non-fuel energy price per MWh is indexed against a basket of a construction cost index and the USD exchange rate against the Euro from the date of the PPA (April 29, 2009) until such time as the notice to commence is issued, which is currently expected to be December 1, 2010. Notice to commence will occur after all permits have been obtained and financing secured. At that point in time, the price is fixed and will remain the same throughout the term of the PPA. Any construction cost overruns are thus risks borne solely by GREC LLC. The exception would be project changes due solely to changing regulatory requirements. While the cost effectiveness evaluations conservatively assume that the non-fuel energy price index will escalate at the capital cost escalation rate of 2.5 percent annually, the expectation is that the index will actually decrease by the notice to commence.

26. **Please refer to Witness Regan's Testimony, Page 5, Lines 13-15. The witness testifies that the capacity from GREC is needed to replace capacity from GRU's Deerhaven Unit 2 during maintenance and forced outages. Please describe how this is accomplished, and what projected sources of replacement power for Deerhaven Unit 2 are available if the GREC is not constructed.**

**Response to Interrogatory No. 26:**

GREC is expected to be dispatched with a high level of utilization given its high order of merit in the dispatch stack. As a low variable cost base load unit it would mitigate the

economic losses associated with Deerhaven 2 outages. Without GREC, GRU would have to replace power from Deerhaven 2 from a combination of its own capacity or from market purchases, depending on the levels of load, fuel costs, and market conditions at the time.

27. **Please refer to Witness Regan's Testimony, Page 8, Lines 2-6. The witness testifies that GRU has entered into several contracts with PEF for baseload capacity. Given that GRU has sufficient capacity to meet its reserve margin without these contracts, what cost and/or reliability benefits do these contracts provide? Please explain.**

**Response to Interrogatory No. 27:**

GRU's risk management plan for power supply includes both financial and physical hedges. Financial hedges include natural gas options, futures, and contracts. The PEF contracts were entered into as physical as well as financial hedges. At the time GRU entered into the PEF agreements the "slice of the baseload system" pricing, consisting of a weighted average of nuclear, coal, and natural gas resources, was less expensive than gas-fired energy while providing the additional benefit of very reliable firm capacity. GRU also knew that it was going to undertake a major retrofit of Deerhaven 2 to comply with Clean Air Interstate Rule (CAIR) regulations. Although current natural gas prices are low, the PEF contracts continue to provide reliability benefits.

28. **Please complete the following table regarding GRU's purchased power contracts and projected use data, through 2032. Please provide information for each Scenario and Case listed below.**

| Scenario: (GREC with Resale, GREC without Resale, or No New Construction until 2023) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: (Base or Regulated $CO_2$) | | | | | | | | | | | | |
| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | ... | 2032 |
| | Summer/Winter Capacity | (MW) | | | | | | | | | | |
| | Energy | (GWh) | | | | | | | | | | |
| | Equiv. Cap. Factor | (%) | | | | | | | | | | |
| | Summer/Winter Capacity | (MW) | | | | | | | | | | |
| | Energy | (GWh) | | | | | | | | | | |
| | Equiv. Cap. Factor | (%) | | | | | | | | | | |
| | Summer/WinterCapacity | (MW) | | | | | | | | | | |
| | Energy | (GWh) | | | | | | | | | | |
| | Equiv. Cap. Factor | (%) | | | | | | | | | | |

**Response to Interrogatory No. 28:**

Please refer to the attachment labeled *Response to Interrogatory No. 28* for the requested information.

**29. Please refer to Witness Regan's Testimony, Page 8, Lines 2-6. The witness testifies that GRU has entered into several contracts with PEF for baseload capacity. What options do these contracts contain for continuation beyond 2013, including any price protections?**

**Response to Interrogatory No. 29:**

At the time these contracts were struck, PEF's position was that they would not be able to extend these contracts beyond 2013 due to their native load requirements and the contract documents contain no provisions for renewal.

***Demand Side Management***

**30. If GRU does not offer any load management or interruptible load programs, please discuss why these programs, which focus on reduction to peak demand rather than energy, are not used in GRU's DSM portfolio.**

**Response to Interrogatory No. 30:**

GRU offers a curtailable demand program for large power customers. Under this program, customers voluntarily reduce their demand upon request by GRU; in exchange, the customer receives a discount on demand charges. If the customer fails to curtail demand upon request by GRU, the customer incurs a financial penalty.

While GRU has considered load management programs for residential customers, these programs have not proved to be the most effective method to meet GRU's and the City of Gainesville's goals. GRU and the City of Gainesville promote energy reduction and greenhouse gas reduction. Energy efficiency reduces energy consumption, demand, and greenhouse gas emissions. While load management programs may be effective at reducing demand, they are not as effective as energy efficiency programs in reducing energy consumption and greenhouse gas reduction. Moreover, GRU has not been capacity-constrained, reducing the relative attractiveness of load management programs. Nonetheless, GRU continues to evaluate load management for its long-term planning.

**31. Please provide a description and number of rebate/incentive programs offered by GRU during the 2006-2009 periods.**

**Response to Interrogatory No. 31:**

The following list presents the requested information. Note that several of these programs were initiated well before 2006.

*Programs Offered to Residential Customers*

1. *High Efficiency Central AC Rebate Program (2006-2009):* GRU offers rebates to high efficiency central air conditioning systems. SEER requirements for rebates have ranged from 13 SEER to 17 SEER.
2. *High Efficiency Room AC Program (2006-2009):* GRU incentivizes the exchange of inefficient room AC units to high efficiency room AC units. This program is sponsored through select promotions with local retailers.
3. *Duct Repair Rebate Program (2006-2009):* GRU offers rebates for repair of duct leaks in central AC systems.
4. *Heat Pipe Rebate Program (2006-2007):* GRU offered rebates for the installation of heat recovery Heat Pipe equipment in central AC systems.
5. *Reflective Roof Coating Rebate Program (2006-2009):* GRU offered rebates for the installation of a reflective roof coating on mobile home units.
6. *AC Maintenance Rebate Program (2006-2009):* GRU offers a one-time rebate for professional servicing of central AC equipment.
7. *Home Performance with Energy Star Rebate Program (2008-2009):* GRU offers rebates for energy-efficient measures installed in conjunction with the federal Energy Star program.
8. *Attic and Raised-Floor Insulation Rebate Program (2006-2009):* GRU offers rebates for the installation of attic and under raised-floor insulation.
9. *Refrigerator Buyback and Recycling Rebate Program (2007-2009):* GRU offers rebates for recycling inefficient refrigerators and freezers.
10. *Compact Fluorescent Light Bulb Program (2007-2009):* GRU offers buy-downs, promotions, and direct install of CFLs.
11. *Low-interest Loan Program (2008-2009):* GRU offers low-interest loans for customers financing energy efficient improvements to their homes.
12. *Variable Speed Pool Pump Rebate Program (2008-2009):* GRU offers rebates for the installation of energy-efficient pool pumps.
13. *Low Income Residential Energy Efficiency Program (2006-2009):* GRU pays for the materials and installation labor of energy-efficient measures in low-income customers' homes.
14. *Online Energy Audits (2007-2009):* GRU provides online tools for conducting self-audits and learning energy saving tips.

*Programs Offered to Non-Residential Customers*

15. *Energy Star Construction of Affordable Housing (2007-2009):* GRU offers incentives for builders of energy-efficient affordable housing units.
16. *Commercial Lighting Efficiency Program (2006):* GRU offered financing of commercial lighting. The cost of the lighting retrofits was recovered through electric consumption energy savings.
17. *Custom Business Rebate Program (2007-2009):* GRU offers rebates for energy and demand-saving projects that do not fit into other program categories.
18. *LED Exit Lighting Program (2007-2009):* GRU offered rebates for installation of light emitting diode (LED) exit signs.

19. *Vending Machine Motion Sensor Program (2007-2009):* GRU offers energy-conserving motion-sensing devices for installation on beverage vending machines.

*Programs Offered to Non-Residential and Residential Customers*

20. *Natural Gas Rebate Program (2006-2009):* GRU offers rebates on natural gas water heaters, central heat, ranges, and dryers.
21. *Solar Water Heater Rebate Program (2007-2009):* GRU offers rebates for installation of solar hot water heaters.
22. *Solar Photovoltaic Rebate Program (2007-2009):* GRU offers rebates for installation of solar photovoltaic systems.
23. *Heat Recovery Water Heater Program (2006-2008):* GRU offered rebates for installation of heat recovery devices on AC systems, which are used in turn to heat water.
24. *Green Building Practices (2008-2009):* GRU offers workshops and educational materials on energy-efficient building practices.

**32. Please refer to Table 13-2 of the Application. Please explain or describe whether all of the DSM services listed still offered to GRU's residential customers. As part of this response, please describe which DSM services are no longer offered to GRU's residential customers and please explain or describe why it is no longer offered.**

**Response to Interrogatory No. 32:**

Of the Programs listed on Table 13-2 of the Application, program #4, Reflective Roof Coating for Mobile Homes (Rebates), is no longer offered by GRU. This program was discontinued in October 2009 due to low customer interest. The remaining 16 residential Programs listed on Table 13-2 are still offered by GRU.

**33. Please refer to Table 13-3 of the Application. Please explain or describe whether all of the DSM services listed still offered to GRU's non-residential customers. As part of this response, please describe which DSM services are no longer offered to GRU's non-residential customers and please explain or describe why it is no longer offered.**

**Response to Interrogatory No. 33:**

Of the Programs listed on Table 13-3 of the Application, program #5, Efficient Exit Lighting (Rebates), was discontinued in October 2009. The price of LED exit signs has come down considerably since the program's inception, and Gainesville's LED exit sign market has neared saturation. LED exit signs are still applicable for incentive through GRU's Customized Business Rebate program. The remaining five non-residential Programs listed on Table 13-3 are still offered by GRU.

*Fuel*

34. **Please refer to Witness Regan's Testimony, Page 18, Line 1-5. The witness states that the GREC Facility's biomass fuel is expected to be less volatile in cost and escalate at a slower rate than conventional fossil fuels. Given that a component of the fuel price is diesel, please explain or describe whether the biomass fuel price include the volatility of this fossil fuel, or the impact of possible carbon legislation.**

**Response to Interrogatory No. 34:**

Conventional fossil fuels, with the exception of coal, have been escalating at rates higher than general inflation rates for nearly the last decade, and coal prices have exhibited the same trend in the last five years. The fuel strategy for GREC is to have put and call contracts with prices tied to a basket of diesel fuel and general labor indices. Diesel is a relatively small portion of the biomass fuel production cost (10 percent to 15 percent) and labor costs tend to lag or track general inflation. These combined indices result in prices expected to be less volatile than natural gas. The relatively small percentage of diesel will moderate the effect of possible carbon legislation. Carbon legislation will exacerbate the price volatility of other fossil fuels, with the net effect of making biomass fuel prices less volatile than other fossil fuels, especially natural gas. Furthermore, the call option contract structure is designed to allow GREC to take advantage of opportunity fuels, some of which would otherwise have to pay a tipping fee for disposal and are thus expected to gain cost advantages compared to forestry sources. This includes storm debris, materials from land clearing, urban vegetation management, and forest products damaged by fire or insects. The addition of these low cost supplies will act to further moderate overall fuel costs.

35. **Please refer to Witness Regan's Testimony, Page 18, Line 1-5. The witness states that the GREC Facility's biomass fuel is expected to be less volatile in cost and escalate at a slower rate than conventional fossil fuels. Given that pending federal legislation may require a percent of generation come from renewable energy sources such as biomass, please explain or describe whether the escalation rate for biomass include possible competition with other biomass facilities.**

**Response to Interrogatory No. 35:**

The response to Interrogatory No. 34 addresses biomass fuel cost volatility and escalation. Given that solar energy and biomass are Florida's primary sources of renewable energy, a renewable portfolio standard applicable in Florida would be likely to result in increased demand for biomass fuels. GRU was concerned about the effects of competition with other biomass facilities and included this scenario in the fuel supply assessment described in the GREC Need for Power Application in Section 8.4.3. This included two 40 MW units theoretically located in Leon and Duval counties as well as two existing biomass generating facilities (Telogia and Monticello) and eight pulpwood mills. Currently, 150 MW of biomass are being proposed in Hamilton County, roughly

mid way between the two hypothetical plants in GRU's study. GRU's assessments indicate that this level of competition will affect the shape of the fuel catchment areas associated with each plant and resulted in some price increases, but the potential supply is sufficient at this level of competition, especially when it is recognized that GRU's assessment did not include several additional sources of clean fuel supply, such as agricultural crop residue and clean construction debris. A factor moderating the effect of competition is that transportation distances and cost limit the level of market choice. Given the intent to enter relatively long term contracts, that the escalation rates envisioned are tied to actual production costs, and that GREC will be early in the market in terms of supply commitment, GRU's treatment of fuel price as escalating at the level of general escalation is appropriate, especially for the first ten years of the analysis.

36. **Please refer to page 9, lines 17-19 of Witness Levine's testimony. The witness states that in addition to the GREC facility, American Renewables is currently developing an identical biomass facility in Hamilton County, Florida. Please explain who the biomass facility contract is with, capacity rating, and fuel requirements.**

**Response to Interrogatory No. 36:**

American Renewables is currently developing a 100 MW net biomass energy facility called the Hamilton County Renewable Energy Center (HCREC) in Hamilton County, Florida along Rt. 41 between the towns of Jasper and White Springs. HCREC is an identical facility to GREC with the exception that it does not have a zero liquid discharge (ZLD) system as GREC does. HCREC will be located on a 260 acre parcel of land that American Renewables has site control of through a site option agreement with PCS Phosphate. HCREC will require 1,000,000 green tons of biomass material annual to fuel the facility. American Renewables has held numerous discussions with potential offtakers for the power, capacity, and environmental attributes of HCREC. However, at this time, American Renewables has not signed a power purchase agreement with any offtakers.

37. **Please complete the following table describing the biomass fuel cost components. Please complete it for each case. Also include any additional categories of biomass cost not listed, with the appropriate values. Please provide information for each Case listed below.**

| Biomass Cost Components ($/MMBTU) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Case: (Base, High Fuel, Regulated CO2, High Regulated CO2) | | | | | | | |
| Year | Tipping Fee | Labor | Equipment | Diesel | Grower's Premium | Forest Stewardship | Total |
| 2013 | | | | | | | |
| 2014 | | | | | | | |
| 2015 | | | | | | | |
| 2016 | | | | | | | |
| 2017 | | | | | | | |
| 2018 | | | | | | | |
| 2019 | | | | | | | |
| 2020 | | | | | | | |
| 2021 | | | | | | | |
| 2022 | | | | | | | |
| 2023 | | | | | | | |
| 2024 | | | | | | | |
| 2025 | | | | | | | |
| 2026 | | | | | | | |
| 2027 | | | | | | | |
| 2028 | | | | | | | |
| 2029 | | | | | | | |
| 2030 | | | | | | | |
| 2031 | | | | | | | |
| 2032 | | | | | | | |
| 2033 | | | | | | | |
| 2034 | | | | | | | |
| 2035 | | | | | | | |
| 2036 | | | | | | | |
| 2037 | | | | | | | |
| 2038 | | | | | | | |
| 2039 | | | | | | | |
| 2040 | | | | | | | |
| 2041 | | | | | | | |
| 2042 | | | | | | | |
| 2043 | | | | | | | |

**Response to Interrogatory No. 37:**

The biomass material that GREC will utilize comes from a variety of sources, some of which may include a tipping fee (i.e. urban wood waste) while some of the material may have an associated stumpage fee, or payment to the landowner for the biomass material (i.e. forest residue). Given the current lack of a liquid market for these fuels it is very difficult to model the impact of carbon legislation and increases in the cost of diesel fuel.

The majority of the biomass material will include a processing and transportation fee. However, some of the material, like mill residue, may already be in an acceptable form and will not require additional processing. As the fuel composition of GREC is made up of all of these varied biomass sources, it is difficult to assign an exact rate to each of the individual components of the fuel. Nonetheless, it is possible to understand the range of the weight of each component. For explanatory purposes, we break the biomass fuel into four categories: a) stumpage fee (a payment for the material to the landowner; tipping fee would be represented here), b) processing fee (includes labor, equipment and diesel to run the equipment), c) transportation fee, and d) forest stewardship fee (a payment to landowners who meet strict sustainability requirements under the PPA). We estimate that the percentage that each of these categories contribute to the total biomass fuel cost are:

1. Stumpage fee – 15 to 25% of total biomass fuel cost.
2. Processing fee – 45 to 65% of total biomass fuel cost, including a portion of diesel.
3. Transportation fee – 20 to 30% of total biomass fuel cost, including a portion of diesel.
4. Forest stewardship fee – 2.5 to 5% of total biomass fuel cost.

***Environmental Considerations***

38. **Please refer to page 3, lines 18-20 of Witness Hanrahan's testimony. The witness discusses the US Climate Protection Agreement's call for reducing carbon emissions to 7 percent below 1990 levels by 2012. Please explain or describe the City of Gainesville's plan to achieve this goal.**

**Response to Interrogatory No. 38:**

In 2005, along with cities across the nation, the City of Gainesville leaders pledged to reduce carbon and Mayor Pegeen Hanrahan signed the U.S. Mayors' Climate Protection Agreement as authorized by the Gainesville City Commission on June 27, 2005. The Climate Protection Agreement and the Kyoto Protocol call for reducing carbon emissions to seven percent below 1990 levels by 2012, a target Gainesville will hit in 2013. There are four key strategies to meet the carbon reduction goal: improve energy and water efficiency; improve efficiency of power generation; increase use of renewable and domestic fuels to generate electricity; and improve transportation and land use initiatives. The actual activities to accomplish these strategies are as follows:

- Repowering J. R. Kelly Unit 8
- GRU Energy Conservation Programs
- Acquiring Land Development Rights
- Landfill Gas to Energy Project
- LED Traffic Signals

- Combined Heat and Power
- Solar Photovoltaic Electricity
- Biomass Power Plant
- Traffic Signal Synchronization

**39. Please refer to Witness Hanrahan's Testimony, Page 3, Line 17-18. The witness testifies that the City of Gainesville has pledged to reduce carbon emissions as part of the US Mayor's Climate Protection Agreement. Please describe historic and projected goals of US Mayor's Climate Protection Agreement, and compare to historic and projected achievement of these goals.**

**Response to Interrogatory No. 39:**

The U. S. Mayors' Climate Protection Agreement calls for reducing carbon emissions to seven percent below 1990 levels by 2012, a target Gainesville pledges to meet in 2013. The projected goals and the historical achievements toward those goals are detailed in the table below.

| Historical and Future Reductions (metric tons of $CO_2$ equivalents per year) | | |
|---|---|---|
| **Source of Carbon Reductions** | **Historical Annual Reductions (thru end of 2008)** | **Projected Annual Reductions (by end of 2013)** |
| Repowering J. R. Kelly Unit 8 | 36,134 | 31,801 |
| GRU Energy Conservation Programs | 131,031 | 177,650 |
| Acquiring Land Development Rights | 31,824 | 31,824 |
| Landfill Gas to Energy Project | 3 | 19,678 |
| LED Traffic Signals | 1,036 | 2,967 |
| Combined Heat and Power | 0 | 22,557 |
| Solar Photovoltaic Electricity | 435 | 7,682 |
| Biomass Power Plant[(1)] | 0 | 334,219 |
| Traffic Signal Synchronization | 0 | 82,701 |
| Total | | 711,080 |

[(1)] Assumes that in 2013, half of the capacity of the biomass unit will be sold off system.

**40. Please refer to Witness Hanrahan's Testimony, Page 5, Line 17-24. The witness testifies that the decision to build the GREC Facility considered carbon reduction goals for the City of Gainesville. Please compare these voluntary carbon reduction goals to those proposed under pending federal legislation.**

**Response to Interrogatory No. 40:**

HR 2454, the American Clean Energy and Security (ACES) Act of 2009 as passed by the House of Representatives, requires National reductions of $CO_2e$ levels of 3 percent in 2012, a 17 percent reduction in 2020, a 42 percent reduction in 2030, and an 83 percent reduction in 2050, all based on 2005 $CO_2e$ emission levels. The City of Gainesville's voluntary reduction goals call for a 7 percent reduction of 1990 $CO_2$ emissions by 2013.

The allocation of carbon credits to electric utilities under HR 2454 is disproportionate, and without GREC's biomass capacity GRU's shortfall in 2014 is estimated to be 34 percent after adjusting for carbon neutral landfill gas and solar generated electricity. With 50 MW of GREC's capacity, this shortfall falls to less than 19 percent. With 50 MW of GREC's capacity the City of Gainesville is projected to meet its voluntary carbon reduction goals.

41. **Please refer to Witness Regan's Testimony, Page 14, Lines 7-9. The witness states that the use of biomass, a carbon-neutral fuel, reduces the regulatory risks associated with potential federal legislation. Please explain or describe whether the current version of any pending federal legislation for a renewable portfolio standard or carbon legislation would affect GRU. As part of this response, please explain or describe the potential requirements as well.**

**Response to Interrogatory No. 41:**

HR 2454, the American Clean Energy and Security (ACES) Act of 2009 has requirements for both a renewable electric standard (RES) and a $CO_2$ cap and trade program. The RES requires that 20 percent of a utility's electric energy must be produced from renewable resources by 2020. It is noted that the proposed Senate Energy Bill has a requirement of 15 percent. 25 percent of the RES can be met through energy efficiency projects. Currently there is an exemption from the RES for utilities with less than 4,000,000 MWhs annual sales. If this exemption is retained in the legislation that is finally adopted, GRU would be exempted from the RES requirement. Even if the exemption is not retained, the proposed GREC biomass project along with other GRU renewable and energy conservation programs should allow GRU to met or exceed the anticipated requirements of the RES provisions. It is estimated that compliance with the RES would require GRU to produce approximately 450,000 MWh of its annual energy from renewable sources in 2020.

HR 2454 contains specific $CO_2$ reduction requirements for electric utilities that generate electric energy with fossil fuels. These utilities are required to hold $CO_2$ allowances for every metric ton of $CO_2$ emitted on an annual basis starting in 2012. For example, it is estimated that GRU will have approximately 1,785,000 metric tons of $CO_2$ emissions in 2012 and will be required to surrender that many allowances to the federal government at the end of the year. To mitigate the cost to the retail consumer, HR 2454 provides for the distribution of "free" allowances to distribution utilities based 50 percent on retail sales

and 50 percent on $CO_2$ emissions. The formula is based on a three year average of previous sales and $CO_2$ emissions, most likely 2007, 2008 and 2009. The total amount of allowances available for "free" distribution is equal to about 83 percent of total $CO_2$ emissions from the electric utility industry in 2007 and is reduced annually to 0 percent in 2030. Note that since 50 percent of the allowances are distributed based on sales, about 15 percent of the allowances are awarded based non fossil generation. Based on that formula, GRU is expected to receive about 76 percent of the allowances needed to cover its $CO_2$ emissions in 2012. The GRU allowance shortfall is estimated to be approximately 432,000 metric tons in 2012, increasing to approximately 1,500,000 metric tons in 2030 with the proposed GREC biomass project and 2,270,000 metric tons without the proposed GREC biomass project. This assumes that 100 percent of the energy from the biomass project will be used by GRU starting in 2024.

***Reliability***

42. **Please refer to page 5, lines 12-15 of Witness Regan's testimony. The witness discusses that the purchase power agreement between Gainesville Renewable Energy Center (GREC) and Gainesville Regional Utilities (GRU) is needed to improve and maintain reliability of GRU's system and that the capacity from GREC is needed to replace capacity during maintenance and forced outages. Please explain or describe how GRU currently deals with maintaining reliable service during maintenance and forced outage periods.**

**Response to Interrogatory No. 42:**

For short term contingency outages, spinning reserve requirements pursuant to FRCC standards, given the relatively small size of GRU's load and its robust interconnections to the bulk power grid, are able to support the import of emergency power and maintain voltage and frequency even under the loss of Deerhaven 2 while at full load and under peak demand conditions until such time as replacement power is obtained. Replacement power is obtained either by ramping up a regulating unit, starting another unit, buying power from the market, or a combination of the three, depending on load, fuel prices, and market conditions. For planned outages, replacement power from the same sources is secured in advance. GRU's current contracts with Progress Energy Florida are an example of this form of advance planning.

In the event of a long term outage of Deerhaven 2, GRU is a participant in the Mutual Aid Agreement for Extended Generation Outages. This is a contractual agreement among the larger consumer owned generating utilities in which the members pledge to provide base load capacity at a pre-determined price (indexed to natural gas) to replace the committed capacity of a designated unit if the unit has an unplanned outage of more than 30 days. Participants include the City of Tallahassee, Florida Municipal Power Agency, GRU, JEA, City of Lakeland, Orlando Utilities Commission, Municipal Electric Authority of Georgia, and Seminole Electric Cooperative Inc. Deerhaven 2 is GRU's

designated unit in the Mutual Aid Agreement with a capacity commitment of 100 MW. This agreement provides replacement power for up to twelve months after the onset of the unplanned outage, which helps mitigate the effect of an extended loss of Deerhaven 2.

43. **Please supply a list of names, type of facility, unit ages and MW for all GRU facilities that would be retired during the term of the proposed GREC Purchase Power Agreement (PPA).**

**Response to Interrogatory No. 43:**

Please see the table below, which presents the requested information.

| Unit Name | Type of Facility | Primary Fuel Used | Unit Age in 2009 | Unit Age at Retirement | Estimated Retirement Date | Net Capacity | |
|---|---|---|---|---|---|---|---|
| | | | | | | Summer (MW) | Summer (MW) |
| J. R. Kelly #7 | Steam Turbine | Natural Gas | 48 | 52 | Oct 2013 | 23.20 | 23.20 |
| J. R. Kelly GT #1 | Combustion Turbine | Natural Gas | 41 | 50 | Feb 2018 | 14.00 | 15.00 |
| J. R. Kelly GT #2 | Combustion Turbine | Natural Gas | 41 | 50 | Sep 2018 | 14.00 | 15.00 |
| J. R. Kelly GT #3 | Combustion Turbine | Natural Gas | 40 | 50 | May 2019 | 14.00 | 15.00 |
| Deerhaven Unit #1 | Steam Turbine | Natural Gas | 37 | 50 | Aug 2022 | 83.00 | 83.00 |
| Deerhaven GT #1 | Combustion Turbine | Natural Gas | 33 | 50 | Oct 2026 | 17.50 | 20.00 |
| Deerhaven GT #2 | Combustion Turbine | Natural Gas | 33 | 50 | Oct 2026 | 17.50 | 20.00 |
| Deerhaven Unit #2 | Steam Turbine | Coal | 28 | 50 | Oct 2031 | 231.50 | 231.50 |
| Crystal River #3 | Steam Turbine | Nuclear | 33 | 60 | Dec 3, 2036 | 14.16 | 14.45 |

*Cost Effectiveness*

44. **Please refer to page 15, lines 1-2 of Witness Regan's testimony. The witness discusses GRU's consideration of reselling 50 percent of the facilities output for the initial ten years of GREC's operation. Please supply a sensitivity comparison of the cost-effectiveness of the first ten years of operation at 50 percent, 25 percent, and zero percent.**

**Response to Interrogatory No. 44:**

The cost-effectiveness of the GREC LLC PPA would not be affected by the amount of GREC's output sold by GRU, since all billing elements of the power purchase agreement between GRU and GREC LLC are structured on a cost per MWh basis.

**45. Please refer to Witness Hanrahan's Testimony, Page 4, Line 17-20. The witness testifies that the selection of a 100 MW biomass facility reduces costs when compared to a smaller alternative. Please explain or describe estimated difference in cost between 100 MW and 50 MW biomass facility, in total, and $/MW installed.**

**Response to Interrogatory No. 45:**

While developing its 100 MW net reference facility over the last few years, American Renewables has conducted numerous cost studies to understand the total capital costs involved in developing and constructing a biomass energy facility, including obtaining boiler and turbine pricing and evaluating construction cost. Understanding that the costs to develop and operate a 50 MW biomass energy facility are almost identical, significant economies of scale can be realized depending on the capital costs necessary to construct the facility. American Renewables estimates that the construction costs of a 100 MW net biomass facility are approximately 40 percent greater than the costs of a similarly-designed 50 MW net biomass facility. This results in a $/kW installed cost for the 100 MW facility that is approximately 30 percent lower per kW than for a 50 MW unitt. When including the financing cost and cost impact of development and permitting, this percentage increases.

**46. Please refer to Witness Regan's Testimony, Page 20, Line 20, to Page 21, Line 1. The witness states that biomass and landfill gas generation are the lowest cost renewable energy resources available to GRU. Please explain or describe the cost and capabilities of other renewable energy resources available to GRU, including their capacity factors, and whether it would be considered, in part or in full, as firm capacity.**

**Response to Interrogatory No. 46:**

According to the Florida Renewable Energy Potential Assessment report, prepared for the Florida Public Service Commission on November 24, 2008 by Navigant Consulting, there are 13 categories of renewable energy with 5 sources having potential for energy generation in Florida. Of the 5 sources for potential renewable energy development in Florida (solar, wind, biomass, waste heat and ocean), only 2 are available as options to GRU. Being far from the ocean shore, both ocean and wind resources are unavailable for development in Gainesville. Waste heat is not available on a large scale in Gainesville since there are few, if any, compatible industrial sites in the region. Solar and biomass are the only two viable renewable sources.

There are six categories of renewable generation methods utilizing these two energy sources. For solar, three categories exist: photovoltaic (PV), concentrated solar power (CSP), and solar water heating. Of these three, CSP is at present an unproven and doubtful technology in Florida due to light diffusion – CSP requires a high level of direct insolation to generate effectively, which is not available in Florida – and solar water heating is not a generation process, but instead is a conservation measure. Gainesville

does support solar water heating through its DSM programs, and the expected energy savings are listed below. Solar PV remains the only viable large-scale renewable resource generated from a solar source, and is actively being developed through the GRU Solar Feed in Tariff program.

There are three potential biomass technologies available for development in Gainesville – solid biomass, landfill gas, and anaerobic digester gas. Of these, GRU has already exhausted its local landfill gas resource having run approximately 3 MW of generation over the course of the last 3 years until the reduction in available fuel from the Southwest landfill caused GRU to cease production and dismantle the facility. An additional 3.8 MW of landfill gas capacity has been acquired from G2, coming from Marion County. Anaerobic digestion has been considered as an option to handling GRU's solid waste from our sewage treatment facilities, but an internal study has determined this to be economically infeasible and of very limited capacity.

The three technology areas applicable to Gainesville, other than the biomass plant being considered, are summarized below. Solar PV would not be considered firm capacity at least compared to its installed capacity.

| Technology | Cost/MWh | Max Capacity | Capacity Factor | Status |
|---|---|---|---|---|
| Solar PV | 320 | 32 MW by 2017 | 17% | Ongoing |
| Solar Water Heating | 17 | 1.14 MW | N/A | Ongoing |
| Landfill Gas to Energy | 72 | 3.8 MW | 95% | Ongoing |
| Anaerobic Digester | 585 | 200 kW | | Not Financially Feasible |

47. **Please refer to Witness Regan's Testimony, Page 13, Lines 6-17. The witness testifies that all billing elements have been structured on a cost per megawatt-hour basis. Please explain or describe what effect would a lower than guaranteed capacity factor have upon the billing elements.**

**Response to Interrogatory No. 47:**

The billing elements, except for fuel cost and variable O&M, will not change. Please refer to the response to Interrogatory No. 34 for discussion of these particular billing elements.

48. **Please refer to Witness Regan's Testimony, Page 17, Lines 1-7. The witness testifies that the pricing of the GREC Facility is roughly two thirds fixed over the term of the PPA. Please explain or describe what composes the roughly one third non-fixed portion of costs, and the associated level of volatility.**

**Response to Interrogatory No. 48:**

The only billing elements within the PPA which are not fixed over the term of the PPA are the variable O&M charge and the fuel charge. The variable O&M charge escalates annually with the U.S. consumer price index (CPI). Historically, the CPI has averaged approximately 2.5 percent annually. The fuel charge billing element does not have a set escalation rate nor does it track a defined index but rather it tracks the actual costs paid to the fuel suppliers under a gain or loss sharing formula between GRU and GREC LLC. Please refer to the responses to Interrogatory Nos. 34 and 47.

**49. After the 90 percent capacity factor has been met, please explain or describe what options GREC has for additional power sales?**

**Response to Interrogatory No. 49:**

Under the terms of the PPA, GRU has rights to all of the output produced from GREC whenever it chooses to dispatch GREC regardless of what the actual capacity factor is. Therefore, there are no options for additional power sales as GRU already has the rights to all energy, capacity, and environmental attributes from GREC.

**50. Please refer to Witness Regan's Testimony, Page 14, Lines 3-5. The witness notes that GRU has the right to dispatch the GREC Facility as needed, including load reduction. Please explain or describe the minimum load discussed here, and the benefits or penalties associated with lowering the unit's generation.**

**Response to Interrogatory No. 50:**

Under the terms of the PPA, GRU has the ability to dispatch GREC to produce between 70 and 100 MW under normal operating conditions and may only dispatch GREC to produce between 50 and 70 MW under a system emergency for a period less than one hour. GRU may not dispatch GREC to produce less than 50 MW under any condition unless it requests a complete shutdown. GRU has the ability under the terms of the PPA to request up to two shutdowns per month for the non-summer months (i.e. October to May). The ability to dispatch GREC at an amount less than full capacity, or to actually shut GREC down, gives GRU significant operational flexibility. If GRU operates GREC at any level below full capacity (i.e. 100 MW), the fixed costs are still based on the available energy that GREC could have produced. If GRU shuts GREC down, GRU is responsible for paying a shutdown charge which compensates GREC LLC for the costs to re-start the facility.

**51. Please refer to Table 9-1 of the Application. Please explain or describe what assumptions were assumed for the method of escalation of the fuel charge billing element in which the market is based less than CPI.**

**Response to Interrogatory No. 51:**

Please refer to the response to Interrogatory No. 34. For evaluation purposes, GREC's fuel price is conservatively projected to escalate at the 2.5 percent general escalation rate assumed throughout the GREC Need for Power Application.

52. **Please refer to Tables 10-5 and 10-8 of the Application. Please explain or describe the basis for the costs mentioned for the generating facilities shown under the 2009 $/kw sections. Please comment on the estimated costs for a similar combustion turbine facility mentioned in Tampa Electric Company's 2009 Ten Year Site Plan.**

**Response to Interrogatory No. 52:**

The cost estimates in Tables 10-5 and 10-8 were developed on an engineer, procure, and construct (EPC) contracting strategy and reflect labor rates for Gainesville, Florida. The EPC cost estimates reflect both direct and indirect costs, as detailed in Section 10 of the GREC Need for Power Application (Exhibit No. __ [GREC-1]). An allowance for Owner's costs was added to the EPC capital cost estimates – please refer to Table 10-1 of the GREC Need for Power Application for a listing of what such costs may include. Tables 10-5 and 10-8 present the 2009 $/kW estimates both with and without the allowance for Owner's costs.

The 2009 Tampa Electric Company (TECO) Ten Year Site Plan (TYSP) appears to indicate that TECO will construct several new aeroderivative and frame combustion turbines within the next 10 years. However, these units do not appear to be of similar technology to those considered in the GREC Need for Power Application. The new units in TECO TYSP are of similar size to General Electric LM6000 and 7FA combustion turbines, neither of which was included in the GREC Need for Power Application. The natural gas fired units included in the GREC Need for Power Application were selected as they represent alternatives of similar size to the GREC LLC PPA, and encompass generating alternatives that are designed for peaking and intermediate operations.

53. **Please refer to Tables 15-1 and 15-2 of the Application. Please supply each table without the impacts of renewable energy credits and $CO_2$. As part of this response, please perform the same analysis without the assumption of a 50 percent sale of GREC output.**

**Response to Interrogatory No. 53:**

The following tables contain the results from the same analysis without assuming a 50 percent sale form GREC for the first 10 years of the PPA wherein 100 percent of the units output is used for native load. GRU believes this is an unrealistic scenario as the firm capacity and environmental attributes of the capacity has a higher value in the market than the low cost generating resources being displaced in this scenario. Please note that

the $12/MWh used for this analysis is substantially less than the cost per MWh associated with the $CO_2$ price projections presented in the GREC Need for Power Application.

| Biomass Plant Risk Assessment Assuming No Resale[1] | | | |
|---|---|---|---|
| Natural Gas Price Forecast | Value of Environmental Attributes | Impact on 1,000 kWh Residential Bill (/Month) | |
| | | 2014 | 2019 |
| Low | $0.00/MWh | $26.26 | $19.09 |
| | $12.00/MWh | $22.19 | $14.88 |
| Base | $0.00/MWh | $22.82 | $13.65 |
| | $12.00/MWh | $18.59 | $9.44 |
| High | $0.00/MWh | $19.38 | $8.22 |
| | $12.00/MWh | $14.95 | $4.01 |

[1] No adjustment for the value of avoided capacity. Value of environmental attributes includes combined REC and $CO_2$ offset values.

| Biomass Plant Risk Assessment Assuming No Resale[1] | | |
|---|---|---|
| Scenario | Increase of 1,000 kWh Residential Bill | |
| | 2014 | 2019 |
| Low Natural Gas Price | 12.1% | 6.4% |
| Base Case | 9.7% | 3.0% |
| High Natural Gas Price | 7.3% | -0.6 % |

[1] No adjustment for the value of avoided capacity. Includes $12.00/MWh value for RECs and $CO_2$ offsets.

**54. Please refer to Witness Hanrahan's Testimony, Page 6, Line 3-5. The witness testifies that the GREC Facility will result in lower customer costs in the long-term, but there may be short term increases. Please complete the following chart below regarding the Residential Rate Impact in $/1,200 kWh from 2013 through 2043. Please supply information for each Scenario Combination and Case listed below.**

| Scenario Combinations | |
|---|---|
| Scenario A | Scenario B |
| GREC with Resale | GREC without Resale |
| GREC with Resale | No New Construction until 2023 |
| GREC without Resale | No New Construction until 2023 |

| Year | [Scenario A] vs. [Scenario B] | | | | | |
|---|---|---|---|---|---|---|
| | Cases (Base or Regulated CO2) | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | System Average Electric Rates | Differential in Residential Customer Bill |
| | (Smillions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | | | | | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |
| 2026 | | | | | | |
| 2027 | | | | | | |
| 2028 | | | | | | |
| 2029 | | | | | | |
| 2030 | | | | | | |
| 2031 | | | | | | |
| 2032 | | | | | | |
| 2033 | | | | | | |
| 2034 | | | | | | |
| 2035 | | | | | | |
| 2036 | | | | | | |
| 2037 | | | | | | |
| 2038 | | | | | | |
| 2039 | | | | | | |
| 2040 | | | | | | |
| 2041 | | | | | | |
| 2042 | | | | | | |
| 2043 | | | | | | |

**Response to Interrogatory No. 54:**

Please refer to the attachment labeled *Response to Interrogatory No. 54* for the requested information.

**55. Please complete the following table comparison with and without the proposed GRU generation unit and other generation alternatives:**

| Comparison of GRU's Generation Alternatives | | | | | | |
|---|---|---|---|---|---|---|
| Technology | | GREC Facility | LMS100 CT | 1x1 7EA CC | Pulverized Coal Without CCS* | Pulverized Coal with CCS* |
| Size | (MW) | | | | | |
| Costs | | | | | | |
| Installed Costs | (2013$) | | | | | |
| Capital Cost | ($/kW) | | | | | |
| Fixed O&M | ($/kW-yr) | | | | | |
| Variable O&M | ($/MWh) | | | | | |
| Technical Information | | | | | | |
| Heat Rate | (BTU/kWh) | | | | | |
| Equiv. Availability | (%) | | | | | |
| Water Usage | (gal/day) | | | | | |
| Emission Rates | | | | | | |
| $NO_x$ | (lb/kWh) | | | | | |
| $SO_2$ | (lb/kWh) | | | | | |
| $CO_2$ | (lb/kWh) | | | | | |
| Mercury | (lb/kWh) | | | | | |

* CCS = Carbon Capture and Sequestration

**Response to Interrogatory No. 55:**

Please see the completed table below, which presents the requested information. Confidential information for GREC has been redacted.

| Comparison of GRU's Generation Alternatives | | | | | | |
|---|---|---|---|---|---|---|
| **Technology** | | **GREC Facility** | **LMS100 CT** | **1x1 7EA CC** | **Pulverized Coal Without CCS*** | **Pulverized Coal with CCS*** |
| **Size** [1] | **(MW)** | 100 | 96.4 | 118.9 | 125 | 94 |
| **Costs** | | | | | | |
| **Installed Costs** [2] | **(2014 $)** | [redacted] | 130,148,000 | 221,555,000 | 729,100,000 | 1,218,564,000 |
| **Capital Cost** [2] | **(2014 $/kW)** | [redacted] | 1,350 | 1,863 | 5,833 | 12,963 |
| **Fixed O&M** [3] | **(2014 $/kW-yr)** | [redacted] | 18.41 | 28.21 | 74.81 | 99.49 |
| **Variable O&M** [3] | **(2014 $/MWh)** | [redacted] | 4.75 | 3.98 | 5.59 | 7.43 |
| **Technical Information** | | | | | | |
| **Heat Rate** [1] | **(BTU/kWh)** | [redacted] | 9,258 | 7,911 | 10,000 | 13,300 |
| **Equiv. Availability** [4] | **(%)** | 90 | N/A | N/A | N/A | N/A |
| **Water Usage** | **(000 gal/day)** | 1,390 | 31 | 636 | 1,567 | 1,567 |
| **Emission Rates** | | | | | | |
| **$NO_x$** [6] | **(lb/MWh)** | 0.82 | 0.08 | 0.07 | 0.50 | 0.67 |
| **$SO_2$** [6] | **(lb/MWh)** | 0.48 | 0.01 | 0.01 | 0.60 | 0.80 |
| **$CO_2$** [6] | **(lb/MWh)** | 0.00 | 1,062.8 | 908.2 | 2,050.0 | 272.7 |
| **Mercury** [6] | **(lb/MWh)** | 1.6E-05 | Negligible | Negligible | 1.27E-05 | 1.69E-05 |

Notes:

(1) For alternatives other than GREC, based on net degraded performance at average ambient conditions of 70° F and 72 percent relative humidity.
(2) For alternatives other than GREC, includes escalation and interest during construction to 2014 commercial operation date. For GREC, installed cost ranges are presented and depend on financing outcomes. Although Staff requested values in 2013 dollars, values have been provided in 2014 dollars to be consistent with the initial year of the economic analyses.
(3) For alternatives other than GREC, values are provided in 2014 dollars and are based on net degraded output at average ambient conditions of 70° F and 72 percent relative humidity. GREC cost per kW is levelized over the term of the PPA.
(4) Equivalent availability estimates were not developed for alternatives to GREC. The alternatives were evaluated based on assumed capacity factors, and therefore equivalent availability estimates were not required for purposes of the economic analyses.
(5) Values presented in thousands of gallons per day and represent annual average usage.
(6) Staff requested values in lb/kWh; however, values have been provided in lb/MWh because providing values in lb/kWh would result in extremely small values that may not be of use to Staff. GREC $CO_2$ emissions are presented as net $CO_2$. Emissions rates presented for GRFC represent anticipated permit levels; actual emissions rates will be lower.

**56. Please complete the following table for Cumulative Present Worth Cost Analysis Table**

| Cumulative Present Worth Cost Analysis by Scenario and Case ($000, 2013$) | | | | |
|---|---|---|---|---|
| Case | Scenario | | | |
| | GREC with Resale | GREC without Resale | No New Construction till 2023 | Least Cost Fossil Fuel Alternative |
| Base Case | | | | |
| High Fuel | | | | |
| Low Fuel | | | | |
| High Load | | | | |
| Low Load | | | | |
| Regulated $CO_2$ | | | | |
| High Regulated $CO_2$ | | | | |
| High Fuel & Regulated $CO_2$ | | | | |
| High Fuel, High Load, & Regulated $CO_2$ | | | | |
| Low Fuel, Low Load, & Regulated $CO_2$ | | | | |
| Low Fuel & Low Load | | | | |

**Response to Interrogatory No. 56:**

Please see the table below. Note that the least-cost economic analyses presented in the GREC Need for Power Application, Exhibit No. __ [GREC-1], was based on levelized cost of energy results for various cases. The levelized cost of energy results provided the basis for which the economics of the proposed GREC biomass project were compared to the economics of supply-side alternatives. The information requested in Interrogatory No. 56, as well as several other Staff interrogatories, requires detailed system production cost analyses that were not performed as part of the GREC Need for Power Application. GRU staff has made considerable effort to provide Staff with as much requested information as feasible given the breadth of the requests and the timeframe in which responses were due. As a result, the table below does not provide all of the requested information, but rather information which was able to be generated within these time constraints.

| Cumulative Present Worth Cost Analysis by Scenario and Case ($000, 2013$) | | | | |
|---|---|---|---|---|
| Case | Scenario | | | |
| | GREC with Resale | GREC without Resale | No New Construction till 2023 | Least Cost Fossil Fuel Alternative |
| Base Case | 8,164,156 | 8,340,137 | 8,222,807 | NA |
| High Fuel | NA | NA | NA | NA |
| Low Fuel | NA | NA | NA | NA |
| High Load | NA | NA | NA | NA |
| Low Load | NA | NA | NA | NA |
| Regulated $CO_2$ | 11,388,595 | 11,435,422 | 12,186,677 | NA |
| High Regulated $CO_2$ | NA | NA | NA | NA |
| High Fuel & Regulated $CO_2$ | NA | NA | NA | NA |
| High Fuel, High Load, & Regulated $CO_2$ | NA | NA | NA | NA |
| Low Fuel, Low Load, & Regulated $CO_2$ | NA | NA | NA | NA |
| Low Fuel & Low Load | NA | NA | NA | NA |

Notes:
1. In all scenarios the GREC PPA begins January 1, 2014.
2. Production cost results not available for all scenarios denoted "NA".
3. Present worth calculations use a 4.20% discount rate and 2013 base year.

**57. Please complete the following table showing the annual and cumulative present value revenue requirements for the scenarios and cases listed below. As part of this response, please supply an electronic (Excel format) copy along with the hard copy. (See next page).**

| Year | Scenario: (GREC with Resale, GREC without Resale, or No New Construction until 2023) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: (Base or Regulated CO2) | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | | | | | | | | |
| 2015 | | | | | | | | |
| 2016 | | | | | | | | |
| 2017 | | | | | | | | |
| 2018 | | | | | | | | |
| 2019 | | | | | | | | |
| 2020 | | | | | | | | |
| 2021 | | | | | | | | |
| 2022 | | | | | | | | |
| 2023 | | | | | | | | |
| 2024 | | | | | | | | |
| 2025 | | | | | | | | |
| 2026 | | | | | | | | |
| 2027 | | | | | | | | |
| 2028 | | | | | | | | |
| 2029 | | | | | | | | |
| 2030 | | | | | | | | |
| 2031 | | | | | | | | |
| 2032 | | | | | | | | |
| 2033 | | | | | | | | |
| 2034 | | | | | | | | |
| 2035 | | | | | | | | |
| 2036 | | | | | | | | |
| 2037 | | | | | | | | |
| 2038 | | | | | | | | |
| 2039 | | | | | | | | |
| 2040 | | | | | | | | |
| 2041 | | | | | | | | |
| 2042 | | | | | | | | |
| 2043 | | | | | | | | |

**Response to Interrogatory No. 57:**

Please refer to the attachment labeled *Response to Interrogatory No. 57* for the requested information. An Excel version of this information has also been provided on the enclosed CD.

***Completion Delay***

58. **Please refer to Paragraph 20 of GRU's Petition. Please provide the amount of losses associated with the contract if the American Recovery and Reinvestment Act of 2009 (ARRA) deadline is not met. Please provide these figures in nominal values and net present value.**

**Response to Interrogatory No. 58:**

For the initial 10 years of operation of the GREC, during which time it has been assumed that GRU will sell 50 percent of the output from the GREC, annual cost increases resulting from inability to qualify for the Renewable Energy Grant contained in the American Recovery and Reinvestment Act of 2009 (ARRA) are approximately $3.2 million per year. For subsequent years, such cost increases are approximately $6.4 million per year. Over the 30 year term of the power purchase from the GREC biomass facility, these cost increases total approximately $162.8 million. The net present value of these annual cost increases, discounted to 2009 dollars at the 4.2 percent present worth discount rate used throughout the GREC Need for Power Application, is approximately $68.6 million.

59. **Please refer to Witness Regan's Testimony, Page 18, Line 16, through Page 19, Line 2. The witness testifies that if the GREC Facility is unable to qualify under the American Recovery and Reinvestment Act of 2009, it would result in an increase of approximately $8.10/MWh in GRU's costs from the facility. Please explain or describe how this amount was calculated.**

**Response to Interrogatory No. 59:**

Under the terms of the PPA with GREC, GRU's customers will receive a lower per megawatt hour rate if GREC is eligible to receive the 30 percent investment tax credit (ITC) or the grant in lieu of tax credits (renewable energy grant) as specified by the American Recovery and Reinvestment Act of 2009 (ARRA) which was enacted in February 2009. Under Section 1102 of the ARRA, a biomass energy facility like GREC may request to receive a 30 percent ITC in the first year of operations instead of receiving the production tax credits (PTC) over a ten year period. To qualify for the ITC, a facility must be placed in service (i.e. achieve commercial operations) by January 1, 2014. Under Section 1603 of the ARRA, a biomass energy facility which begins construction by January 1, 2011, and begins commercial operations by January 1, 2014, is eligible to

receive the 30 percent ITC as a renewable energy grant instead of as tax credits in the first year of operations.

Prior to the enactment of the ARRA, an open-loop biomass energy facility like GREC would have only been eligible to receive the PTCs from the federal government over a ten year period. The ability for GREC to receive a 30 percent ITC on all eligible property within the first year, or to actually receive the ITC as a cash grant instead of as tax credits, significantly improves GREC LLC's economic return on the project compared to when GREC receives only the PTC over a 10 year period. For this reason, GREC LLC and GRU negotiated a lower per megawatt hour rate if GREC was able to qualify to receive the ITC or the renewable energy grant. The delta of $8.10/MWh between the lower rate GRU pays if GREC qualifies for the ITC/renewable energy grant and the higher rate GRU pays if GREC does not qualify was a negotiated rate which GRU and GREC LLC arrived at after extensive evaluation and negotiation. Both parties are aligned to achieve the necessary deadlines for GREC to qualify for the ITC/renewable energy grant as GRU pays a lower overall per megawatt hour rate and GREC LLC's economic return on GREC is higher. It is important to note that neither party is realizing the full value of the ITC/renewable energy grant benefit, but rather have attempted to equitably share in its benefit.

**60. Please complete the following chart for the 2010-2019 periods regarding GRU's residential rate impact using the base and regulated $CO_2$ cases:**

| Monthly Residential Bill Impact ($/1200 kWh) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Case | | | | | | | | | | |
| Scenario | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| GREC w/out Resale | | | | | | | | | | |
| GREC w/Resale | | | | | | | | | | |
| GREC Delayed | | | | | | | | | | |
| No New Construction | | | | | | | | | | |
| Regulated $CO_2$ Case | | | | | | | | | | |
| Scenario | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| GREC w/out Resale | | | | | | | | | | |
| GREC w/Resale | | | | | | | | | | |
| GREC Delayed | | | | | | | | | | |
| No New Construction | | | | | | | | | | |

**Response to Interrogatory No. 60:**

Please see the completed table below, which presents the requested information.

| Monthly Residential Bill Impact ($/1200 kWh) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Base Case** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| **GREC w/out Resale** | 135.25 | 139.10 | 141.96 | 144.68 | 172.24 | 173.36 | 170.65 | 177.85 | 179.71 | 183.51 |
| **GREC w/Resale** | 135.25 | 139.10 | 141.96 | 144.68 | 157.08 | 158.77 | 156.29 | 164.31 | 166.91 | 171.92 |
| **GREC Delayed** | 135.25 | 139.10 | 141.96 | 144.68 | 158.87 | 160.54 | 158.05 | 166.05 | 168.63 | 173.62 |
| **No New Construction** | 135.25 | 139.10 | 141.96 | 144.68 | 145.21 | 147.97 | 145.99 | 155.07 | 157.53 | 162.88 |
| **Regulated $CO_2$ Case** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| **GREC w/out Resale** | 135.25 | 139.10 | 171.67 | 177.36 | 197.58 | 201.46 | 201.34 | 212.12 | 217.37 | 225.58 |
| **GREC w/Resale** | 135.25 | 139.10 | 171.67 | 177.36 | 188.85 | 194.07 | 194.95 | 207.23 | 213.73 | 224.23 |
| **GREC Delayed** | 135.25 | 139.10 | 171.67 | 177.36 | 190.64 | 195.85 | 196.71 | 208.97 | 215.45 | 225.93 |
| **No New Construction** | 135.25 | 139.10 | 171.67 | 177.36 | 184.55 | 191.01 | 193.02 | 207.08 | 214.96 | 225.90 |

Notes:
1. In all scenarios the GREC PPA begins January 1, 2014. The "GREC Delayed" scenario reflects an increase of $8.10/MWh to the non-fuel energy cost for GREC resulting from not being eligible for the Renewable Energy Grant contained in the American Recovery and Reinvestment Act of 2009.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.
3. All $ are nominal.
4. Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

**61. Please refer to Witness Regan's Testimony, Page 19, Line 4-7. The witness testifies that each year of delay of the facility results in an impact of approximately $29.6 million. Please explain or describe what factors may delay completion of the facility. As part of this response, please explain whether what delays for which GRU would be responsible and what contractual safeguards protect the ratepayers from delays for which GRU would not be responsible.**

**Response to Interrogatory No. 61:**

To protect both GRU and GREC LLC from a situation where the construction costs of GREC vary significantly from the assumption of these costs at the time the PPA was signed, the parties agreed to apply a construction cost adjuster (composed of multiple indices) to the non-fuel energy charge billing element within the PPA. This construction cost adjuster will be used to adjust the non-fuel energy charge from the rate agreed to at the time of the PPA signing (April 2009) to a new rate at the Construction Commencement Date (anticipated date of December 2010). Depending on the movement of the indices within the construction cost adjuster, the non-fuel energy charge may either increase or decrease. In Witness Regan's Testimony, it states that if the construction cost adjuster were to track the assumed general escalation rate of a 2.5 percent increase, the total impact on GRU over the 30 year PPA term would be $29.6 million in nominal dollars.

After the Construction Commencement Date, the non-fuel energy charge is fixed and GRU is no longer at any risk of an increase to this rate. Therefore, a delay in the

completion of the facility does not impact the level of the non-fuel energy charge. However, a delay in the Construction Commencement Date of GREC does have the ability, through the construction cost adjuster, to change the non-fuel energy charge. Factors that could delay the Construction Commencement Date of GREC include the failure to receive all necessary construction and operation permits for the facility in a timely manner and the failure to finance the construction of the facility. Both GRU and GREC LLC are at risk with respect to the non-fuel energy charge under these scenarios. Within the PPA, GREC LLC would be in default if they were unable to begin construction by the Guaranteed Construction Commencement Date. This provides GRU with the protection to be able to terminate the PPA if GREC LLC cannot begin construction by this date.

62. **Please explain or describe the typical build time required by similar biomass facilities, and whether GREC has previously constructed such a facility. Please also compare GREC's construction schedule with that of these typical projects.**

**Response to Interrogatory No. 62:**

American Renewables estimates that GREC will take between 34 to 36 months to construct. American Renewables has not previously constructed a similar biomass facility. However, American Renewables first biomass energy project, Nacogdoches Power in east Texas, was recently sold to Southern Power and construction on this facility has started. The Nacogdoches Power project is nearly an identical facility to GREC with the exceptions that GREC has a zero liquid discharge system and selective catalytic reduction instead of selective non-catalytic reduction for the control of $NO_x$ emissions. The Nacogdoches project is contracted for a 32 month schedule. Principals within American Renewables have previously constructed biomass energy facilities, but they were significantly smaller facilities and therefore the construction times were shorter. It is difficult to compare the construction time of GREC with that of other typical biomass energy projects as there are not many other 100 MW biomass energy projects or any larger size biomass plants in the U.S. that have been recently constructed.

***Short-Term Power Resale***

63. **Please refer to page 15, lines 6-7 of Witness Regan's testimony. The witness testifies that at least four municipal utilities have expressed interest in purchasing output from the proposed GREC that GRU is considering selling during the first ten years of operation. Please explain or describe whether GRU has contacted or been contacted by any investor-owned utilities who have expressed interest in purchasing some of the output from the proposed GREC.**

**Response to Interrogatory No. 63:**

GRU staff has discussed the possibility of purchasing some of the output from GREC with investor-owned utilities without generating sustained interest. Factors that came up in the discussion included the uncertainty of getting cost recovery approval from a relatively short term power purchase agreement, the lack of a regulatory mandate, and the investment advantage of equity ownership which GRU is unable to offer.

64. **Please refer to Paragraph 11 of GRU's Petition. Will any resale of power from the GREC Facility also include any variety environmental attributes? If so, please describe which environmental attributes would be a component of the resale.**

**Response to Interrogatory No. 64:**

GRU's intent is to include all environmental attributes on the same pro-rata share as the energy taken by the counter party. These include renewable energy credits and carbon offset credits as well as any other attribute that could have market value.

65. **Please refer to Paragraph 11 of GRU's Petition. What impact would the inability to resell power from the GREC Facility at rates equivalent to the contract between GREC and GRU have on the cost-effectiveness of the facility?**

**Response to Interrogatory No. 65:**

The cost-effectiveness of the power and firm capacity produced by the facility in comparison to other alternatives for additional baseload capacity as demonstrated in the GREC Need for Power Application are not related to GRU's ability to resell power during the first 10 years of the contract with GREC. After that period, GRU will need all of GREC's capacity to maintain reserve margins. Given that GREC's dispatch merit is similar to coal, the output will almost always have market value in Florida's wholesale power market, except when natural gas prices fall to extraordinarily low prices.. Under high fuel price and/or carbon regulation conditions, GREC's market value could be higher than GRU's contract price.

66. **Please refer to Paragraph 11 of GRU's Petition. Please supply a list of utilities considering the purchase of the spare capacity of the GREC Facility.**

**Response to Interrogatory No. 66:**

The Florida Municipal Power Agency, City Of Lakeland Utilities, Orlando Utilities Commission, and Reedy Creek Improvement District are the utilities that to date have entered confidentiality agreements to enable detailed discussion of the proposed power purchase agreements.

*Transmission*

**67. Please supply transmission costs associated with the GREC. As part of this response, please supply critical in service dates.**

**Response to Interrogatory No. 67:**

GREC LLC estimates that the short 138 kV transmission line from GREC to a new switchyard and then from the switchyard to GRU's existing transmission line will cost approximately $1.6 million. The new switchyard which GREC LLC will construct and then give to GRU will cost approximately $3.75 million. Therefore GREC's transmission costs will total approximately $5.35 million. GREC LLC's transmission costs are included in the non-fuel energy charge in the power purchase agreement. GREC intends to begin initial synchronization by September 2013 and will achieve a commercial operation date of December 2013. Based on a systems impact analysis conducted by GRU, no upgrades to the existing transmission system are necessary for GREC to come online.

**68. Please explain or describe upon what transmission cost estimates were based.**

**Response to Interrogatory No. 68:**

The transmission costs described above were based upon quoted prices from equipment vendors for similar transmission on American Renewables' Nacogdoches Power project in east Texas.

**69. Please explain or describe whether transmission costs were included in GRU's economic evaluation.**

**Response to Interrogatory No. 69:**

GRU has entered into a 30-year power purchase agreement with GREC LLC for capacity, energy, and environmental attributes from the proposed GREC biomass facility. The costs of transmission are reflected in the negotiated pricing between GRU and GREC LLC and are therefore included in the economic evaluations.

**70. Please supply the projected transmission costs for each supply side alternative.**

**Response to Interrogatory No. 70:**

Specific transmission cost estimates were not developed for the supply-side alternatives. The allowance for Owner's costs (please refer to the response to Interrogatory No. 52 for additional information on Owner's costs) that was included in the capital cost estimates is intended to cover numerous possible costs associated with development and construction of new generating units, including transmission costs.

RESPECTFULLY SUBMITTED this 3rd day of November, 2009.

Young van Assenderp, P.A.

By: _____

Roy C. Young
Florida Bar No. 098428
Schef Wright
Florida Bar No. 966721
225 South Adams Street- Suite 200
P.O. Box 1833
Tallahassee, Florida 32302-1833
(850) 222-7206
(850) 561-6834 (fax)

Attorneys for GRU and GREC LLC

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing responses to Staff's Second Set of Interrogatories (Nos. 9-70) was served upon the following by hand delivery on this 3rd day of November, 2009:

Martha Carter Brown
Erik Saylor
Office of General Counsel
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850
(850) 413-6187

_____
Attorney

**Response to Interrogatory No. 19**

Notes

1. MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

**Scenario: GREC with Reads**

**Case: Base**

| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,494 | 1,513 | 1,559 | 1,554 | 1,548 | 1,535 | 1,559 | 1,566 | 1,583 | 1,583 | 1,588 |
| | | | | Cap. Factor | % | 79.7% | 80.7% | 83.3% | 82.9% | 82.6% | 71.2% | 72.3% | 72.8% | 73.5% | 73.7% | 74.0% |
| Deerhaven | 2 | Steam | Coal | Availability | % | 84.2% | 84.2% | 86.7% | 86.1% | 84.7% | 86.7% | 86.2% | 86.2% | 86.1% | 86.1% | 86.1% |
| | | | | Capacity | MW | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | | Generation | GWh | 4 | 43 | 84 | 95 | 81 | 85 | 92 | 101 | 99 | 97 | 86 |
| | | | | Cap. Factor | % | 0.6% | 5.9% | 11.7% | 13.2% | 11.3% | 11.7% | 12.7% | 13.9% | 13.6% | 13.4% | 11.6% |
| Deerhaven | 1 | Steam | Natural Gas | Availability | % | 76.3% | 89.3% | 93.1% | 93.1% | 93.1% | 87.4% | 93.1% | 93.1% | 93.1% | 93.1% | 93.1% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Availability | % | 74.6% | 94.1% | 93.5% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.2% | 0.3% | 0.1% | 1.6% | 2.4% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Availability | % | 79.4% | 79.4% | 77.8% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 12 | 16 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 1.9% | 2.5% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 78.5% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 101 | 59 | 129 | 121 | 137 | 126 | 136 | 126 | 136 | 148 | 186 |
| | | | | Cap. Factor | % | 18.7% | 5.2% | 13.4% | 12.6% | 16.3% | 13.0% | 14.1% | 13.1% | 14.1% | 15.6% | 19.3% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Availability | % | 90.0% | 86.1% | 90.0% | 90.0% | 82.1% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 92.3% |
| | | | | Capacity | MW | 20 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 15 | 16 | 17 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 6.8% | 7.4% | 9.2% | 9.9% | 10.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | 2 | Steam | Natural Gas | Availability | % | 88.7% | 86.5% | 96.4% | 96.4% | 96.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 2 | 2 | 2 | 3 | 3 | 4 | 5 | 5 | 4 | 4 | 0 |
| | | | | Cap. Factor | % | 1.5% | 1.3% | 1.7% | 2.0% | 2.3% | 3.3% | 3.7% | 3.5% | 3.0% | 3.1% | 0.0% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 0 |
| | | | | Cap. Factor | % | 0.6% | 0.4% | 0.8% | 1.0% | 1.3% | 1.5% | 1.9% | 2.0% | 2.0% | 1.5% | 0.0% |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.1% | 0.2% | 0.2% | 0.3% | 0.3% | 0.5% | 0.5% | 0.5% | 0.4% | 0.0% |
| J. R. Kelly | CT3 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 80 | 105 | 100 | 125 | 109 | 123 | 109 | 125 | 109 | 123 | 109 |
| | | | | Cap. Factor | % | 76.4% | 100.0% | 100.0% | 100.0% | 99.0% | 100.0% | 99.0% | 100.0% | 99.0% | 100.0% | 99.0% |
| Crystal River | 3 | Steam | Nuclear | Availability | % | 76.4% | 100.0% | 100.0% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 21 | 35 | 35 | 38 | 35 | 35 | 35 | 34 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 53.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| South Energy Center | CT1 | Combustion Turbine | Natural Gas | Availability | % | 78.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000066

Notes:

1. MW Capability is the High Dispatch Limit in Net MW used for production cost modeling

| Scenario: GREC with Resale | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Deerhaven | 2 | Steam | Coal | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,394 | 1,413 | 1,406 | 1,196 | 1,191 | 1,209 | 1,209 | 1,225 | 1,222 | 1,220 | 1,241 | 228 | 0 |
| | | | | Cap. Factor | % | 74.8% | 75.4% | 75.2% | 63.8% | 63.5% | 64.5% | 64.5% | 65.4% | 65.2% | 66.1% | 66.2% | 12.2% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 12.2% | 0.0% |
| Deerhaven | 1 | Steam | Natural Gas | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 93 | 100 | 109 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 12.4% | 13.8% | 15.2% | 0.8% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.1% | 93.1% | 93.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 2 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.2% | 0.1% | 1.7% | 4.3% | 4.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 1 | 2 | 2 | 3 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.9% | 1.3% | 1.0% | 1.9% | 5.2% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 11 | 14 | 15 | 10 | 45 | 48 | 45 | 46 | 55 | 56 | 59 | 411 | 402 |
| | | | | Cap. Factor | % | 1.6% | 2.1% | 2.4% | 1.5% | 6.6% | 6.2% | 6.6% | 7.3% | 8.5% | 8.6% | 9.1% | 62.5% | 78.3% |
| | | | | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| J.R. Kelly | 8 | Combined Cycle | Natural Gas | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 183 | 191 | 187 | 99 | 147 | 169 | 185 | 191 | 185 | 195 | 193 | 693 | 772 |
| | | | | Cap. Factor | % | 19.0% | 19.7% | 19.6% | 10.3% | 16.3% | 17.5% | 19.2% | 19.9% | 19.2% | 20.2% | 19.9% | 62.6% | 80.5% |
| | | | | Availability | % | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% |
| J.R. Kelly | 7 | Steam | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J.R. Kelly | CT5 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J.R. Kelly | CT6 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J.R. Kelly | CT7 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J.R. Kelly | CT8 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Crystal River | 3 | Steam | Nuclear | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| | | | | Cap. Factor | % | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% |
| | | | | Availability | % | 100.0% | 99.4% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% |
| South Energy Center | 2x4 | Cogeneration Combined Heat & Power | Natural Gas | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000067

Notes:

1. MW Capacity is the High Dependable Load in Net MW (used for production cost modeling)

**Scenario: GREC without Resale**

**Case: Base**

| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 2 | Steam | [illegible] | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,404 | 1,513 | 1,559 | 1,554 | 1,548 | 1,091 | 1,108 | 1,117 | 1,128 | 1,143 | 1,160 |
| | | | | Cap. Factor | % | 79.7% | 85.7% | 87.7% | 82.9% | 82.6% | 58.2% | 59.1% | 59.6% | 60.2% | 61.0% | 62.0% |
| | | | | Availability | % | 84.2% | 85.2% | 86.7% | 86.2% | 84.7% | 86.7% | 85.1% | 86.3% | 86.1% | 86.1% | 86.1% |
| Deerhaven | 1 | Steam | Natural Gas | Capacity | MW | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | | Generation | GWh | 4 | 35 | 41 | 45 | 48 | 55 | 65 | 67 | 62 | 67 | 64 |
| | | | | Cap. Factor | % | 0.6% | 4.9% | 5.7% | 6.2% | 6.5% | 7.5% | 9.0% | 9.3% | 8.5% | 9.2% | 8.8% |
| | | | | Availability | % | 96.7% | 95.5% | 95.5% | 93.5% | 93.1% | 87.1% | 93.1% | 93.1% | 93.1% | 93.3% | 93.3% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 4 | 3 | 2 | 2 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 3.2% | 2.2% | 2.3% | 1.6% | 1.0% |
| | | | | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 4 | 2 | 3 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 1.7% | 2.6% | 2.3% | 1.4% | 1.8% |
| | | | | Availability | % | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 0 | 0 | 6 | 6 | 8 | 13 | 7 | 9 | 9 | 10 | 12 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 1.1% | 1.4% | 1.4% | 1.5% | 1.9% |
| | | | | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 181 | 50 | 129 | 121 | 157 | 35 | 41 | 41 | 62 | 61 | 90 |
| | | | | Cap. Factor | % | 18.7% | 5.2% | 13.4% | 12.6% | 16.3% | 3.7% | 4.4% | 4.2% | 6.3% | 6.2% | 9.3% |
| | | | | Availability | % | 90.7% | 80.1% | 90.6% | 90.1% | 82.1% | 90.6% | 92.2% | 91.1% | 92.1% | 90.9% | 82.2% |
| J. R. Kelly | 2 | Steam | Natural Gas | Capacity | MW | 20 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 13 | 18 | 17 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 6.6% | 7.4% | 9.2% | 9.8% | 10.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 88.7% | 86.5% | 86.4% | 96.4% | 96.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 |
| | | | | Cap. Factor | % | 1.5% | 1.2% | 1.3% | 2.0% | 2.3% | 2.1% | 2.3% | 2.3% | 2.3% | 2.0% | 0.0% |
| | | | | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 0.0% |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 |
| | | | | Cap. Factor | % | 0.6% | 0.4% | 0.8% | 1.0% | 1.3% | 0.9% | 1.1% | 1.0% | 1.0% | 0.9% | 0.0% |
| | | | | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| J. R. Kelly | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.1% | 0.2% | 0.3% | 0.3% | 0.2% | 0.2% | 0.2% | 0.2% | 0.2% | 0.0% |
| | | | | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| Crystal River | [illegible] | Steam | Nuclear | Capacity | MW | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 81 | 105 | 109 | 125 | 109 | 123 | 109 | 123 | 109 | 123 | 109 |
| | | | | Cap. Factor | % | 70.4% | 100.0% | 100.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% |
| | | | | Availability | % | 79.5% | 100.0% | 100.0% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| South Energy Center | [illegible] | Combustion Combined Heat & Power | Natural Gas | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 23 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 58.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 98.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000068

Notes:

1. MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

| Scenario: GREC without Resale | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Brandon | 2 | Steam | Coal | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,161 | 1,179 | 1,178 | 1,196 | 1,193 | 1,209 | 1,209 | 1,235 | 1,222 | 1,239 | 1,241 | 228 | 0 |
| | | | | Cap. Factor | % | 61.9% | 62.9% | 62.8% | 63.8% | 63.3% | 64.5% | 64.5% | 65.8% | 65.2% | 66.1% | 66.2% | 12.2% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 12.2% | 0.0% |
| Dorchester | 1 | Steam | Natural Gas | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 61 | 60 | 60 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 8.8% | 8.3% | 8.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.3% | 93.3% | 93.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dorchester | 1 A1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 1 | 2 | 2 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.8% | 1.0% | 1.1% | 1.3% | 1.4% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dorchester | 1 A2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 4 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 2.7% | 1.8% | 1.6% | 1.9% | 2.2% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dorchester | 1 A3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 6 | 8 | 9 | 10 | 44 | 46 | 43 | 46 | 55 | 56 | 59 | 411 | 494 |
| | | | | Cap. Factor | % | 1.0% | 1.2% | 1.4% | 1.5% | 6.6% | 7.2% | 6.6% | 7.1% | 8.5% | 8.6% | 9.1% | 63.5% | 76.3% |
| Dorchester | 1 A4 | Combustion Turbine | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| C. P. Kelly | 1 CT1 | Combined Cycle | Natural Gas | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 85 | 98 | 94 | 99 | 147 | 169 | 185 | 191 | 185 | 196 | 191 | 603 | 774 |
| | | | | Cap. Factor | % | 8.9% | 10.1% | 9.7% | 10.3% | 16.3% | 17.5% | 19.3% | 19.9% | 19.2% | 20.2% | 19.9% | 52.6% | 80.1% |
| | | | | Availability | % | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% |
| C. P. Kelly | 2 | Steam | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C. P. Kelly | 3 CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C. P. Kelly | 3 CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Crystal River | 1 | Steam | Nuclear | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| | | | | Cap. Factor | % | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% |
| | | | | Availability | % | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% |
| South Energy Center | 1A | Cogeneration Combined Heat & Power | Natural Gas | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000069

Notes

1 MW Capacity is the High Dispatch Limit in the MW input for production cost modeling

| Scenario: No New Construction until 2023 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Deerhaven | 2 | Steam | Coal | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,494 | 1,513 | 1,550 | 1,534 | 1,548 | 1,559 | 1,567 | 1,572 | 1,578 | 1,583 | 1,592 |
| | | | | Cap. Factor | % | 79.7% | 80.7% | 82.6% | 82.0% | 82.6% | 83.2% | 83.6% | 83.9% | 84.2% | 84.5% | 84.9% |
| | | | | Availability | % | 81.2% | 84.5% | 86.7% | 86.1% | 84.7% | 86.2% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% |
| Deerhaven | 1 | Steam | Natural Gas | Capacity | MW | 83 | 93 | 85 | 93 | 82 | 82 | 93 | 83 | 83 | 83 | 83 |
| | | | | Generation | GWh | 4 | 11 | 34 | 45 | 43 | 147 | 154 | 164 | 161 | 179 | 178 |
| | | | | Cap. Factor | % | 0.6% | 1.9% | 4.7% | 5.5% | 5.7% | 20.7% | 21.2% | 22.5% | 22.1% | 24.6% | 22.4% |
| | | | | Availability | % | 76.2% | 89.5% | 93.1% | 97.1% | 95.1% | 82.4% | 95.1% | 93.1% | 93.1% | 93.1% | 95.1% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.7% |
| | | | | Availability | % | 73.6% | 93.1% | 93.2% | 93.5% | 93.8% | 93.4% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 4 | 5 | 4 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 2.0% | 1.6% | 0.0% | 2.5% | 2.9% | 2.6% |
| | | | | Availability | % | 73.6% | 93.1% | 93.2% | 93.5% | 93.8% | 93.4% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 5 | 8 | 10 | 11 | 11 | 14 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 1.2% | 1.5% | 1.7% | 1.7% | 2.2% |
| | | | | Availability | % | 88.4% | 94.1% | 88.4% | 78.5% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| J R Kelly | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 181 | 98 | 139 | 121 | 157 | 215 | 224 | 231 | 262 | 245 | 270 |
| | | | | Cap. Factor | % | 18.7% | 5.2% | 13.4% | 12.6% | 16.2% | 22.4% | 24.2% | 24.0% | 27.2% | 25.5% | 28.0% |
| | | | | Availability | % | 95.0% | 93.1% | 90.0% | 93.0% | 82.1% | 90.0% | 92.8% | 90.0% | 82.1% | 93.0% | 82.1% |
| J R Kelly | ST | Steam | Natural Gas | Capacity | MW | 29 | 29 | 29 | 29 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 11 | 16 | 17 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 8.5% | 7.4% | 9.2% | 9.5% | 10.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 89.7% | 86.4% | 96.4% | 96.4% | 96.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J R Kelly | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 2 | 2 | 2 | 3 | 5 | 8 | 9 | 8 | 7 | 7 | 0 |
| | | | | Cap. Factor | % | 1.5% | 1.2% | 1.7% | 2.0% | 2.3% | 6.2% | 6.5% | 5.8% | 5.5% | 5.0% | 0.0% |
| | | | | Availability | % | 85.0% | 84.7% | 88.2% | 88.2% | 94.2% | 84.2% | 94.2% | 88.2% | 88.2% | 84.2% | 0.0% |
| J R Kelly | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 1 | 2 | 4 | 5 | 4 | 4 | 3 | 0 |
| | | | | Cap. Factor | % | 0.6% | 0.4% | 0.8% | 1.4% | 1.3% | 3.2% | 3.5% | 3.0% | 2.7% | 2.4% | 0.0% |
| | | | | Availability | % | 84.2% | 84.7% | 88.2% | 88.2% | 94.2% | 84.2% | 94.2% | 88.2% | 88.2% | 84.2% | 84.2% |
| J R Kelly | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.1% | 0.2% | 0.2% | 0.2% | 1.0% | 1.0% | 0.9% | 0.9% | 0.7% | 0.0% |
| | | | | Availability | % | 85.0% | 84.7% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| Stanton Energy Center | 1 | Steam | Coal | Capacity | MW | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 81 | 105 | 109 | 123 | 102 | 123 | 109 | 123 | 109 | 122 | 109 |
| | | | | Cap. Factor | % | 79.5% | 100.0% | 100.0% | 100.0% | 83.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% |
| | | | | Availability | % | 79.4% | 100.0% | 100.0% | 100.0% | 94.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| South Energy Center | CT1 | Combustion Turbine Combined Heat & Power | Natural Gas | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 21 | 35 | 35 | 33 | 33 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 58.5% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 58.5% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000070

Notes:

1. MW Capacity is the High Dispatch Limit or Net MW used in production cost modeling

| Scenario: No New Construction until 2023 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Deerhaven | 2 | Steam | Coal | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,593 | 1,609 | 1,603 | 1,603 | 1,574 | 1,589 | 1,549 | 1,585 | 1,592 | 1,587 | 1,576 | 417 | 0 |
| | | | | Cap. Factor | % | 85.0% | 85.7% | 85.5% | 85.5% | 84.0% | 84.7% | 82.7% | 84.5% | 84.9% | 84.7% | 84.1% | 19.9% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 19.9% | 0.0% |
| Deerhaven | 3 | Steam | Natural Gas | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 174 | 185 | 185 | 167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 24.0% | 25.5% | 25.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.1% | 93.1% | 93.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 1 | 15 | 16 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.9% | 0.9% | 0.7% | 0.8% | 9.5% | 9.9% | 4.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 95.6% | 95.6% | 95.6% | 95.6% | 95.6% | 95.6% | 95.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 5 | 5 | 5 | 5 | 19 | 22 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 2.9% | 2.9% | 2.9% | 2.5% | 12.1% | 13.8% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 11.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 94 | 99 | 90 | 91 | 138 | 138 | 136 | 161 | 145 | 168 | 154 | 585 | 625 |
| | | | | Cap. Factor | % | 4.1% | 4.3% | 4.2% | 3.9% | 21.2% | 23.3% | 21.0% | 25.1% | 22.3% | 26.0% | 23.8% | 79.4% | 96.3% |
| Deerhaven | CT4 | Combustion Turbine | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 96.3% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 265 | 265 | 267 | 303 | 431 | 459 | 470 | 445 | 475 | 462 | 386 | 748 | 942 |
| | | | | Cap. Factor | % | 27.6% | 27.5% | 27.7% | 31.4% | 42.6% | 44.7% | 48.8% | 46.2% | 49.3% | 47.9% | 39.9% | 77.6% | 97.7% |
| J. R. Kelly | CC1 | Combined Cycle | Natural Gas | Availability | % | 90.0% | 82.5% | 90.0% | 82.5% | 90.0% | 82.5% | 90.0% | 82.5% | 90.0% | 82.5% | 90.0% | 82.5% | 97.7% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | 7 | Steam | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT3 | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| | | | | Cap. Factor | % | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% |
| Crystal River | 1 | Steam | Nuclear | Availability | % | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| South Energy Center | TBA | Combined-cycle Natural Gas & Power | Natural Gas | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

090451 Hearing Exhibit - 000071

Notes:

1. MW Capacity is the High Dispatch Limit or Net MW used for production cost modeling

**Scenario: GREC with Resale**

**Case: Regulated $CO_2$**

| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,494 | 1,722 | 1,559 | 1,554 | 1,548 | 1,531 | 1,552 | 1,561 | 1,580 | 1,580 | 1,585 |
| | | | | Cap. Factor | % | 79.3% | 80.7% | 83.3% | 82.9% | 82.6% | 71.8% | 72.8% | 73.6% | 73.6% | 73.9% | 73.9% |
| Deerhaven | 2 | Steam | Coal | Availability | % | 90.2% | 84.2% | 86.7% | 86.1% | 84.7% | 86.7% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% |
| | | | | Capacity | MW | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | | Generation | GWh | 3 | 43 | 74 | 55 | 60 | 87 | 89 | 101 | 92 | 95 | 89 |
| | | | | Cap. Factor | % | 0.6% | 5.9% | 4.7% | 3.8% | 4.3% | 11.2% | 12.2% | 13.8% | 12.6% | 12.8% | 11.8% |
| Deerhaven | 1 | Steam | Natural Gas | Availability | % | 76.7% | 89.3% | 93.1% | 94.5% | 93.1% | 97.2% | 94.1% | 93.1% | 93.1% | 93.1% | 93.1% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Availability | % | 92.6% | 93.1% | 93.5% | 92.4% | 93.5% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.2% | 0.2% | 0.2% | 0.3% | 0.4% |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Availability | % | 79.0% | 79.1% | 72.4% | 79.4% | 78.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 6 | 9 | 8 | 8 | 9 | 8 | 0 | 0 | 18 | 12 | 16 |
| | | | | Cap. Factor | % | 0.9% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 1.8% | 2.5% |
| Deerhaven | CT3 | Combustion Turbine | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 78.5% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 151 | 98 | 129 | 107 | 129 | 113 | 142 | 150 | 145 | 141 | 187 |
| | | | | Cap. Factor | % | 15.7% | 5.2% | 13.4% | 11.1% | 13.4% | 11.9% | 14.7% | 15.5% | 15.0% | 15.7% | 19.4% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Availability | % | 90.0% | 90.1% | 90.0% | 90.0% | 92.1% | 90.0% | 82.1% | 90.0% | 82.1% | 90.0% | 92.1% |
| | | | | Capacity | MW | 50 | 50 | 50 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 13 | 16 | 19 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 5.6% | 7.4% | 9.2% | 10.8% | 13.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | ST | Steam | Natural Gas | Availability | % | 88.7% | 96.5% | 96.4% | 96.4% | 96.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 2 | 2 | 2 | 3 | 4 | 4 | 5 | 5 | 6 | 5 | 0 |
| | | | | Cap. Factor | % | 1.5% | 1.7% | 1.7% | 2.4% | 2.9% | 3.4% | 4.1% | 3.7% | 4.4% | 3.9% | 0.0% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 94.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 0 |
| | | | | Cap. Factor | % | 0.8% | 1.1% | 0.8% | 1.2% | 1.4% | 1.5% | 2.0% | 2.1% | 2.1% | 1.9% | 0.0% |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 94.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.1% | 0.2% | 0.3% | 0.4% | 0.3% | 0.5% | 0.5% | 0.6% | 0.4% | 0.0% |
| J. R. Kelly | CT3 | Combustion Turbine | Natural Gas | Availability | % | 95.0% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 85 | 105 | 100 | 123 | 109 | 123 | 103 | 123 | 109 | 123 | 109 |
| | | | | Cap. Factor | % | 79.4% | 100.0% | 100.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% |
| Crystal River | 4 | Steam | Nuclear | Availability | % | 79.4% | 100.0% | 100.0% | 100.0% | 98.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 94.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Smith Energy Center | 3A | Cogeneration, Combined Heat & Power | Natural Gas | Availability | % | 96.2% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Regulated $CO_2$ (which $CO_2$ emissions allowance prices consistent with the U.S. EPA's Base Case Assumptions) applied for GREC Need for Power Application

090451 Hearing Exhibit - 000072

Notes:

1. MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

| Scenario: GREC with Resale | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,389 | 1,405 | 1,398 | 1,191 | 1,194 | 1,269 | 1,209 | 1,225 | 1,222 | 1,260 | 1,241 | 228 | 0 |
| Deerhaven | 2 | Steam | Coal | Cap. Factor | % | 74.1% | 74.9% | 74.6% | 63.5% | 63.7% | 67.7% | 64.5% | 65.4% | 65.2% | 66.2% | 66.2% | 12.2% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 12.2% | 0.0% |
| | | | | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 82 | 95 | 89 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deerhaven | 1 | Steam | Natural Gas | Cap. Factor | % | 11.3% | 13.1% | 12.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 95.1% | 95.1% | 95.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 2 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deerhaven | T1 | Combustion Turbine | Natural Gas | Cap. Factor | % | 0.1% | 0.2% | 0.1% | 1.7% | 2.4% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 2 | 2 | 3 | 3 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deerhaven | CT2 | Combustion Turbine | Natural Gas | Cap. Factor | % | 1.0% | 1.0% | 0.9% | 1.8% | 2.1% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 39.4% | 39.4% | 39.4% | 39.4% | 39.4% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 28 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 51 | 54 | 56 | 58 | 42 | 42 | 42 | 46 | 55 | 55 | 58 | 431 | 664 |
| Deerhaven | CT1 | Combustion Turbine | Natural Gas | Cap. Factor | % | 3.6% | 2.8% | 2.8% | 1.5% | 6.8% | 6.6% | 6.5% | 7.1% | 8.5% | 8.5% | 8.9% | 63.5% | 76.3% |
| | | | | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 197 | 194 | 205 | 116 | 155 | 307 | 185 | 191 | 185 | 195 | 192 | 652 | 772 |
| J. R. Kelly | 8 | Combined Cycle | Natural Gas | Cap. Factor | % | 20.4% | 20.2% | 21.3% | 12.0% | 16.3% | 17.4% | 19.2% | 19.9% | 19.2% | 20.2% | 20.0% | 67.5% | 80.1% |
| | | | | Availability | % | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| J. R. Kelly | 7 | Steam | Natural Gas | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 110 | 123 |
| Crystal River | - | Steam | No Fuel | Cap. Factor | % | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.5% | 100.0% |
| | | | | Availability | % | 100.0% | 89.5% | 100.0% | 89.5% | 100.0% | 89.5% | 100.0% | 89.5% | 100.0% | 89.5% | 100.0% | 89.5% | 100.0% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| South Energy Center | NA | Cogeneration Combined Heat & Power | Natural Gas | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Regulated $CO_2$ reflects $CO_2$ emissions effective price consistent with the U.S. EPA Base Case assumptions applied for GREC Need to Serve Analysis.

090451 Hearing Exhibit - 000073

Notes:

1. MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

**Scenario: GREC without Resale**

**Case: Regulated $CO_2$**

| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,694 | 1,553 | 1,559 | 1,553 | 1,548 | 1,888 | 1,167 | 1,119 | 1,119 | 1,141 | 1,156 |
| | | | | Cap. Factor | % | 90.3% | 80.3% | 83.2% | 82.9% | 82.6% | 58.9% | 59.1% | 59.7% | 60.7% | 60.9% | 61.7% |
| Deerhaven | 2 | Steam | Coal | Availability | % | 81.2% | 84.2% | 86.7% | 88.1% | 84.7% | 86.7% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% |
| | | | | Capacity | MW | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| | | | | Generation | GWh | 4 | 63 | 64 | 61 | 66 | 42 | 60 | 69 | 62 | 58 | 54 |
| | | | | Cap. Factor | % | 0.6% | 9.0% | 8.7% | 7.6% | 9.0% | 5.8% | 8.2% | 9.4% | 8.4% | 8.0% | 7.7% |
| Deerhaven | 1 | Steam | Natural Gas | Availability | % | 98.3% | 99.4% | 99.1% | 99.1% | 93.1% | 87.4% | 93.1% | 92.1% | 98.1* | 93.1% | 93.1% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 4 | 3 | 2 | 2 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 3.2% | 2.4% | 2.2% | 1.6% | 1.6% |
| Deerhaven | GT3 | Combustion Turbine | Natural Gas | Availability | % | 94.0% | 93.3% | 93.3% | 93.6% | 95.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 3 | 6 | 7 | 4 | 4 | 2 | 3 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 4.8% | 2.8% | 2.4% | 1.4% | 1.9% |
| Deerhaven | GT2 | Combustion Turbine | Natural Gas | Availability | % | 79.9% | 79.3% | 77.8% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 33 | 8 | 9 | 9 | 10 | 17 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 1.2% | 1.4% | 1.4% | 1.5% | 1.5% |
| Deerhaven | GT1 | Combustion Turbine | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 78.5% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 183 | 50 | 129 | 107 | 129 | 50 | 39 | 36 | 60 | 72 | 91 |
| | | | | Cap. Factor | % | 18.7% | 5.2% | 13.1% | 11.1% | 13.4% | 5.2% | 5.1% | 3.7% | 6.2% | 7.4% | 9.4% |
| J. R. Kelly | CC1 | Combined Cycle | Natural Gas | Availability | % | 93.0% | 90.1% | 91.0% | 90.0% | 82.1% | 90.0% | 92.3% | 90.0% | 82.3% | 90.0% | 82.5% |
| | | | | Capacity | MW | 20 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 11 | 16 | 19 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 6.6% | 7.4% | 9.2% | 10.7% | 11.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | 7 | Steam | Natural Gas | Availability | % | 83.7% | 85.5% | 90.4% | 96.4% | 90.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 3 | 2 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 0 |
| | | | | Cap. Factor | % | 2.5% | 1.7% | 2.7% | 2.5% | 3.0% | 1.7% | 2.3% | 2.4% | 2.1% | 2.5% | 0.0% |
| J. R. Kelly | GT3 | Combustion Turbine | Natural Gas | Availability | % | 84.0% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 0 |
| | | | | Cap. Factor | % | 0.6% | 0.4% | 0.8% | 1.2% | 1.4% | 0.7% | 1.0% | 1.1% | 1.0% | 1.1% | 0.0% |
| J. R. Kelly | GT2 | Combustion Turbine | Natural Gas | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.1% | 0.1% | 0.2% | 0.1% | 0.4% | 0.2% | 0.2% | 0.2% | 0.2% | 0.2% | 0.0% |
| J. R. Kelly | GT1 | Combustion Turbine | Natural Gas | Availability | % | 84.0% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 83 | 103 | 109 | 123 | 109 | 125 | 109 | 123 | 109 | 123 | 109 |
| | | | | Cap. Factor | % | 79.4% | 100.0% | 100.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% |
| Crystal River | 3 | Steam | Nuclear | Availability | % | 79.4% | 100.0% | 100.0% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 21 | 25 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | | | | Cap. Factor | % | 54.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| South Energy Center | CT1 | Cogeneration Combined Heat & Power | Natural Gas | Availability | % | 94.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Regulated $CO_2$ refers to $CO_2$ emissions allowance prices consistent with the IEPR 2009 Base Case discussed throughout the GREC Need to Power Application.

090451 Hearing Exhibit - 000074

Notes:

1. MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

| Scenario: GREC without Resale | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,159 | 1,175 | 1,176 | 1,193 | 1,158 | 1,209 | 1,209 | 1,225 | 1,222 | 1,240 | 1,241 | 228 | 0 |
| [illegible] | [illegible] | Steam | [illegible] | Cap. Factor | % | 61.8% | 62.8% | 62.7% | 63.5% | 63.3% | 64.5% | [illegible] | 65.4% | 65.2% | 66.2% | 66.2% | 12.2% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 12.2% | 0.0% |
| | | | | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 61 | 90 | 79 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 8.2% | 8.2% | 8.2% | 6.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| [illegible] | [illegible] | Steam | Natural Gas | Availability | % | 93.1% | 93.1% | 93.1% | 9.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 1 | 2 | 2 | 2 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.6% | 1.0% | 1.1% | 1.1% | 4.4% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| [illegible] | [illegible] | [illegible] | Natural Gas | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 5 | 5 | 2 | 3 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 2.9% | 3.3% | 1.6% | 1.8% | 5.1% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| [illegible] | [illegible] | [illegible] | Natural Gas | Availability | % | 78.4% | 78.4% | 78.4% | 78.4% | 78.4% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 6 | 8 | 10 | 10 | 42 | 42 | 42 | 46 | 55 | 55 | 58 | 411 | 494 |
| | | | | Cap. Factor | % | 1.0% | 1.2% | 1.5% | 1.5% | 6.5% | 6.6% | 6.5% | 7.1% | 8.3% | 8.4% | 8.9% | 63.5% | 76.3% |
| [illegible] | [illegible] | [illegible] | Natural Gas | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 91 | 98 | 109 | 116 | 155 | 167 | 183 | 191 | 185 | 199 | 192 | 602 | 772 |
| | | | | Cap. Factor | % | 9.4% | 10.2% | 10.4% | 12.0% | 16.1% | 17.4% | 19.2% | 19.9% | 19.2% | 20.7% | 20.0% | 62.5% | 80.1% |
| J. K. Kelly | [illegible] | [illegible] | Natural Gas | Availability | % | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. K. Kelly | [illegible] | Steam | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. K. Kelly | [illegible] | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. K. Kelly | [illegible] | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. K. Kelly | [illegible] | Combustion Turbine | Natural Gas | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 | 109 | 123 |
| | | | | Cap. Factor | % | 100.0% | 90.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% | 89.0% | 100.0% |
| [illegible] | [illegible] | Steam | Natural Gas | Availability | % | 100.0% | 90.0% | 100.0% | 90.0% | 100.0% | 90.0% | 100.0% | 99.0% | 100.0% | 90.0% | 100.0% | 89.0% | 100.0% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| South Energy Center | NA | Cogeneration/Combined Heat & Power | Natural Gas | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance pricing consistent with the U.S. EPA Rule [illegible] throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000075

Notes

* MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

**Scenario: No New Construction until 2023**

**Case: Regulated $CO_2$**

| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| | | | | Generation | GWh | 1,404 | 1,312 | 1,559 | 1,554 | 1,548 | 1,549 | 1,560 | 1,565 | 1,574 | 1,574 | 1,586 |
| | | | | Cap. Factor | % | 74.7% | 69.7% | 82.9% | 82.6% | 82.6% | 82.6% | 83.2% | 83.5% | 84.0% | 84.0% | 84.6% |
| | | | | Availability | % | 91.2% | 84.2% | 86.7% | 86.1% | 84.7% | 86.7% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% |
| | | | | Capacity | MW | 83 | 84 | 84 | 84 | 83 | 83 | 83 | 84 | 84 | 84 | 83 |
| | | | | Generation | GWh | 4 | 43 | 44 | 51 | 66 | 128 | 144 | 161 | 157 | 161 | 170 |
| | | | | Cap. Factor | % | 0.6% | 5.9% | 6.1% | 7.0% | 9.1% | 17.6% | 20.5% | 22.2% | 21.5% | 22.1% | 23.3% |
| | | | | Availability | % | 76.3% | 89.5% | 93.1% | 93.1% | 93.1% | 97.4% | 93.1% | 93.1% | 93.1% | 93.1% | 93.1% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.6% | 94.1% | 95.6% | 93.6% | 95.6% | 95.6% | 93.6% | 95.6% | 93.6% | 93.6% | 93.6% |
| | | | | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 4 | 7 | 9 | 3 | 6 | 4 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 2.2% | 1.6% | 0.0% | 2.0% | 4.1% | 2.4% |
| | | | | Availability | % | 79.9% | 79.1% | 72.8% | 79.2% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% |
| | | | | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 0 | 0 | 6 | 0 | 0 | 3 | 5 | 10 | 10 | 13 | 13 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.5% | 1.4% | 1.5% | 1.6% | 1.7% | 1.9% |
| | | | | Availability | % | 88.4% | 88.4% | 88.4% | 76.4% | 88.3% | 88.1% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% |
| | | | | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 181 | 50 | 129 | 169 | 129 | 245 | 244 | 259 | 220 | 271 | 279 |
| | | | | Cap. Factor | % | 18.7% | 5.2% | 13.4% | 11.1% | 13.4% | 25.5% | 25.4% | 24.8% | 28.0% | 28.1% | 28.7% |
| | | | | Availability | % | 90.0% | 80.1% | 90.0% | 90.0% | 82.2% | 90.0% | 87.3% | 90.0% | 82.3% | 82.3% | 82.3% |
| | | | | Capacity | MW | 20 | 20 | 20 | 20 | 20 | 0 | 9 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 12 | 11 | 16 | 19 | 20 | 0 | 1 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 6.6% | 2.4% | 9.2% | 10.6% | 11.5% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 88.7% | 86.5% | 96.4% | 96.4% | 96.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 2 | 2 | 2 | 3 | 4 | 11 | 9 | 8 | 8 | 7 | 6 |
| | | | | Cap. Factor | % | 1.5% | 1.2% | 1.7% | 2.5% | 2.9% | 8.2% | 7.1% | 6.4% | 6.0% | 4.7% | 4.6% |
| | | | | Availability | % | 85.0% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 1 | 1 | 1 | 2 | 2 | 6 | 5 | 4 | 4 | 4 | 4 |
| | | | | Cap. Factor | % | 0.8% | 0.4% | 0.8% | 1.2% | 1.4% | 4.3% | 3.5% | 3.2% | 2.7% | 2.7% | 2.7% |
| | | | | Availability | % | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 0 |
| | | | | Cap. Factor | % | 0.2% | 0.1% | 0.2% | 0.3% | 0.4% | 1.2% | 1.0% | 0.8% | 1.0% | 1.0% | 0.0% |
| | | | | Availability | % | 85.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% | 84.2% |
| | | | | Capacity | MW | 12 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | | | | Generation | GWh | 81 | 105 | 109 | 124 | 109 | 123 | 123 | 123 | 109 | 123 | 109 |
| | | | | Cap. Factor | % | 76.4% | 100.0% | 100.0% | 100.0% | 89.8% | 100.0% | 100.0% | 100.0% | 89.8% | 100.0% | 89.8% |
| | | | | Availability | % | 96.4% | 100.0% | 100.0% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% | 100.0% | 99.5% |
| | | | | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 23 | 14 | 15 | -5 | 35 | 25 | 25 | -5 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 58.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 54.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Footnotes: * = Indicates CT operations assumed to be consistent with the 2004 data * = Indicates data provided by GRDA, Oklahoma Power Association

090451 Hearing Exhibit - 000076

Notes:

* MW Capacity is the High Dispatch Limit in Net MW used for production cost modeling

| Scenario: No New Construction until 2023 | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | | | | |
| Facility Name | Unit # | Unit Type | Fuel Type | Unit Information | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Dearborn | 5 | Steam | Coal | Capacity | MW | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 0 |
| | | | | Generation | GWh | 1,589 | 1,665 | 1,567 | 1,566 | 1,554 | 1,567 | 1,557 | 1,535 | 1,559 | 1,582 | 1,570 | 712 | 0 |
| | | | | Cap. Factor | % | 84.8% | 88.9% | 83.9% | 83.9% | 82.9% | 83.6% | 83.1% | 84.0% | 83.3% | 84.4% | 83.8% | 38.0% | 0.0% |
| | | | | Availability | % | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 86.1% | 0.0% |
| Dearborn | 6 | Steam | Natural Gas | Capacity | MW | 83 | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 367 | 388 | 193 | 156 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 52.3% | 53.9% | 26.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.1% | 93.1% | 93.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dearborn | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 1 | 1 | 1 | 2 | 12 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.8% | 1.0% | 0.7% | 1.0% | 8.2% | 22.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 93.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dearborn | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 5 | 4 | 4 | 5 | 15 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 3.0% | 2.7% | 2.7% | 3.0% | 9.6% | 23.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 79.4% | 79.4% | 79.4% | 79.4% | 79.4% | 16.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Dearborn | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| | | | | Generation | GWh | 34 | 39 | 40 | 55 | 125 | 141 | 136 | 153 | 142 | 161 | 148 | 508 | 625 |
| | | | | Cap. Factor | % | 5.2% | 6.0% | 6.2% | 8.6% | 19.5% | 21.7% | 21.0% | 23.7% | 21.9% | 24.8% | 22.8% | 78.4% | 96.4% |
| | | | | Availability | % | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 88.4% | 96.3% |
| J. R. Kelly | ST2 | Condensing Unit | Natural Gas | Capacity | MW | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| | | | | Generation | GWh | 281 | 268 | 288 | 322 | 446 | 446 | 479 | 462 | 481 | 478 | 398 | 760 | 942 |
| | | | | Cap. Factor | % | 29.2% | 27.9% | 29.9% | 33.4% | 46.3% | 46.3% | 49.8% | 47.9% | 49.9% | 49.1% | 41.3% | 78.8% | 97.7% |
| | | | | Availability | % | 90.8% | 82.3% | 90.0% | 92.3% | 90.0% | 85.3% | 90.0% | 82.3% | 90.0% | 82.3% | 90.0% | 82.3% | 97.7% |
| J. R. Kelly | 7 | Steam | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT1 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT2 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| J. R. Kelly | CT3 | Combustion Turbine | Natural Gas | Capacity | MW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Generation | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Cap. Factor | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | | | | Availability | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cook | 1 | Steam | Nuclear | Capacity | MW | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 | 1,118 |
| | | | | Generation | GWh | 9,127 | 8,709 | 8,123 | 8,698 | 8,123 | 8,698 | 8,123 | 8,698 | 8,123 | 8,709 | 8,123 | 8,698 | 8,123 |
| | | | | Cap. Factor | % | 93.2% | 89.0% | 83.0% | 89.0% | 83.0% | 89.0% | 83.0% | 89.0% | 83.0% | 89.0% | 83.0% | 89.0% | 83.0% |
| | | | | Availability | % | 100.0% | 96.5% | 100.0% | 96.5% | 100.0% | 96.5% | 100.0% | 96.5% | 100.0% | 96.5% | 100.0% | 96.5% | 100.0% |
| South Energy Center | CT1 | Cogeneration Combined Heat & Power | Natural Gas | Capacity | MW | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | | Generation | GWh | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | | | Cap. Factor | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | Availability | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Prepared by Synapse; reflects 10 emissions allowance prices consistent with the EPA 2014 Base Case Assumptions throughout the MRO Integrated Power Application

090451 Hearing Exhibit - 000077

**Response to Interrogatory No. 28**

**Scenario: GREC with Resale**

**Case: Base**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 100/75 | 100/75 | 50/50 | 50/50 | 50/50 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 25.2% | 32.2% | 32.2% | 34.4% | 36.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 50 | 50 | 50 | 50 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 394 | 394 | 395 | 394 | 394 | 394 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% |
| O2, Inc. - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

090451 Hearing Exhibit - 000079

| Scenario: GREC with Resale | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 90 | 90 | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Energy | (GWh) | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 |
| | Equiv. Cap. Factor | (%) | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% |
| G2, Inc. - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 288 | 244 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% |

090451 Hearing Exhibit - 000080

**Scenario: GREC without Resale**

**Case: Base**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 100/75 | 100/75 | 50/50 | 50/50 | 50/50 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 29.2% | 32.2% | 32.2% | 34.4% | 36.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 788 | 788 | 790 | 788 | 788 | 788 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% |
| EQ Inc - Marion County Landfill (In | Summer/WinterCapacity | (MW) | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

090451 Hearing Exhibit - 000081

| Scenario: GREC without Resale | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Energy | (GWh) | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 |
| | Equiv. Cap. Factor | (%) | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% |
| [illegible] - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 260 | 284 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

090451 Hearing Exhibit - 000082

**Scenario: No New Construction until 2023**

**Case: Base**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 100/75 | 100/75 | 50/50 | 50/50 | 50/50 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 151 | 161 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 29.2% | 32.2% | 32.2% | 34.4% | 36.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| GU, Inc. - Marion County Landfill Gas | Summer/Winter Capacity | (MW) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/Winter Capacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

090451 Hearing Exhibit - 000083

| Scenario: No New Construction until 2023 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Base | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Commodity Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| [illegible] Marion County Landfill, Corp | Summer/WinterCapacity | (MW) | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 33 | 33 | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 10 | 11 | 35 | 38 | 37 | 42 | 43 | 710 | 758 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

090451 Hearing Exhibit - 000084

**Scenario: GREC with Resale**

**Case: Regulated $CO_2$**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 157 | 167 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 29.2% | 32.2% | 32.2% | 35.8% | 38.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 50 | 50 | 50 | 50 | 50 | 50 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 394 | 394 | 395 | 394 | 394 | 394 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% |
| [illegible] | Summer/WinterCapacity | (MW) | 3 | 3 | 3 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 25 | 25 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Base Case assumed throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000085

| Scenario: GREC with Resale | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Consolidated Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 50 | 46 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Energy | (GWh) | 395 | 364 | 394 | 788 | 790 | 788 | 788 | 788 | 790 | 788 | 788 | 788 | 790 |
| | Equiv. Cap. Factor | (%) | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% | 90.0% | 90.0% | 90.0% | 90.2% |
| 912 Inc - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 294 | 294 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Base Case discussed throughout the GREC Need for Power Application.

090451 Hearing Exhibit - 000086

**Scenario: GREC without Resale**

**Case: Regulated $CO_2$**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 1060/75 | 1060/75 | 950/50 | 950/50 | 950/50 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 157 | 167 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 30.3% | 32.2% | 22.2% | 23.8% | 25.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 288 | 288 | 288 | 288 | 288 | 288 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| SJ2 Inc. - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000087

| Scenario: GREC without Resale | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Hardee/Polk Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 788 | 788 | 788 | 788 | 790 | 788 | 788 | 788 | 788 | 788 | 788 | 788 | 788 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| LFG, Inc. - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 260 | 234 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emission allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000088

**Scenario: No New Construction until 2023**

**Case: Regulated $CO_2$**

| Contracted Party | | Unit | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 160 | 160 | 160 | 160 | 160 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 224 | 247 | 141 | 153 | 167 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 31.2% | 32.2% | 32.2% | 35.8% | 38.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Hardee Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| LG Inc - Marion County Landfill Gas | Summer/WinterCapacity | (MW) | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Energy | (GWh) | 27 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Market Purchases | Summer/WinterCapacity | (MW) | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Base Case discussed throughout the GREC Need for Power Application

090451 Hearing Exhibit - 000089

| Scenario: No New Construction until 2023 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: Regulated $CO_2$ | | | | | | | | | | | | | | | |
| Contracted Party | | Unit | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Progress Energy Florida | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Gainesville Renewable Energy Center, LLC | Summer/Winter Capacity | (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| O2 Bio - Marion County Landfill Gas | Summer/Winter Capacity | (MW) | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Energy | (GWh) | 35 | 35 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Equiv. Cap. Factor | (%) | 100.0% | 100.0% | 100.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Market Purchases | Summer/Winter Capacity | (MW) | | | | | | | | | | | | | |
| | Energy | (GWh) | 0 | 0 | 0 | 0 | 56 | 31 | 35 | 38 | 32 | 42 | 43 | 716 | 725 |
| | Equiv. Cap. Factor | (%) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the DREC Need for Power Application.

090451 Hearing Exhibit - 000090

**Response to Interrogatory No. 54**

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC with Resale vs. GREC without Resale | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | (\$millions, Nominal \$) | | | (GWh @ meter) | (cents/kWh) | (\$/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 279 | 306 | (27) | 2,135 | (1.26) | (15.16) |
| 2015 | 286 | 312 | (26) | 2,160 | (1.22) | (14.59) |
| 2016 | 284 | 310 | (26) | 2,183 | (1.20) | (14.36) |
| 2017 | 302 | 327 | (25) | 2,205 | (1.13) | (13.54) |
| 2018 | 310 | 334 | (24) | 2,228 | (1.07) | (12.80) |
| 2019 | 322 | 344 | (22) | 2,249 | (0.97) | (11.59) |
| 2020 | 330 | 352 | (22) | 2,265 | (0.98) | (11.74) |
| 2021 | 341 | 362 | (21) | 2,280 | (0.91) | (10.89) |
| 2022 | 350 | 370 | (20) | 2,294 | (0.88) | (10.53) |
| 2023 | 379 | 379 | - | 2,310 | - | - |
| 2024 | 373 | 373 | - | 2,324 | - | - |
| 2025 | 401 | 401 | - | 2,341 | - | - |
| 2026 | 411 | 411 | - | 2,356 | - | - |
| 2027 | 423 | 423 | - | 2,372 | - | - |
| 2028 | 435 | 435 | - | 2,387 | - | - |
| 2029 | 448 | 448 | - | 2,402 | - | - |
| 2030 | 459 | 459 | - | 2,418 | - | - |
| 2031 | 618 | 618 | - | 2,433 | - | - |
| 2032 | 670 | 670 | - | 2,449 | - | - |
| 2033 | 693 | 693 | - | 2,465 | - | - |
| 2034 | 720 | 720 | - | 2,481 | - | - |
| 2035 | 749 | 749 | - | 2,497 | - | - |
| 2036 | 778 | 778 | - | 2,513 | - | - |
| 2037 | 814 | 814 | - | 2,529 | - | - |
| 2038 | 869 | 869 | - | 2,545 | - | - |
| 2039 | 904 | 904 | - | 2,562 | - | - |
| 2040 | 943 | 943 | - | 2,578 | - | - |
| 2041 | 981 | 981 | - | 2,595 | - | - |
| 2042 | 1,025 | 1,025 | - | 2,612 | - | - |
| 2043 | 1,067 | 1,067 | - | 2,628 | - | - |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC with Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 279 | 258 | 21 | 2,135 | 0.99 | 11.87 |
| 2015 | 286 | 266 | 19 | 2,160 | 0.90 | 10.80 |
| 2016 | 284 | 266 | 19 | 2,183 | 0.86 | 10.30 |
| 2017 | 302 | 285 | 17 | 2,205 | 0.77 | 9.24 |
| 2018 | 310 | 293 | 17 | 2,228 | 0.78 | 9.38 |
| 2019 | 322 | 305 | 17 | 2,249 | 0.75 | 9.04 |
| 2020 | 330 | 315 | 15 | 2,265 | 0.67 | 8.07 |
| 2021 | 341 | 327 | 14 | 2,280 | 0.62 | 7.39 |
| 2022 | 350 | 336 | 13 | 2,294 | 0.58 | 7.00 |
| 2023 | 379 | 348 | 31 | 2,310 | 1.32 | 15.88 |
| 2024 | 373 | 335 | 38 | 2,324 | 1.62 | 19.48 |
| 2025 | 401 | 382 | 20 | 2,341 | 0.84 | 10.10 |
| 2026 | 411 | 391 | 19 | 2,356 | 0.83 | 9.92 |
| 2027 | 423 | 406 | 17 | 2,372 | 0.71 | 8.56 |
| 2028 | 435 | 421 | 14 | 2,387 | 0.58 | 6.94 |
| 2029 | 448 | 438 | 10 | 2,402 | 0.40 | 4.80 |
| 2030 | 459 | 454 | 5 | 2,418 | 0.21 | 2.51 |
| 2031 | 618 | 647 | (29) | 2,433 | (1.18) | (14.13) |
| 2032 | 670 | 699 | (30) | 2,449 | (1.21) | (14.46) |
| 2033 | 693 | 728 | (34) | 2,465 | (1.39) | (16.69) |
| 2034 | 720 | 759 | (39) | 2,481 | (1.56) | (18.77) |
| 2035 | 749 | 795 | (45) | 2,497 | (1.81) | (21.77) |
| 2036 | 778 | 829 | (51) | 2,513 | (2.03) | (24.31) |
| 2037 | 814 | 872 | (58) | 2,529 | (2.29) | (27.44) |
| 2038 | 869 | 934 | (64) | 2,545 | (2.53) | (30.38) |
| 2039 | 904 | 975 | (71) | 2,562 | (2.79) | (33.47) |
| 2040 | 943 | 1,023 | (79) | 2,578 | (3.07) | (36.80) |
| 2041 | 981 | 1,068 | (87) | 2,595 | (3.35) | (40.14) |
| 2042 | 1,025 | 1,120 | (95) | 2,612 | (3.63) | (43.56) |
| 2043 | 1,067 | 1,170 | (104) | 2,628 | (3.94) | (47.26) |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC without Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 306 | 258 | 48 | 2,135 | 2.25 | 27.03 |
| 2015 | 312 | 266 | 46 | 2,160 | 2.12 | 25.39 |
| 2016 | 310 | 266 | 45 | 2,183 | 2.05 | 24.66 |
| 2017 | 327 | 285 | 42 | 2,205 | 1.90 | 22.78 |
| 2018 | 334 | 293 | 41 | 2,228 | 1.85 | 22.18 |
| 2019 | 344 | 305 | 39 | 2,249 | 1.72 | 20.63 |
| 2020 | 352 | 315 | 37 | 2,265 | 1.65 | 19.81 |
| 2021 | 362 | 327 | 35 | 2,280 | 1.52 | 18.28 |
| 2022 | 370 | 336 | 34 | 2,294 | 1.46 | 17.53 |
| 2023 | 379 | 348 | 31 | 2,310 | 1.32 | 15.88 |
| 2024 | 373 | 335 | 38 | 2,324 | 1.62 | 19.48 |
| 2025 | 401 | 382 | 20 | 2,341 | 0.84 | 10.10 |
| 2026 | 411 | 391 | 19 | 2,356 | 0.83 | 9.92 |
| 2027 | 423 | 406 | 17 | 2,372 | 0.71 | 8.56 |
| 2028 | 435 | 421 | 14 | 2,387 | 0.58 | 6.94 |
| 2029 | 448 | 438 | 10 | 2,402 | 0.40 | 4.80 |
| 2030 | 459 | 454 | 5 | 2,418 | 0.21 | 2.51 |
| 2031 | 618 | 647 | (29) | 2,433 | (1.18) | (14.13) |
| 2032 | 670 | 699 | (30) | 2,449 | (1.21) | (14.46) |
| 2033 | 693 | 728 | (34) | 2,465 | (1.39) | (16.69) |
| 2034 | 720 | 759 | (39) | 2,481 | (1.56) | (18.77) |
| 2035 | 749 | 795 | (45) | 2,497 | (1.81) | (21.77) |
| 2036 | 778 | 829 | (51) | 2,513 | (2.03) | (24.31) |
| 2037 | 814 | 872 | (58) | 2,529 | (2.29) | (27.44) |
| 2038 | 869 | 934 | (64) | 2,545 | (2.53) | (30.38) |
| 2039 | 904 | 975 | (71) | 2,562 | (2.79) | (33.47) |
| 2040 | 943 | 1,023 | (79) | 2,578 | (3.07) | (36.80) |
| 2041 | 981 | 1,068 | (87) | 2,595 | (3.35) | (40.14) |
| 2042 | 1,025 | 1,120 | (95) | 2,612 | (3.63) | (43.56) |
| 2043 | 1,067 | 1,170 | (104) | 2,628 | (3.94) | (47.26) |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC with Resale vs. GREC without Resale | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | (Smillions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 312 | 312 | - | 2,110 | - | - |
| 2014 | 336 | 351 | (16) | 2,135 | (0.73) | (8.73) |
| 2015 | 349 | 363 | (13) | 2,160 | (0.62) | (7.39) |
| 2016 | 355 | 366 | (12) | 2,183 | (0.53) | (6.39) |
| 2017 | 381 | 390 | (9) | 2,205 | (0.41) | (4.89) |
| 2018 | 397 | 404 | (7) | 2,228 | (0.30) | (3.64) |
| 2019 | 420 | 423 | (3) | 2,249 | (0.11) | (1.35) |
| 2020 | 438 | 439 | (1) | 2,265 | (0.04) | (0.53) |
| 2021 | 462 | 459 | 3 | 2,280 | 0.13 | 1.58 |
| 2022 | 483 | 477 | 6 | 2,294 | 0.27 | 3.26 |
| 2023 | 499 | 499 | - | 2,310 | - | - |
| 2024 | 508 | 508 | - | 2,324 | - | - |
| 2025 | 553 | 553 | - | 2,341 | - | - |
| 2026 | 577 | 577 | - | 2,356 | - | - |
| 2027 | 609 | 609 | - | 2,372 | - | - |
| 2028 | 640 | 640 | - | 2,387 | - | - |
| 2029 | 677 | 677 | - | 2,402 | - | - |
| 2030 | 712 | 712 | - | 2,418 | - | - |
| 2031 | 817 | 817 | - | 2,433 | - | - |
| 2032 | 883 | 883 | - | 2,449 | - | - |
| 2033 | 923 | 923 | - | 2,465 | - | - |
| 2034 | 981 | 981 | - | 2,481 | - | - |
| 2035 | 1,030 | 1,030 | - | 2,497 | - | - |
| 2036 | 1,098 | 1,098 | - | 2,513 | - | - |
| 2037 | 1,159 | 1,159 | - | 2,529 | - | - |
| 2038 | 1,274 | 1,274 | - | 2,545 | - | - |
| 2039 | 1,335 | 1,335 | - | 2,562 | - | - |
| 2040 | 1,437 | 1,437 | - | 2,578 | - | - |
| 2041 | 1,507 | 1,507 | - | 2,595 | - | - |
| 2042 | 1,628 | 1,628 | - | 2,612 | - | - |
| 2043 | 1,709 | 1,709 | - | 2,628 | - | - |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC with Renals vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 312 | 312 | - | 2,110 | - | - |
| 2014 | 336 | 328 | 8 | 2,135 | 0.36 | 4.30 |
| 2015 | 349 | 344 | 6 | 2,160 | 0.26 | 3.06 |
| 2016 | 355 | 351 | 4 | 2,183 | 0.16 | 1.93 |
| 2017 | 381 | 381 | - | 2,205 | 0.01 | 0.15 |
| 2018 | 397 | 399 | (2) | 2,228 | (0.10) | (1.23) |
| 2019 | 420 | 423 | (3) | 2,249 | (0.14) | (1.67) |
| 2020 | 438 | 445 | (7) | 2,265 | (0.31) | (3.69) |
| 2021 | 462 | 471 | (9) | 2,280 | (0.42) | (5.00) |
| 2022 | 483 | 496 | (13) | 2,294 | (0.56) | (6.68) |
| 2023 | 499 | 527 | (28) | 2,310 | (1.21) | (14.47) |
| 2024 | 508 | 535 | (27) | 2,324 | (1.17) | (14.04) |
| 2025 | 553 | 605 | (52) | 2,341 | (2.21) | (26.52) |
| 2026 | 577 | 632 | (55) | 2,356 | (2.32) | (27.81) |
| 2027 | 609 | 674 | (65) | 2,372 | (2.75) | (32.99) |
| 2028 | 640 | 716 | (76) | 2,387 | (3.19) | (38.23) |
| 2029 | 677 | 767 | (89) | 2,402 | (3.72) | (44.68) |
| 2030 | 712 | 815 | (103) | 2,418 | (4.26) | (51.15) |
| 2031 | 817 | 894 | (77) | 2,433 | (3.17) | (38.01) |
| 2032 | 883 | 952 | (69) | 2,449 | (2.81) | (33.70) |
| 2033 | 923 | 994 | (71) | 2,465 | (2.90) | (34.80) |
| 2034 | 981 | 1,065 | (84) | 2,481 | (3.37) | (40.44) |
| 2035 | 1,030 | 1,118 | (88) | 2,497 | (3.52) | (42.21) |
| 2036 | 1,098 | 1,201 | (103) | 2,513 | (4.11) | (49.34) |
| 2037 | 1,159 | 1,265 | (106) | 2,529 | (4.19) | (50.26) |
| 2038 | 1,274 | 1,386 | (112) | 2,545 | (4.41) | (52.92) |
| 2039 | 1,335 | 1,452 | (117) | 2,562 | (4.57) | (54.79) |
| 2040 | 1,437 | 1,573 | (135) | 2,578 | (5.24) | (62.88) |
| 2041 | 1,507 | 1,647 | (139) | 2,595 | (5.36) | (64.37) |
| 2042 | 1,628 | 1,786 | (158) | 2,612 | (6.04) | (72.49) |
| 2043 | 1,709 | 1,872 | (163) | 2,628 | (6.22) | (74.64) |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

| | GREC without Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| Year | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 312 | 312 | - | 2,110 | - | - |
| 2014 | 351 | 328 | 23 | 2,135 | 1.09 | 13.03 |
| 2015 | 363 | 344 | 19 | 2,160 | 0.87 | 10.45 |
| 2016 | 366 | 351 | 15 | 2,183 | 0.69 | 8.32 |
| 2017 | 390 | 381 | 9 | 2,205 | 0.42 | 5.04 |
| 2018 | 404 | 399 | 4 | 2,228 | 0.20 | 2.41 |
| 2019 | 423 | 423 | (1) | 2,249 | (0.03) | (0.33) |
| 2020 | 439 | 445 | (6) | 2,265 | (0.26) | (3.15) |
| 2021 | 459 | 471 | (13) | 2,280 | (0.55) | (6.58) |
| 2022 | 477 | 496 | (19) | 2,294 | (0.83) | (9.94) |
| 2023 | 499 | 527 | (28) | 2,310 | (1.21) | (14.47) |
| 2024 | 508 | 535 | (27) | 2,324 | (1.17) | (14.04) |
| 2025 | 553 | 605 | (52) | 2,341 | (2.21) | (26.52) |
| 2026 | 577 | 632 | (55) | 2,356 | (2.32) | (27.81) |
| 2027 | 609 | 674 | (65) | 2,372 | (2.75) | (32.99) |
| 2028 | 640 | 716 | (76) | 2,387 | (3.19) | (38.23) |
| 2029 | 677 | 767 | (89) | 2,402 | (3.72) | (44.68) |
| 2030 | 712 | 815 | (103) | 2,418 | (4.26) | (51.15) |
| 2031 | 817 | 894 | (77) | 2,433 | (3.17) | (38.01) |
| 2032 | 883 | 952 | (69) | 2,449 | (2.81) | (33.70) |
| 2033 | 923 | 994 | (71) | 2,465 | (2.90) | (34.80) |
| 2034 | 981 | 1,065 | (84) | 2,481 | (3.37) | (40.44) |
| 2035 | 1,030 | 1,118 | (88) | 2,497 | (3.52) | (42.21) |
| 2036 | 1,098 | 1,201 | (103) | 2,513 | (4.11) | (49.34) |
| 2037 | 1,159 | 1,265 | (106) | 2,529 | (4.19) | (50.26) |
| 2038 | 1,274 | 1,386 | (112) | 2,545 | (4.41) | (52.92) |
| 2039 | 1,335 | 1,452 | (117) | 2,562 | (4.57) | (54.79) |
| 2040 | 1,437 | 1,573 | (135) | 2,578 | (5.24) | (62.88) |
| 2041 | 1,507 | 1,647 | (139) | 2,595 | (5.36) | (64.37) |
| 2042 | 1,628 | 1,786 | (158) | 2,612 | (6.04) | (72.49) |
| 2043 | 1,709 | 1,872 | (163) | 2,628 | (6.22) | (74.64) |

Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application.

**Response to Interrogatory No. 57**

Assumptions

1. In all scenarios the GREC PPA begins January 1, 2014
2. All figures are present worth with a 4.20% discount rate and 2009 base year
3. Fixed O&M Costs are included in the "Capital Costs" column

| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
|---|---|---|---|---|---|---|---|---|
| **Scenario: GREC with Resale** | | | | | | | | |
| **Case: Base** | | | | | | | | |
| **All Costs are in Present Worth (2009 $, $000)** | | | | | | | | |
| **2014** | 130,821 | | 2,210 | 94,435 | | | 227,466 | 227,466 |
| **2015** | 126,329 | | 2,289 | 94,663 | | | 223,281 | 450,747 |
| **2016** | 117,338 | | 2,250 | 93,597 | | | 213,186 | 663,933 |
| **2017** | 121,675 | | 2,290 | 93,321 | | | 217,286 | 881,219 |
| **2018** | 119,690 | | 2,235 | 92,114 | | | 214,039 | 1,095,258 |
| **2019** | 117,737 | | 2,119 | 93,641 | | | 213,497 | 1,308,755 |
| **2020** | 115,816 | | 2,080 | 92,011 | | | 209,916 | 1,518,672 |
| **2021** | 113,927 | | 2,092 | 92,150 | | | 208,169 | 1,726,849 |
| **2022** | 112,068 | | 2,065 | 90,673 | | | 204,806 | 1,931,646 |
| **2023** | 110,240 | | 1,495 | 101,328 | | | 213,063 | 2,144,709 |
| **2024** | 108,441 | | 1,541 | 91,093 | | | 201,075 | 2,345,785 |
| **2025** | 106,672 | | 1,560 | 99,505 | | | 207,738 | 2,553,522 |
| **2026** | 104,932 | | 1,584 | 97,474 | | | 203,990 | 2,757,512 |
| **2027** | 103,220 | | 1,596 | 96,841 | | | 201,660 | 2,959,172 |
| **2028** | 101,536 | | 1,564 | 95,912 | | | 199,012 | 3,158,184 |
| **2029** | 99,879 | | 1,580 | 95,228 | | | 196,687 | 3,354,871 |
| **2030** | 98,250 | | 1,551 | 93,750 | | | 193,551 | 3,548,422 |
| **2031** | 96,647 | | 2,433 | 150,982 | | | 250,062 | 3,798,484 |
| **2032** | 95,070 | | 2,805 | 162,088 | | | 259,963 | 4,058,447 |
| **2033** | 93,519 | | 1,482 | 163,333 | | | 258,334 | 4,316,781 |
| **2034** | 91,993 | | 1,521 | 163,971 | | | 257,486 | 4,574,266 |
| **2035** | 90,492 | | 1,453 | 165,170 | | | 257,115 | 4,831,381 |
| **2036** | 89,016 | | 1,494 | 165,831 | | | 256,341 | 5,087,723 |
| **2037** | 87,564 | | 1,431 | 168,392 | | | 257,386 | 5,345,109 |
| **2038** | 86,135 | | 1,538 | 175,962 | | | 263,635 | 5,608,744 |
| **2039** | 84,730 | | 1,445 | 176,821 | | | 262,997 | 5,871,740 |
| **2040** | 83,348 | | 1,501 | 178,679 | | | 263,528 | 6,135,268 |
| **2041** | 81,988 | | 1,411 | 179,527 | | | 262,926 | 6,398,194 |
| **2042** | 80,650 | | 1,466 | 181,668 | | | 263,784 | 6,661,978 |
| **2043** | 79,334 | | 1,375 | 182,641 | | | 263,351 | 6,925,329 |

Notes

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs
2. Variable O&M Costs include all production-related variable O&M costs
3. Fuel Costs include fuel, PPA, and net market purchase costs

Assumptions

1. In all scenarios the GREC PPA begins January 1, 2014
2. All figures are present worth with a 4.20% discount rate and 2009 base year
3. Fixed O&M Costs are included in the "Capital Costs" column.

| | Scenario: GREC without Resale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Base | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 1,503 | 117,095 | | | 249,419 | 249,419 |
| 2015 | 126,329 | | 1,560 | 115,909 | | | 243,798 | 493,217 |
| 2016 | 117,338 | | 1,511 | 113,898 | | | 232,768 | 725,985 |
| 2017 | 121,675 | | 1,583 | 111,934 | | | 235,192 | 961,177 |
| 2018 | 119,690 | | 1,567 | 109,192 | | | 230,449 | 1,191,626 |
| 2019 | 117,737 | | 1,499 | 108,653 | | | 227,889 | 1,419,515 |
| 2020 | 115,816 | | 1,485 | 106,716 | | | 224,018 | 1,643,533 |
| 2021 | 113,927 | | 1,508 | 105,361 | | | 220,796 | 1,864,329 |
| 2022 | 112,068 | | 1,483 | 103,044 | | | 216,595 | 2,080,924 |
| 2023 | 110,240 | | 1,495 | 101,328 | | | 213,063 | 2,293,987 |
| 2024 | 108,441 | | 1,541 | 91,093 | | | 201,075 | 2,495,062 |
| 2025 | 106,672 | | 1,560 | 99,505 | | | 207,738 | 2,702,800 |
| 2026 | 104,932 | | 1,584 | 97,474 | | | 203,990 | 2,906,790 |
| 2027 | 103,220 | | 1,596 | 96,844 | | | 201,660 | 3,108,449 |
| 2028 | 101,536 | | 1,564 | 95,912 | | | 199,012 | 3,307,461 |
| 2029 | 99,879 | | 1,580 | 95,228 | | | 196,687 | 3,504,149 |
| 2030 | 98,250 | | 1,551 | 93,750 | | | 193,551 | 3,697,700 |
| 2031 | 96,647 | | 2,433 | 150,982 | | | 250,062 | 3,947,761 |
| 2032 | 95,070 | | 2,805 | 162,088 | | | 259,963 | 4,207,724 |
| 2033 | 93,519 | | 1,482 | 163,333 | | | 258,334 | 4,466,058 |
| 2034 | 91,993 | | 1,521 | 163,971 | | | 257,486 | 4,723,544 |
| 2035 | 90,492 | | 1,453 | 165,170 | | | 257,115 | 4,980,659 |
| 2036 | 89,016 | | 1,494 | 165,831 | | | 256,341 | 5,237,000 |
| 2037 | 87,564 | | 1,431 | 168,392 | | | 257,386 | 5,494,387 |
| 2038 | 86,135 | | 1,538 | 175,962 | | | 263,635 | 5,758,021 |
| 2039 | 84,730 | | 1,445 | 176,821 | | | 262,997 | 6,021,018 |
| 2040 | 83,348 | | 1,501 | 178,679 | | | 263,528 | 6,284,546 |
| 2041 | 81,988 | | 1,411 | 179,527 | | | 262,926 | 6,547,472 |
| 2042 | 80,650 | | 1,466 | 181,668 | | | 263,784 | 6,811,256 |
| 2043 | 79,334 | | 1,375 | 182,641 | | | 263,351 | 7,074,606 |

Notes

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs.
2. Variable O&M Costs include all production-related variable O&M costs.
3. Fuel Costs include fuel, PPA, and net market purchase costs.

Assumptions:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. All figures are present worth with a 4.20% discount rate and 2009 base year.
3. Fixed O&M Costs are included in the "Capital Costs" column.

| | Scenario: No New Construction until 2023 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Base | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 3,156 | 76,300 | | | 210,277 | 210,277 |
| 2015 | 126,329 | | 3,235 | 78,533 | | | 208,097 | 418,374 |
| 2016 | 112,338 | | 3,146 | 78,648 | | | 199,132 | 617,506 |
| 2017 | 121,675 | | 3,183 | 80,206 | | | 205,064 | 822,571 |
| 2018 | 119,690 | | 3,088 | 79,227 | | | 202,005 | 1,024,575 |
| 2019 | 117,737 | | 2,843 | 81,691 | | | 202,271 | 1,226,846 |
| 2020 | 115,816 | | 2,793 | 81,622 | | | 200,232 | 1,427,078 |
| 2021 | 115,927 | | 2,796 | 82,870 | | | 199,593 | 1,626,671 |
| 2022 | 112,068 | | 2,757 | 82,136 | | | 196,961 | 1,823,632 |
| 2023 | 110,240 | | 2,795 | 82,848 | | | 195,883 | 2,019,515 |
| 2024 | 108,441 | | 2,795 | 69,482 | | | 180,718 | 2,200,234 |
| 2025 | 106,672 | | 2,815 | 88,052 | | | 197,539 | 2,397,773 |
| 2026 | 104,932 | | 2,862 | 86,521 | | | 194,315 | 2,592,088 |
| 2027 | 103,220 | | 2,804 | 87,565 | | | 193,589 | 2,785,677 |
| 2028 | 101,536 | | 2,808 | 88,351 | | | 192,696 | 2,978,373 |
| 2029 | 99,879 | | 2,773 | 89,817 | | | 192,469 | 3,170,842 |
| 2030 | 98,250 | | 2,766 | 90,403 | | | 191,420 | 3,362,262 |
| 2031 | 96,647 | | 3,050 | 161,951 | | | 261,649 | 3,623,910 |
| 2032 | 95,070 | | 3,454 | 172,897 | | | 271,421 | 3,895,331 |
| 2033 | 93,519 | | 1,778 | 175,806 | | | 271,102 | 4,166,433 |
| 2034 | 91,993 | | 1,848 | 177,521 | | | 271,362 | 4,437,796 |
| 2035 | 90,492 | | 1,723 | 180,442 | | | 272,657 | 4,710,453 |
| 2036 | 89,016 | | 1,795 | 182,292 | | | 273,103 | 4,983,556 |
| 2037 | 87,564 | | 1,672 | 186,428 | | | 275,664 | 5,259,220 |
| 2038 | 86,135 | | 1,753 | 195,287 | | | 283,176 | 5,542,396 |
| 2039 | 84,730 | | 1,630 | 197,436 | | | 283,796 | 5,826,192 |
| 2040 | 83,348 | | 1,700 | 200,564 | | | 285,612 | 6,111,804 |
| 2041 | 81,988 | | 1,579 | 202,629 | | | 286,195 | 6,397,999 |
| 2042 | 80,650 | | 1,645 | 205,880 | | | 288,175 | 6,686,174 |
| 2043 | 79,334 | | 1,529 | 208,043 | | | 288,906 | 6,975,080 |

Notes:

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs.
2. Variable O&M Costs include all production-related variable O&M costs.
3. Fuel Costs include fuel, PPA, and net market purchase costs.

Assumptions:

1. In all scenarios the GREC PPA begins January 1, 2014
2. All figures are present worth with a 4.20% discount rate and 2009 base year
3. Fixed O&M Costs are included in the "Capital Costs" column

| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
|---|---|---|---|---|---|---|---|---|
| **Scenario: GREC with Resale** | | | | | | | | |
| **Case: Regulated CO2** | | | | | | | | |
| **All Costs are in Present Worth (2009 $, $000)** | | | | | | | | |
| 2014 | 130,821 | | 2,222 | 123,125 | 17,308 | | 273,477 | 273,477 |
| 2015 | 126,329 | | 2,319 | 125,563 | 18,717 | | 272,928 | 546,404 |
| 2016 | 117,338 | | 2,268 | 126,427 | 19,879 | | 265,912 | 812,317 |
| 2017 | 121,675 | | 2,320 | 128,586 | 21,464 | | 274,045 | 1,086,361 |
| 2018 | 119,696 | | 2,264 | 129,322 | 22,803 | | 274,079 | 1,360,440 |
| 2019 | 117,737 | | 2,126 | 133,883 | 24,711 | | 278,458 | 1,638,898 |
| 2020 | 115,816 | | 2,106 | 134,493 | 26,078 | | 278,493 | 1,917,391 |
| 2021 | 113,927 | | 2,116 | 137,783 | 28,024 | | 281,849 | 2,199,239 |
| 2022 | 112,068 | | 2,097 | 139,196 | 29,633 | | 282,995 | 2,482,235 |
| 2023 | 110,240 | | 1,514 | 143,311 | 25,563 | | 280,628 | 2,762,863 |
| 2024 | 108,441 | | 1,535 | 135,892 | 27,933 | | 273,802 | 3,036,665 |
| 2025 | 106,672 | | 1,560 | 147,937 | 30,066 | | 286,235 | 3,322,900 |
| 2026 | 104,932 | | 1,585 | 148,495 | 31,675 | | 286,686 | 3,609,586 |
| 2027 | 103,220 | | 1,596 | 151,614 | 34,055 | | 290,485 | 3,900,071 |
| 2028 | 101,536 | | 1,564 | 153,813 | 36,054 | | 292,967 | 4,193,039 |
| 2029 | 99,879 | | 1,579 | 157,287 | 38,704 | | 297,450 | 4,490,489 |
| 2030 | 98,250 | | 1,552 | 159,427 | 40,904 | | 300,133 | 4,790,622 |
| 2031 | 96,647 | | 2,432 | 193,508 | 37,716 | | 330,303 | 5,120,925 |
| 2032 | 95,070 | | 2,805 | 203,423 | 41,413 | | 342,710 | 5,463,635 |
| 2033 | 93,519 | | 1,484 | 205,970 | 42,742 | | 343,715 | 5,807,350 |
| 2034 | 91,993 | | 1,522 | 210,527 | 46,710 | | 350,753 | 6,158,103 |
| 2035 | 90,492 | | 1,453 | 213,272 | 48,156 | | 353,373 | 6,511,476 |
| 2036 | 89,016 | | 1,494 | 218,323 | 52,598 | | 361,432 | 6,872,908 |
| 2037 | 87,564 | | 1,441 | 222,790 | 54,401 | | 366,185 | 7,239,093 |
| 2038 | 86,135 | | 1,538 | 237,353 | 61,399 | | 386,425 | 7,625,518 |
| 2039 | 84,730 | | 1,445 | 239,660 | 62,866 | | 388,685 | 8,014,204 |
| 2040 | 83,348 | | 1,501 | 247,652 | 69,001 | | 401,501 | 8,415,705 |
| 2041 | 81,988 | | 1,411 | 250,095 | 70,582 | | 404,077 | 8,819,782 |
| 2042 | 80,650 | | 1,466 | 259,198 | 77,541 | | 418,855 | 9,238,637 |
| 2043 | 79,334 | | 1,375 | 261,883 | 79,263 | | 421,855 | 9,660,493 |

Notes:

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs
2. Variable O&M Costs include all production-related variable O&M costs
3. Fuel Costs include fuel, PPA, and net market purchase costs
4. Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

Assumptions:

1. In all scenarios the GREC PPA begins January 1, 2014
2. All figures are present worth with a 4.26% discount rate and 2009 base year
3. Fixed O&M Costs are included in the "Capital Costs" column.

| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
|---|---|---|---|---|---|---|---|---|
| **Scenario: GREC without Resale** | | | | | | | | |
| **Case: Regulated CO2** | | | | | | | | |
| **All Costs are in Present Worth (2009 $, $000)** | | | | | | | | |
| 2014 | 130,821 | | 1,497 | 139,959 | 13,849 | | 286,125 | 286,125 |
| 2015 | 126,329 | | 1,561 | 140,454 | 14,974 | | 283,318 | 569,444 |
| 2016 | 117,338 | | 1,537 | 139,836 | 15,923 | | 274,635 | 844,078 |
| 2017 | 121,675 | | 1,584 | 140,073 | 17,184 | | 280,517 | 1,124,595 |
| 2018 | 119,690 | | 1,609 | 139,207 | 18,243 | | 278,749 | 1,403,344 |
| 2019 | 117,737 | | 1,512 | 141,131 | 19,748 | | 280,129 | 1,683,473 |
| 2020 | 115,816 | | 1,491 | 140,913 | 20,912 | | 279,132 | 1,962,605 |
| 2021 | 113,927 | | 1,509 | 142,101 | 22,473 | | 280,011 | 2,242,615 |
| 2022 | 112,068 | | 1,491 | 142,032 | 23,750 | | 279,341 | 2,521,956 |
| 2023 | 110,240 | | 1,514 | 143,311 | 25,563 | | 280,628 | 2,802,584 |
| 2024 | 108,441 | | 1,535 | 135,892 | 27,933 | | 273,802 | 3,076,386 |
| 2025 | 106,672 | | 1,560 | 147,937 | 30,066 | | 286,235 | 3,362,621 |
| 2026 | 104,932 | | 1,585 | 148,495 | 31,675 | | 286,686 | 3,649,307 |
| 2027 | 101,220 | | 1,596 | 151,614 | 34,055 | | 290,485 | 3,939,792 |
| 2028 | 101,536 | | 1,564 | 153,813 | 36,054 | | 292,967 | 4,232,760 |
| 2029 | 99,879 | | 1,579 | 157,287 | 38,704 | | 297,450 | 4,530,210 |
| 2030 | 98,250 | | 1,552 | 159,427 | 40,904 | | 300,133 | 4,830,344 |
| 2031 | 96,647 | | 2,332 | 193,508 | 37,716 | | 330,303 | 5,160,646 |
| 2032 | 95,070 | | 2,805 | 203,423 | 41,413 | | 342,710 | 5,503,356 |
| 2033 | 93,519 | | 1,484 | 205,970 | 42,742 | | 343,715 | 5,847,072 |
| 2034 | 91,993 | | 1,522 | 210,527 | 46,710 | | 350,753 | 6,197,824 |
| 2035 | 90,492 | | 1,453 | 213,272 | 48,156 | | 353,373 | 6,551,198 |
| 2036 | 89,016 | | 1,494 | 218,323 | 52,598 | | 361,432 | 6,912,629 |
| 2037 | 87,564 | | 1,431 | 222,790 | 54,401 | | 366,185 | 7,278,815 |
| 2038 | 86,135 | | 1,938 | 237,353 | 61,399 | | 386,425 | 7,665,240 |
| 2039 | 84,730 | | 1,333 | 239,650 | 62,860 | | 388,685 | 8,053,925 |
| 2040 | 83,348 | | 1,501 | 247,652 | 69,001 | | 401,501 | 8,455,426 |
| 2041 | 81,988 | | 1,411 | 250,095 | 70,582 | | 404,077 | 8,859,503 |
| 2042 | 80,650 | | 1,466 | 259,198 | 77,541 | | 418,855 | 9,278,358 |
| 2043 | 79,334 | | 1,375 | 261,883 | 79,263 | | 421,855 | 9,700,214 |

Notes:

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs
2. Variable O&M Costs include all production-related variable O&M costs
3. Fuel Costs include fuel, PPA, and net market purchase costs
4. Regulated $CO_2$ reflects $CO_2$ emissions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

Assumptions

1. In all scenarios the GREC PPA begins January 1, 2014
2. All figures are present worth with a 4.20% discount rate and 2009 base year
3. Fixed O&M Costs are included in the "Capital Costs" column

| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
|---|---|---|---|---|---|---|---|---|
| **Scenario: No New Construction until 2023** | | | | | | | | |
| **Case: Regulated CO2** | | | | | | | | |
| **All Costs are in Present Worth (2009 $, $000)** | | | | | | | | |
| **2014** | 130,821 | | 3,316 | 111,582 | 21,530 | | 267,249 | 267,249 |
| **2015** | 126,329 | | 3,275 | 115,832 | 23,181 | | 268,617 | 535,867 |
| **2016** | 117,338 | | 3,197 | 118,177 | 24,570 | | 263,282 | 799,149 |
| **2017** | 121,675 | | 3,217 | 122,465 | 26,489 | | 273,846 | 1,072,996 |
| **2018** | 119,690 | | 3,169 | 124,668 | 28,128 | | 275,654 | 1,348,650 |
| **2019** | 117,737 | | 2,856 | 129,739 | 30,204 | | 280,537 | 1,629,186 |
| **2020** | 115,816 | | 2,810 | 132,320 | 31,974 | | 282,920 | 1,912,106 |
| **2021** | 113,927 | | 2,806 | 136,743 | 34,167 | | 287,643 | 2,199,749 |
| **2022** | 112,068 | | 2,780 | 139,489 | 36,142 | | 290,478 | 2,490,227 |
| **2023** | 110,240 | | 2,821 | 144,208 | 38,929 | | 296,288 | 2,786,515 |
| **2024** | 108,441 | | 2,868 | 134,618 | 42,542 | | 288,470 | 3,074,985 |
| **2025** | 106,672 | | 2,855 | 157,799 | 45,695 | | 313,021 | 3,388,006 |
| **2026** | 104,932 | | 2,862 | 158,831 | 47,195 | | 313,821 | 3,701,827 |
| **2027** | 103,220 | | 2,833 | 164,986 | 50,542 | | 321,581 | 4,023,408 |
| **2028** | 101,536 | | 2,819 | 170,026 | 53,390 | | 327,770 | 4,351,178 |
| **2029** | 99,879 | | 2,791 | 176,980 | 57,085 | | 336,735 | 4,687,913 |
| **2030** | 98,250 | | 2,786 | 182,285 | 60,254 | | 343,574 | 5,031,487 |
| **2031** | 96,647 | | 3,069 | 215,236 | 46,531 | | 361,483 | 5,392,971 |
| **2032** | 95,070 | | 3,454 | 221,895 | 48,992 | | 369,411 | 5,762,382 |
| **2033** | 93,519 | | 1,778 | 225,435 | 49,612 | | 370,344 | 6,132,726 |
| **2034** | 91,993 | | 1,848 | 232,132 | 54,668 | | 380,640 | 6,513,366 |
| **2035** | 90,492 | | 1,723 | 235,865 | 55,430 | | 383,510 | 6,896,876 |
| **2036** | 89,016 | | 1,795 | 243,462 | 61,183 | | 395,456 | 7,292,333 |
| **2037** | 87,564 | | 1,672 | 248,448 | 61,935 | | 399,660 | 7,691,992 |
| **2038** | 86,135 | | 1,753 | 263,935 | 68,641 | | 420,465 | 8,112,457 |
| **2039** | 84,730 | | 1,630 | 266,692 | 69,477 | | 422,729 | 8,535,186 |
| **2040** | 83,348 | | 1,700 | 277,375 | 76,816 | | 439,239 | 8,974,425 |
| **2041** | 81,988 | | 1,579 | 280,224 | 77,601 | | 441,391 | 9,415,816 |
| **2042** | 80,650 | | 1,645 | 291,513 | 85,633 | | 459,441 | 9,875,257 |
| **2043** | 79,334 | | 1,529 | 294,692 | 86,661 | | 462,217 | 10,337,474 |

Notes

1. Capital Costs include all non-fuel generation (excluding production-related variable O&M), transmission, distribution, and administrative costs
2. Variable O&M Costs include all production-related variable O&M costs
3. Fuel Costs include, e.g., PPA, and net market purchase costs

Regulated $CO_2$ reflects [illegible] sions allowance prices consistent with the H.R. 2454 Basic Case discussed throughout the GREC Need for Power Application

**AFFIDAVIT**

STATE OF FLORIDA)

COUNTY OF ALACHUA)

I hereby certify that on this 2 day of November, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Edward Regan, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 9 through 12, 20 through 22, 25 through 35, 38 through 42, 46 through 49, 53, 58, 61, and 63 through 66 from STAFF'S SECOND SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 9-70) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 2 day of November, 2009.

Signature of Affiant

Rita K. Strother

Notary Public
State of Florida, at Large

RITA K. STROTHER
Commission DD 767967
Expires May 12, 2012
Bonded Thru Troy Fain Insurance 800-385-7019

My Commission Expires:

**AFFIDAVIT**

STATE OF FLORIDA)

COUNTY OF ALACHUA)

I hereby certify that on this 2nd day of November, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Richard Bachmeier, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 14, 16 through 19, 23, 43, 54, 56, 57, and 60 from STAFF'S SECOND SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 9-70) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 2nd day of November, 2009.

Signature of Affiant

Notary Public
State of Florida, at Large

RITA K. STROTHER
Commission DD 767967
Expires May 12, 2012
Bonded Thru Troy Fain Insurance 800-385-7019

My Commission Expires:

**AFFIDAVIT**

STATE OF FLORIDA)

COUNTY OF Alachua

I hereby certify that on this 2nd day of November, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Todd Kamhoot, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 13 and 15 from STAFF'S SECOND SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 9-70) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 2nd day of November, 2009.

Signature of Affiant

Rita K. Strother

Notary Public
State of Florida, at Large

RITA K. STROTHER
Commission DD 767967
Expires May 12, 2012
Bonded Thru Troy Fain Insurance 800-385-7019

My Commission Expires:

**AFFIDAVIT**

STATE OF KANSAS)

COUNTY OF Johnson

I hereby certify that on this 2nd day of November, 2009, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared Bradley Kushner, who is personally known to me, and he acknowledged before me that he provided the answers to interrogatory numbers 24, 44, 52, 55, 69, and 70 from STAFF'S SECOND SET OF INTERROGATORIES TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 9-70) in Docket No. 090451-EM, and that the responses are true and correct based on his personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 2nd day of November, 2009.

Signature of Affiant

Notary Public
State of Kansas, at Large

My Commission Expires: 7-30-2011

NOTARY PUBLIC STATE OF KANSAS

# 3

# GRU/GREC LLC's Responses to Staff's Third Set of Interrogatories (Nos. 71-79)

## RESPONSES

**71. Please refer to GRU's response to Interrogatory 13 of Staff's Second Set of Interrogatories. Please supply the values that were used for each customer class as indicated by the chart included in your response.**

**Response to Interrogatory No. 71:**

Please see the table below, which presents the requested information. Data through 2008 represent historical usage by customer class. Data for 2009 and beyond represent projected usage by customer class.

The table shows declining average use in the residential sector in the forecast period reflecting the projected impacts of GRU's conservation measures.

In the commercial sector, use per customer is lower in the forecast period compared to the historical period for two primary reasons:

1) Approximately 400 cable television amplifiers that were previously bulk-billed, were reconfigured to be individually billed during 2008. This one-time infusion of new customer accounts causes the use per customer to be lower in the forecast period.
2) GRU's projected impacts from conservation measures offered to non-residential customers are also reflected in this forecast.

In the industrial sector, use per customer is higher in the forecast period compared to the historical period. This is the result of a policy change implemented in 2008 that determines which customers are billed in the large demand rate category. Approximately seven of a total 18 customers were shifted from the large demand (industrial) to the general service demand (commercial) rate category as a result of this change. The remaining 11 large demand customers represent the largest electrical loads from the original group, so the use per customer for this newer subset of customers is higher after 2008.

| Calendar Year | Residential kWh/Customer | Commercial kWh/Customer | Industrial kWh/Customer |
|---|---|---|---|
| 1998 | 11,649 | 81,363 | 10,442,533 |
| 1999 | 11,137 | 80,036 | 10,188,353 |
| 2000 | 11,202 | 80,490 | 10,114,235 |
| 2001 | 11,092 | 80,986 | 10,162,294 |
| 2002 | 11,527 | 82,112 | 10,178,343 |
| 2003 | 11,467 | 81,090 | 9,590,580 |
| 2004 | 11,398 | 80,143 | 10,444,333 |
| 2005 | 11,358 | 80,199 | 10,477,278 |
| 2006 | 11,047 | 78,042 | 10,093,128 |
| 2007 | 10,817 | 79,398 | 10,891,056 |
| 2008 | 9,969 | 73,538 | 11,497,250 |
| 2009 | 9,908 | 71,480 | 14,430,791 |
| 2010 | 9,795 | 70,485 | 14,276,501 |
| 2011 | 9,719 | 69,945 | 14,311,862 |
| 2012 | 9,654 | 69,544 | 14,405,345 |
| 2013 | 9,599 | 69,280 | 14,538,118 |
| 2014 | 9,552 | 69,130 | 14,648,985 |
| 2015 | 9,512 | 69,103 | 14,761,376 |
| 2016 | 9,471 | 69,066 | 14,853,902 |
| 2017 | 9,434 | 69,070 | 14,934,125 |
| 2018 | 9,401 | 69,163 | 15,022,334 |

72. **Please refer to GRU's response to Interrogatory 53 of Staff's Second Set of Interrogatories. Please generate each chart <u>without</u> Renewable Energy Credit (REC) and $CO_2$ offsets.**

**<u>Response to Interrogatory No. 72:</u>**

Section 15 of the September 18, 2009 Need for Power Application contained the results of the potential rate implications of the proposed GREC facility as presented to the Gainesville City Commission and the public on May 7, 2009. These results are repeated below as Table 15-1 and 15-2. They include three gas price and two carbon price scenarios and assume that half of GREC's output is resold. The response to Interrogatory 53 requested that these results be recomputed assuming no value for the resale of half the output of GREC. GRU believes this is an unrealistic scenario as the firm capacity of GREC will never have zero value in Florida's market and generally GREC's fuel cost will be below most of the generating units in the state thus providing significant power sales opportunities even on the spot market. Nonetheless, GRU performed the study whose results are presented as Table 53-1 and Table 53-2 below. These tables have been recomputed pursuant to this request assuming zero value for carbon offsets as well, and the results are presented in Table 72-1 and Table 72-2 below.

**Table 15-1**
**Biomass Plant Risk Assessment[1]**

| Natural Gas Price Forecast | Value of Environmental Attributes | *Impact on* 1,000 kWh Residential Bill (/Month) | |
|---|---|---|---|
| | | 2014 | 2019 |
| Low | $0.00/MWh | $10.53 | $6.22 |
| | $12.00/MWh | $8.32 | $4.12 |
| Base | $0.00/MWh | $8.31 | $2.85 |
| | $12.00/MWh | $6.10 | $0.75 |
| High | $0.00/MWh | $6.10 | $(0.53) |
| | $12.00/MWh | $3.88 | $(2.63) |

[1]No adjustment for the value of avoided capacity. Value of environmental attributes includes combined REC and $CO_2$ offset values. Assumes 50% of GREC's output is resold.

**Table 15-2**
**Biomass Plant Risk Assessment[1]**

| Scenario | Increase of 1,000 kWh Residential Bill | |
|---|---|---|
| | 2014 | 2019 |
| Low Natural Gas Price | 5.8% | 2.5% |
| Base Case | 4.3% | 0.5% |
| High Natural Gas Price | 2.7% | -2.5% |

[1] No adjustment for the value of avoided capacity. Includes $12.00/MWh value for RECs and $CO_2$ offsets. Assumes 50% of GREC's output is resold.

**Table 53-1**
**Biomass Plant Risk Assessment Assuming No Resale[1]**

| Natural Gas Price Forecast | Value of Environmental Attributes | Impact on 1,000 kWh Residential Bill (/Month) | |
|---|---|---|---|
| | | 2014 | 2019 |
| Low | $0.00/MWh | $26.26 | $19.09 |
| | $12.00/MWh | $22.19 | $14.88 |
| Base | $0.00/MWh | $22.82 | $13.65 |
| | $12.00/MWh | $18.59 | $9.44 |
| High | $0.00/MWh | $19.38 | $8.22 |
| | $12.00/MWh | $14.95 | $4.01 |

[1] No adjustment for the value of avoided capacity. Value of environmental attributes includes combined REC and $CO_2$ offset values.

**Table 53-2**
**Biomass Plant Risk Assessment Assuming No Resale[1]**

| Scenario | Increase of 1,000 kWh Residential Bill | |
|---|---|---|
| | 2014 | 2019 |
| Low Natural Gas Price | 12.1% | 6.4% |
| Base Case | 9.7% | 3.0% |
| High Natural Gas Price | 7.3% | -0.6% |

[1] No adjustment for the value of avoided capacity. Includes $12.00/MWh value for RECs and $CO_2$ offsets.

**Table 72-1**
**Biomass Plant Risk Assessment Assuming No Resale[1]**

| Natural Gas Price Forecast | Value of Environmental Attributes | Impact on 1,000 kWh Residential Bill (/Month) | |
|---|---|---|---|
| | | 2014 | 2019 |
| Low | $0.00/MWh | $26.26 | $19.09 |
| Base | $0.00/MWh | $22.82 | $13.65 |
| High | $0.00/MWh | $19.38 | $8.22 |

[1] No adjustment for the value of avoided capacity. Value of environmental attributes includes zero value of environmental attributes.

**Table 72-2**
**Biomass Plant Risk Assessment Assuming No Resale[1]**

| Scenario | Increase of 1,000 kWh Residential Bill | |
|---|---|---|
| | 2014 | 2019 |
| Low Natural Gas Price | 15.2% | 9.0% |
| Base Case | 12.8% | 5.6% |
| High Natural Gas Price | 10.4% | 2.3% |

[1] No adjustment for the value of avoided capacity. Includes zero value for environmental attributes.

**73. Please refer to GRU's response to Interrogatory 55 of Staff's Second Set of Interrogatories. In footnote #6, GRU states that the $CO_2$ emission values for Gainesville Renewable Energy Center are presented as net $CO_2$ values. Please respond to the following:**

**a. Please define "net $CO_2$ values" as used in this response.**

**Response to Interrogatory No. 73a:**

As opposed to energy derived from fossil fuels such as coal, oil and natural gas, biomass energy does not contribute to climate change. Biomass energy does not add new carbon to the active carbon cycle unlike fossil fuels which remove carbon from geologic storage. In addition, the biogenic carbon emissions emitted from biomass facilities would have been released back into the atmosphere through some other fate or mechanism such as natural decay or an alternative disposal method such as open-burning or landfilling. It is

important to note that biomass material which is left to decay naturally releases carbon in the form of carbon dioxide as well as methane, which is between 20 and 25 times more potent as a greenhouse-gas than carbon dioxide.

Since biomass energy facilities, like GREC, are considered to employ a "zero-greenhouse-gas-emitting technology" which is "carbon-neutral" for the reasons mentioned above, GREC is not expected to add any net carbon to the atmosphere. Therefore, as stated in our response to Interrogatory 55, GREC's net $CO_2$ emissions are zero.

**b. Please explain or describe whether GRU is asserting that the Gainesville Renewable Energy Center will be a non-carbon emitting facility.**

**Response to Interrogatory No. 73b:**

Neither our footnote in Interrogatory 55 nor our response to subsection "a" above should be misconstrued to imply that we are asserting that GREC will be a non-carbon emitting facility. The combustion of biomass material at GREC will result in the formation of $CO_2$ emissions. What we are conservatively asserting is that GREC's carbon emissions will be treated as if the facility was carbon neutral. Research as described below actually asserts that biomass power plants may actually be carbon negative.

As we stated above, the greenhouse-gas emissions produced by biomass generating facilities come from carbon that is already a part of the linked atmospheric-biospheric carbon cycle. This is in stark contrast to burning a fossil-fuel such as coal because that process essentially removes carbon from permanent geologic storage and adds it as net new carbon to the carbon already in the atmosphere. In accordance with most, if not all climate change/environmental organizations like the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), The Climate Registry, and the United States Environmental Protection Agency, it is assumed that the biomass material burned is produced in a sustainable manner, which is the case for GREC. This means that the combusted biomass is replaced by growing biomass, which in turn reabsorbs the same amount of atmospheric carbon as was given off by the combusted material. In this manner, the carbon cycle is essentially closed and the atmosphere sees no net increase in carbon dioxide.

Additionally, the National Renewal Energy Laboratory (NREL), which is part of the U.S. Department of Energy (DOE), produced a report in June 2004 ("Biomass Power and Conventional Fossil Systems with and without $CO_2$ Sequestration – Comparing the Energy Balance, Greenhouse Gas Emissions and Economics") which analyzed the use of biomass in the generation of electricity. One of the cases studied was the same as the project proposed by American Renewables for GREC. In that case, the biomass was burned in a boiler in a controlled manner instead of being landfilled or allowed to decompose in the field. This avoids the production of methane, which has a greenhouse warming potential about 20 to 25 times that of $CO_2$. Because of this, the biomass power

plant resulted in a negative Greenhouse Warming Potential (GWP) of -410 g $CO_2$-equivalent/kWh of electricity produced. In other words, the biomass system provides a 148 percent reduction in Greenhouse Warming Potential when compared to the same size coal fired unit, or about a 120 percent reduction when compared to the same sized natural gas fired unit.

All alternative disposal methods for biomass and residue produce higher levels of harmful greenhouse gases than the use of biomass for electricity production. Alternatives include landfill, spread, composting, open burning or materials left for overgrowth.

c. **Please explain or describe whether the carbon emissions associated with fuel transportation are included or excluded, and the reasoning for including or excluding.**

**Response to Interrogatory No. 73c:**

To put the issue in proper context, it should be noted that fuel is consumed in the shipping of natural gas (to run compression stations) and the transport of coal. Typically these factors are not included in analyses of various electrical generation technologies because of the site specific nature of the calculations. GRU estimates that less than 40 lbs $CO_2e$ per MWh will be emitted from the diesel fuel consumed in the chipping and shipping of biomass for GREC, on a distance weighted basis. This is roughly 2 percent of the $CO_2e$ emitted from coal and 4 percent of the amount emitted from a natural gas fired facility. Given the margins of 148 percent to 120 percent negative carbon compared to the emissions of coal and gas facilities respectively, GRU believes that GREC is still carbon neutral when transportation and production energy costs are factored in.

74. **Please supply the annual and cumulative net revenues that would be received from RECs through the Gainesville Renewable Energy Center during the contract period, and please use 2009 NPV and nominal values.**

**Response to Interrogatory No. 74:**

In the absence of a Renewable Portfolio Standard or a well-developed market for RECs, no monetary values were assumed for RECs from the Gainesville Renewable Energy Center in the economic analyses of the project presented in the Gainesville Renewable Energy Center Need for Power Application (Exhibit No. __ [GREC-1]). Any REC revenues received from the project would increase the value of the project to GRU ratepayers.

75. **Please supply the REC prices ($/MWh) that would be generated from the Gainesville Renewable Energy Center, and please use 2009 NPV and nominal values.**

**Response to Interrogatory No. 75:**

In the absence of a Renewable Portfolio Standard or a well-developed market for RECs, no monetary values were assumed for RECs from the Gainesville Renewable Energy Center in the economic analyses of the project presented in the Gainesville Renewable Energy Center Need for Power Application (Exhibit No. __ [GREC-1]. Any REC revenues received from the project would increase the value of the project to GRU ratepayers.

As Florida does not currently have a state-level renewable energy/portfolio standard, and the United States does not currently have a national-level renewable energy/portfolio standard, if GREC were operating today in 2009, the only renewable energy credits that it would be producing would be voluntary RECs associated with a program like Green-e or something similar. Currently, these voluntary RECs are valued at slightly more than $1/MWh. However, in 2008, Governor Crist signed into law House Bill 7135 which requires the Florida Public Service Commission to develop a Renewable Portfolio Standard. In addition to activities at the state-level, the US Congress is currently debating H.R. 2454, the American Clean Energy and Security Act of 2009 (also referred to as the Waxman-Markey bill) which could implement a national-level renewable portfolio standard.

If we look to other mandatory renewable portfolio standards that have been in place throughout the US for numerous years, we can see that RECs throughout New England are valued anywhere from $20/MWh to $40/MWh, depending on the particular state and classification year.

76. **Please complete the following table describing the total cost of the proposed project to American Renewables, LLC.**

| Capital | O&M | Administrative Costs | Tax Credits | Rebates | Other |
|---|---|---|---|---|---|
| | | | | | |

**Response to Interrogatory No. 76:**

Please see the completed table below, which presents the requested information. Please note that certain information requested in this Interrogatory is confidential, proprietary business information and has therefore been redacted.

| Capital[1] | O&M[2] | Administrative Costs[3] | Tax Credits[4] | Rebates | Other |
|---|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | N/A | N/A |

1. As stated in our response to Interrogatory 55, the amounts listed here represent the total installed costs of GREC.
2. This amount is an annual amount, not a capital cost, and includes both fixed and variable O&M expenses. It does not include any expense for fuel which is assumed to be a pass-through under the terms of the PPA between GRU and GREC LLC.
3. This amount is an annual amount, not a capital cost.
4. Assumes that GREC qualifies for the 30 percent ITC or the Renewable Energy Grant. The 30 percent ITC is not applied against the full capital cost, but rather only against the "qualifying" costs of the project as defined by the US Department of Treasury. Depending on when construction begins and ends on GREC, the amounts listed here may be in the form of tax credits or cash.

77. **Please define the weighted average cost of capital American Renewables, LLC proposes to use for purposes of this project. For purposes of this response, identify the capital structure components, amounts, relative percentages, cost rates, and the weighted average cost of capital on a pretax and after tax basis.**

**Response to Interrogatory No. 77:**

American Renewables, LLC will be pursuing a traditional project financing structure for the GREC project. It is estimated that construction will be funded by roughly 70 percent long-term bank debt and the remainder by a third-party equity sponsor. At present, it is believed that an all-in pre-tax cost of debt of 8 to 9 percent and a pre-tax equity yield of 16 to 18 percent are reasonable baseline assumptions. It is important to note, however, that with potentially twelve months ahead before close of financing, these assumptions are subject to change and reflect current conditions. With capital structure and pricing as above, the after-tax WACC would range between 8.22 percent and 9.24 percent, assuming a corporate tax rate of 39 percent.

In addition, at or before the commercial operation date, American Renewables hopes to bring in a tax-oriented investor who can monetize the tax benefits (i.e. Investment Tax Credit and accelerated depreciation) that GREC is eligible to receive. The analysis above does not include this tax equity because American Renewables do not believe that syndication of such a significant amount of tax equity will be possible in this market environment.

**78. Please supply the following information for American Renewables, LLC:**

**a. Annual and Levelized cost of the project (¢/kwh)**

**Response to Interrogatory No. 78a:**

Please note that the requested information is confidential and has therefore been redacted. The levelized cost of the project is expected to range from [redacted] to [redacted] depending on the total installed cost of the project as well as the terms of the project financing. These amounts do not include the fuel cost which is assumed to be a pass-through under the terms of the PPA between GRU and GREC LLC.

**b. Annual revenue ($)**

**Response to Interrogatory No. 78b:**

Please note that the requested information is confidential and has therefore been redacted. First year annual revenue for GREC LLC is expected to be [redacted]. The average annual revenue for GREC is expected to be [redacted]. This amount assumes that the fuel cost is a pass-through.

**79. Please refer to GRU's response to Interrogatory 60 of Staff's Second Set of Interrogatories.**

**a. Please explain or describe how GRU's customers were informed of or educated about the estimated bill impact of the proposed Gainesville Renewable Energy Center, and please supply all pertinent supporting details.**

**Response to Interrogatory No. 79a:**

GRU's customers were informed by:

1. Thirty seven (37) televised presentations to the Gainesville City Commission and subsequent media articles for the period 2002 to 2009 which addressed the relative merits of various energy supply and demand side management options. Note that a presentation made on March 3, 2006 specifically addressed the customer bill effects of various generation alternatives but the GREC facility was not under consideration at that time.

2. A detailed and specific PowerPoint presentation including customer bill impacts of the GREC power purchase agreement under various scenarios was presented to the Gainesville City Commission at a televised public meeting on May 7, 2009. It should be noted that the seven City Commissioners voted unanimously at that meeting to approve the contract between GRU and GREC LLC. This presentation was video recorded and is still accessible to the public to be seen and

heard on the City of Gainesville's web site. Please refer to the enclosed document titled Attachment 79a, which presents a copy of the PowerPoint presentation discussed previously in this response.

3. A comprehensive front page article (above the centerfold) in the Gainesville Sun included rate effects in a highlighted offset box on May 8, 2008.

4. A customer information article citing that the proposed biomass fueled facility would result in increases to fuel adjustment when the plant initially came online was posted on GRU's website (www.GRU.com) with a "click to go there" link to the PowerPoint presentation described in Item 2 (above) within a few days following the May 7 2009 City Commission meeting. The link to that presentation is currently still active.

5. All GRU's residential and commercial customers (approximately 93,000) were notified in their June 2009 monthly customer bulletin bill insert of the decision that had been made and notifying them of a future fuel adjustment increase when the biomass plant initially comes on-line.

The PowerPoint presentation and documentation of the City Commission meeting on May 7, 2009 as well as the link to the video recording has been provided in the response to the Production of Documents Request No. 14. Also included are the newspaper article from May 8, 2009, the customer information article posted on GRU's web site, and a copy of the customer bulletin mailed out to all residential and commercial customers during the June billing cycle. Following is a more detailed description of these customer information items.

Long Term Public Outreach. GRU's numerous presentations made at over seventy (70) public outreach meetings during the development of its Integrated Resource Plan during the years 2004 through 2008 often compared the production costs of various forms of electrical production and energy conservation, with the obvious implications this had on utility bills. Thirty seven (37) of these presentations were made at City Commission meetings which were televised on the local public access television station. Video recordings of presentations made since October 2007 are available to the public for viewing on-line on the City of Gainesville's web site. Please note that the index to presentations included on the disk with POD 9a was found to be incomplete, and three commission presentations (one each from 2005, 2007, and 2008) were not included. The listing of video recordings submitted as POD 9c did not indicate which were available on the Web. GRU will supplement the response to POD 9a with the missing presentations, the complete index, and a modified video index.

Customer Bill Impacts. Detailed and specific bill impacts were presented at the May 7, 2009 City Commission meeting. This presentation has been provided in full in digital format under Production of Documents (POD) 9a under the Calendar Year 2009 folder, and summarized in Section 15 of the GREC Need for Power Application (Exhibit No. ___

[GREC-1]). The shape of the cost curves of GREC compared to Florida's wholesale market for firm capacity and energy as well as risk factors that would affect bill impacts were addressed on pages 21 to 32 of the May 7, 2009 City Commission presentation and the results of the risk assessment performed by the GRU staff are summarized in the tables included on pages 33 through 36. To aid in the complete comprehension by both the City Commission and the public watching on television, the results of the GRU staff studies were expressed as the effect on a 1,000 kWh residential bill which is slightly above the average monthly consumption. The results were expressed for 2014 (the first full year of GREC operation) and 2019 (five years later) in both dollars per month and as a percentage. For the purposes of future bill comparisons electrical costs were assumed to escalate at 2.5 percent annually.

The incremental risk factors studied and presented both individually and cumulatively in the tables on pages 33 through 36 included:

- High, base, and low natural gas price forecasts;
- Net effect after fuel savings;
- Effect of prepayment structures;
- Effect of either a zero or $12/MWh value of environmental attributes;
- The present value of capacity avoided in 2023
- Indirect benefits from taxes paid by off-system resale of output;
- Missing the ITC Grant deadline of 1/1/2014 for commercial operation
- Expiration of the federal production tax credit.

It should be noted that the value for environmental attributes of $12/MWh employed by GRU in the May 7, 2009 presentation was quite conservative. The Energy Information Administration evaluation of H.R. 2454 entitled *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009*, published in August 2009 and employed for the scenarios evaluated in the GREC Need for Power Application (Exhibit No. __ [GREC-1]) suggest significantly higher numbers. The EIA 2009 report modeled the effects of H.R. 2454 on the value of carbon offsets adjusted for the effects of the economic stimulus package. This study yields results of $20.90/MWh to $61.43/MWh for the value of carbon offsets in 2014, and values of $33.79/MWh to $99.31/MWh in 2019 (assuming GRU's current average carbon content of electricity of 0.85 metric tons per MWh), more than double GRU's scenario assumptions.

Internet Publicity. A customer information article citing that the proposed biomass fueled facility would result in increases to fuel adjustment when the plant initially came online was posted on GRU's website (www.GRU.com). The piece was posted within a few days and included a "click to go there" link to the PowerPoint presentation made to the Gainesville City Commission on May 7, 2009 as described above. A link to that presentation is currently still active on GRU's web site under "About Us" then "News" as follows:

http://www.gru.com/AboutGRU/NewsReleases/Archives/Articles/news-2009-05-07.jsp

Customer Bill Insert. All GRU's residential and commercial customers (approximately 93,000) were notified in their June 2009 monthly customer bulletin of the decision that had been made and notifying them of a future fuel adjustment increase when the biomass plant initially comes on-line. The bill insert also included information to assist customers that might want to visit GRU's web site.

**b. Please explain or describe the dates when GRU's customers were informed of or educated about the estimated bill impact of the proposed Gainesville Renewable Energy Center, and please supply all pertinent supporting details.**

**Response to Interrogatory No. 79b:**

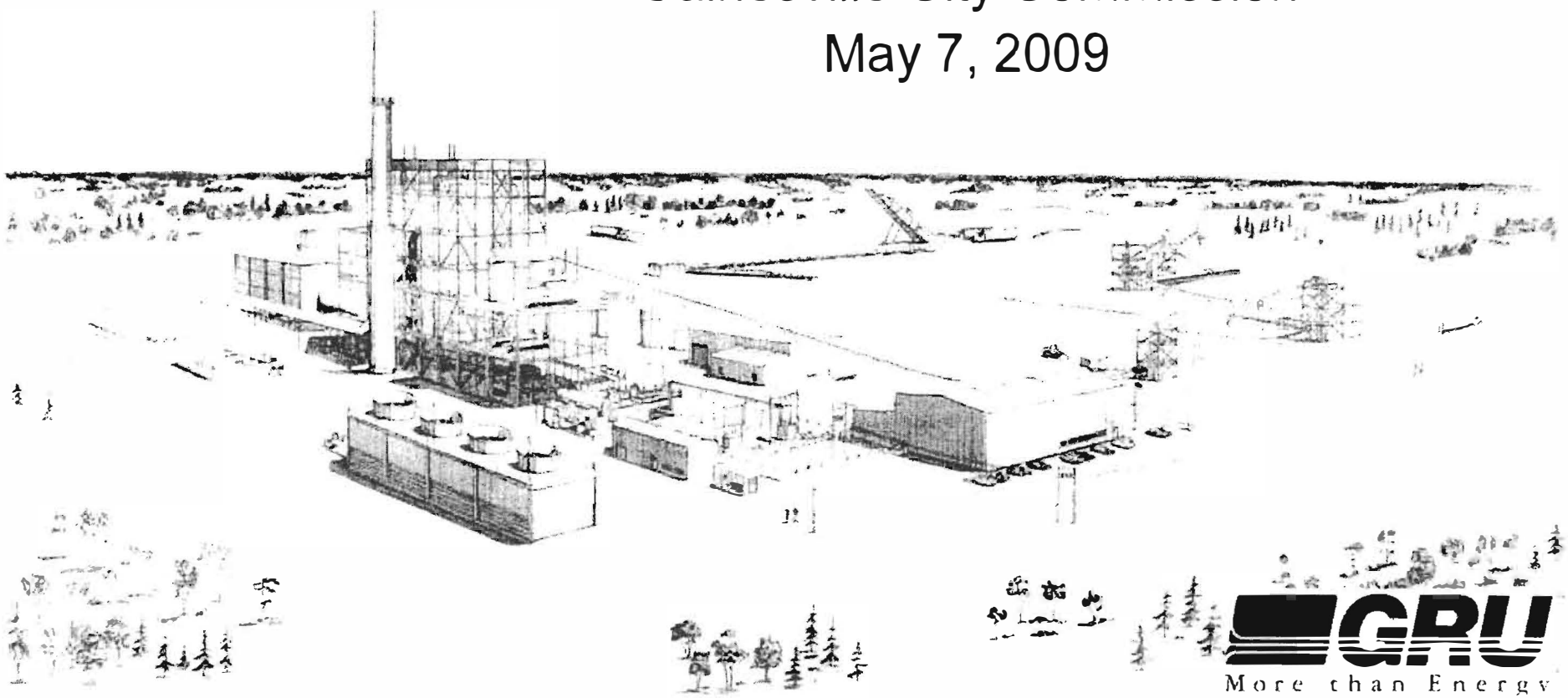
The official record of the actions taken by the City Commission on May 7, 2009 have been provided digitally as part of the response to POD No. 9b and the links to the video recording of the meeting as broadcast were included in the response to POD No. 9c and the May 8 2009 press coverage was presented in response to POD No. 9i. The front page (above the centerfold) article published in the Gainesville Sun on May 8 2009 (see response to POD No. 9i) featured the bill increases in 2014 and 2019 as a boxed item on the front page (above the centerfold). The web information was posted a few days after May 7, 2009, and customer bill inserts were sent out during the June billing cycle. Copies of the May 7, 2009 Gainesville City Commission presentation, the Gainesville Sun article from May 8, the information piece posted on the web, and the customer bill insert are being submitted in response to POD No.14.

Docket No. 090451
Response to Staff's Third Set of Interrogatories
Attachment 79a

GENERAL MANAGER REGULAR ITEM #081036

# Contract For Biomass-Fueled Generation

Presentation to the
Gainesville City Commission
May 7, 2009



GRU
More than Energy

090451 Hearing Exhibit - 000124

# Presentation Outline

- Project History And Description
- Market Changes
- Adjustments To Original Proposal
- Economic Risk Assessment
  - Compare to market purchases
  - Long term generation plans
  - Short term effects on fuel adjustment
- Next Steps
- Recommendation

090451 Hearing Exhibit - 000125

# Project History

| Date | City Commission Actions |
|---|---|
| Jun 2005 | Entered Climate Protection Agreement |
| Apr 2006 | Selected Biomass for Next Generation |
| Jan 2007 | Short Listed Biomass Proposals |
| May 2008 | Selected Nacogdoches Biomass Proposal (Now Gainesville Renewable Energy Center LLC)<br>- Authorized General Manager to negotiate and execute Power Purchase Agreement |
| 2008-2009 | Significant Market Changes |
| April 9, 2009 | Forest Stewardship Plan Approved |
| April 29, 2009 | Final Contract Signed by General Manager<br>- Subject to Ratification by City Commission |

090451 Hearing Exhibit - 000126

# Gainesville Renewable Energy Center, LLC (GREC) Project Description

- Facility
  - 100 MW (net) power plant on Deerhaven site
  - Bubbling fluidized bed boiler and steam turbine
  - Particulate and $NO_X$ control
  - Zero water discharge
- Fuel
  - Clean wood from:
    - Timber harvest residuals
    - Urban forestry and land clearing
    - Mill residue
    - Storm/diseased biomass debris
  - Ash 100% recycled
- Contract
  - Pay for performance
  - 30 years, fixed pricing (except fuels & some O&M)

090451 Hearing Exhibit - 000127

# Gainesville Renewable Energy Center, LLC (GREC) Project Description

(Continued)

- American Renewables (www.amrenewables.com):
  - Energy Management Inc. 25.5% share
  - BayCorp Holdings Ltd. 25.5% share
  - Tyr Energy 49.0% share
    - Subsidiary of ITOCHU Corporation
  - Will own and operate the Gainesville Renewable Energy Center LLC
- GRU Opted for 100% of Output
  - More than needed initially
  - Third party participant for 50 MW, 10 years

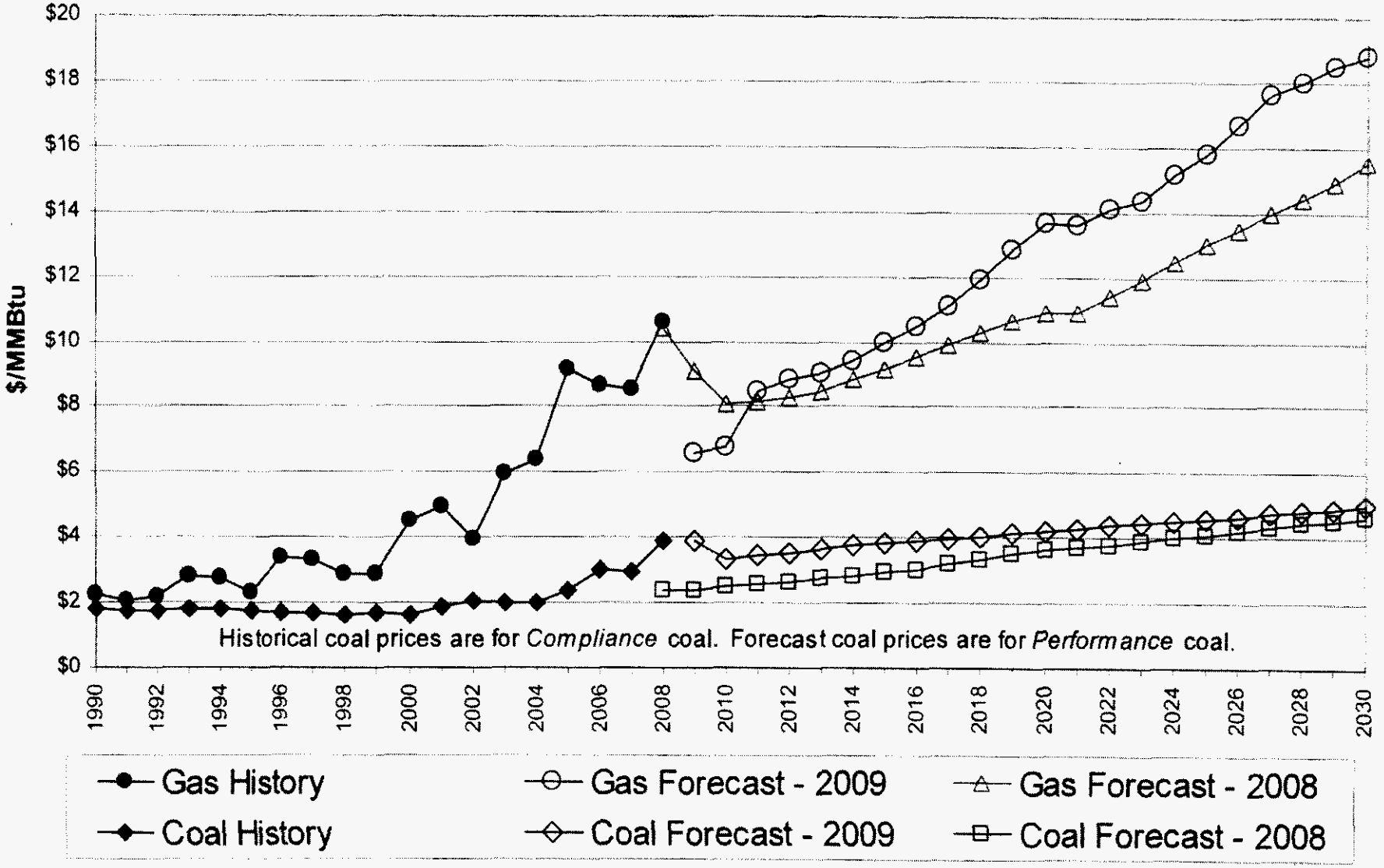
090451 Hearing Exhibit - 000128

# Market Changes

- Fuel Prices
- Load And Energy Forecasts
- Construction Costs

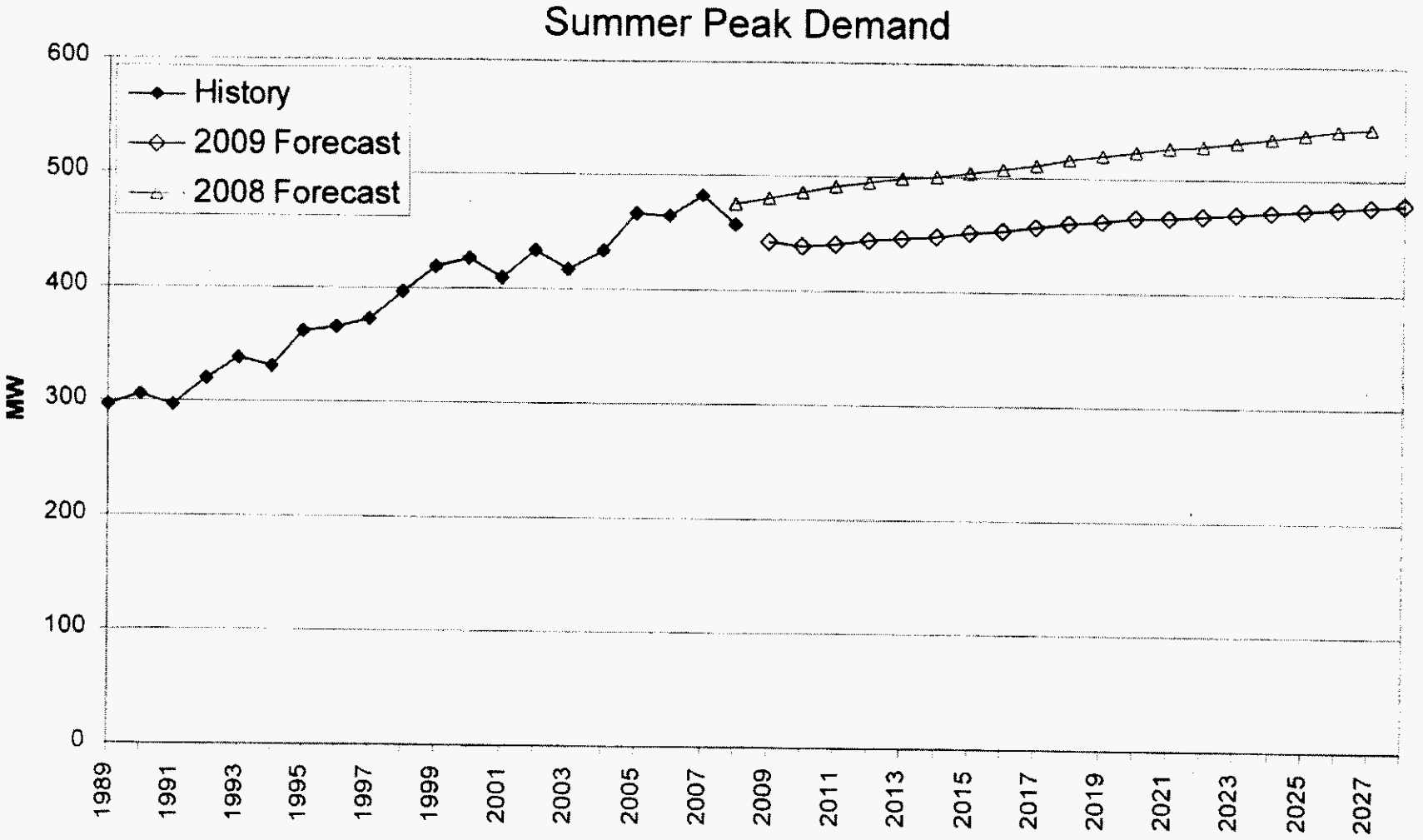
090451 Hearing Exhibit - 000129

# Changes In Fuel Markets



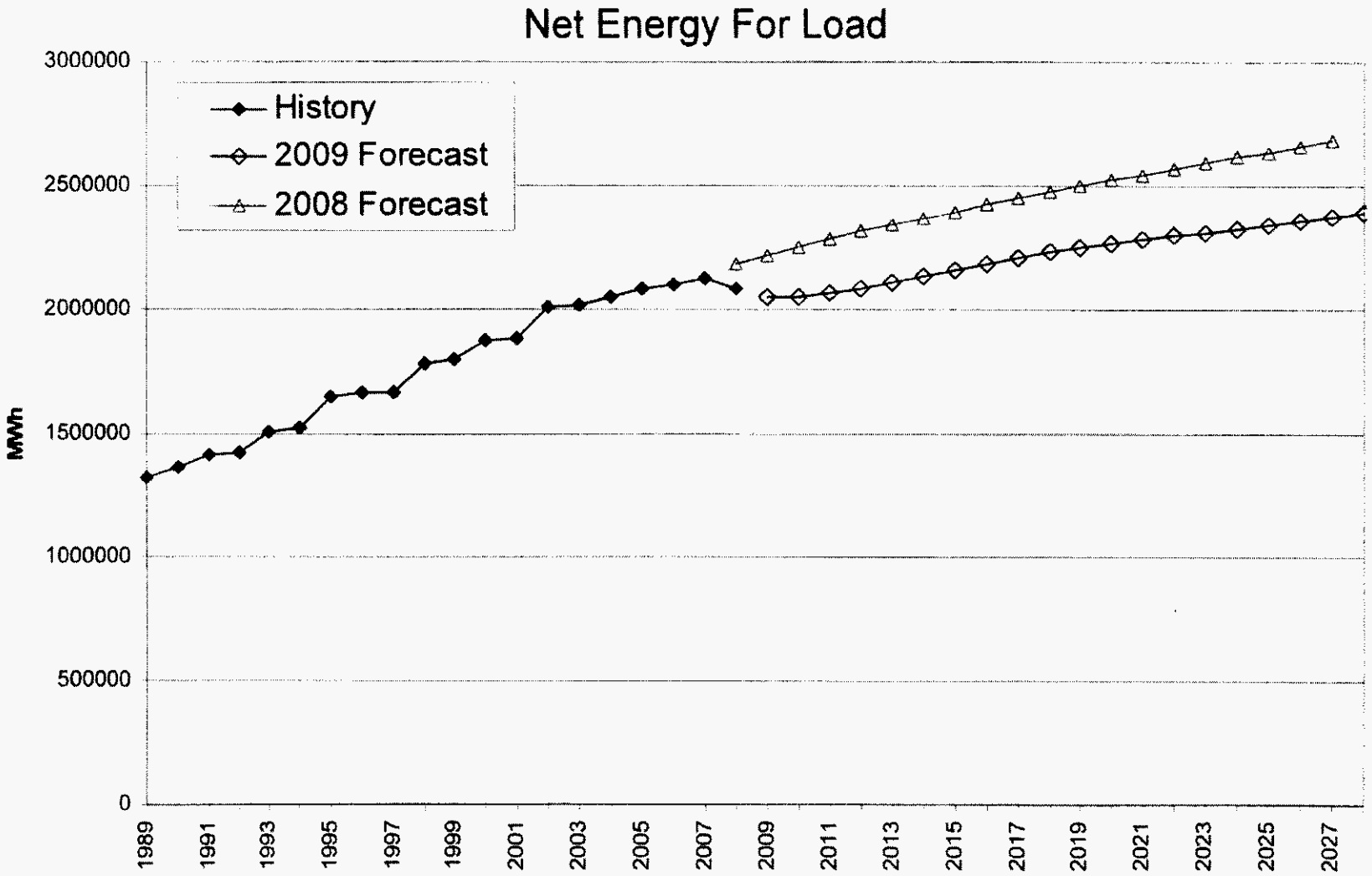

090451 Hearing Exhibit - 000130

# Changes in Load & Energy Forecasts



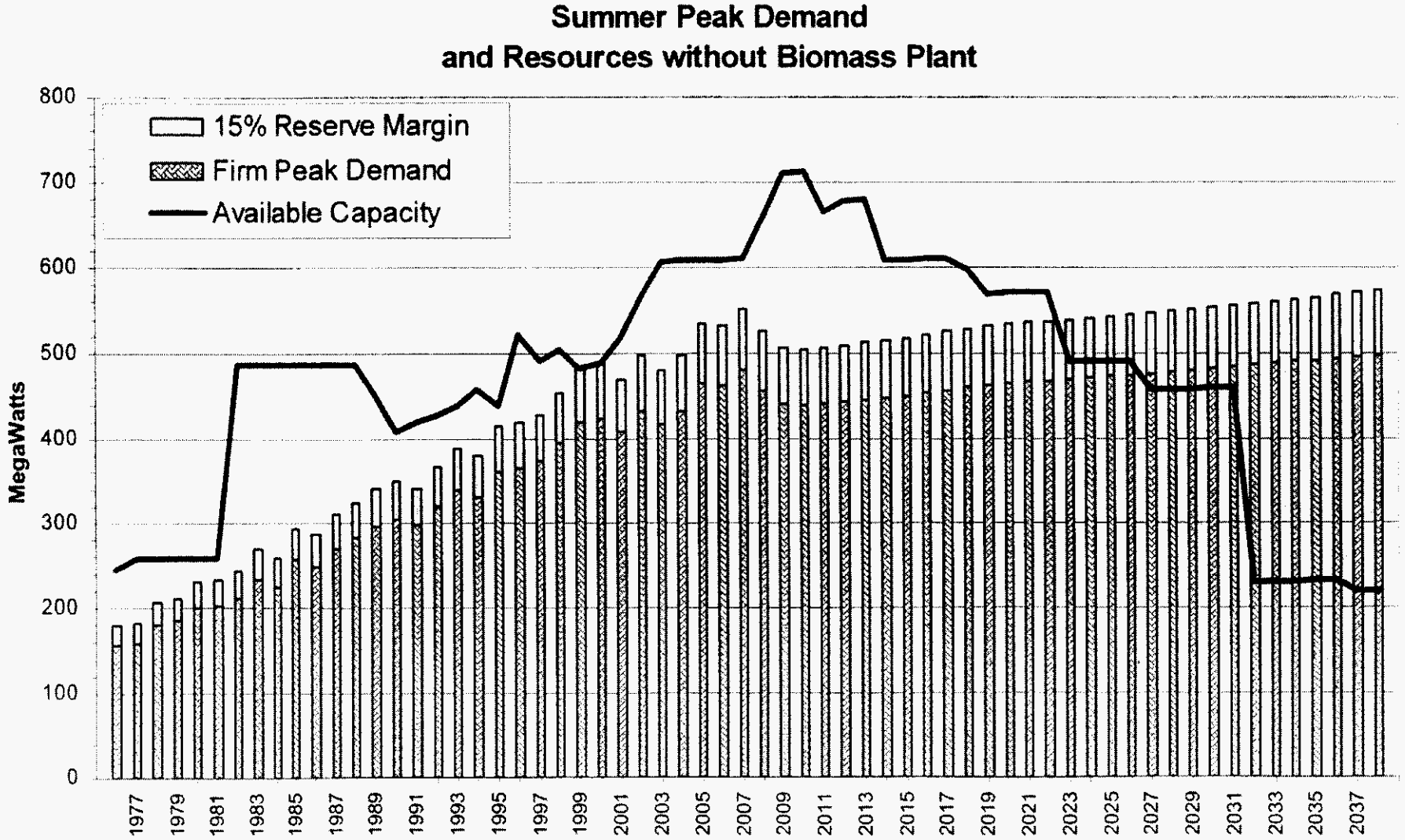

090451 Hearing Exhibit - 000131

# Changes in Load & Energy




090451 Hearing Exhibit - 000132

# Need For New Generation Delayed




090451 Hearing Exhibit - 000133

# Unprecedented Events in the Power Industry In 2008

- Construction Material Prices Skyrocketed
- Global Demand For Power Generation Equipment Increased
- Equipment And Construction Cost Rose
- Credit Crisis
- Dollar Continued To Fall Against Foreign Currencies

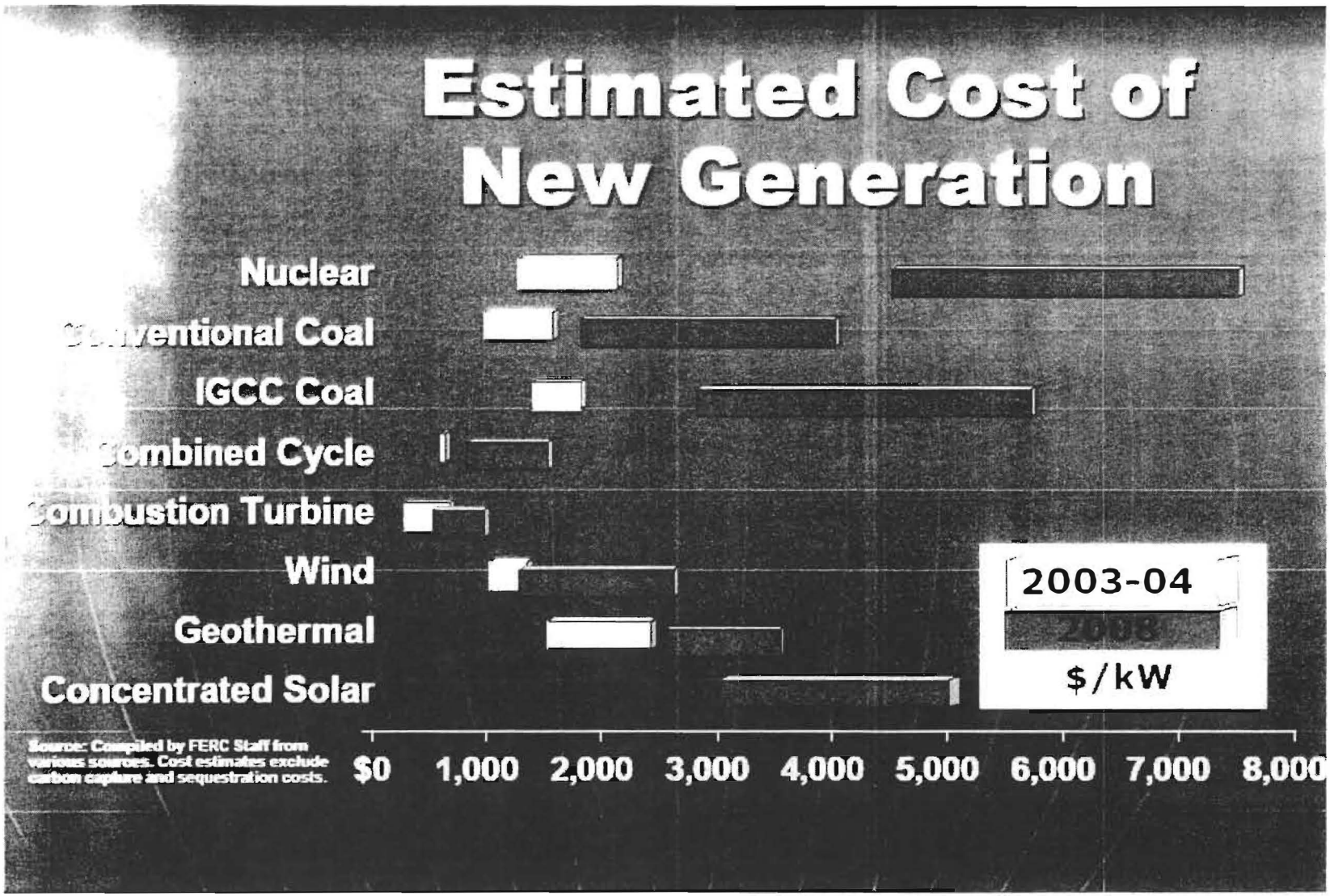
090451 Hearing Exhibit - 000134

# Steel Prices

- Steel Prices Increased 37% From January 2008 To June 2008
- More Than 75% Of The Price Increase Occurred From March To June
- Construction Companies Have Reported Increases Of 30% - 100% For Steel Products

090451 Hearing Exhibit - 000135

# All Types of Generation Increased in Cost




090451 Hearing Exhibit - 000136

# Adjustments To The Original Proposal From American Renewables

- Pricing
  - 2014 Cost Per MWh Increased
    - 17.9% with ITC Grant
    - 25.8% without ITC Grant
    - Indexed from execution to construction commencement
    - Fixed at that time
- Term
  - Increased contract length from 20 to 30 years
  - Fixed pricing
  - Fuel risk share
  - Variable O&M indexed to CPI

090451 Hearing Exhibit - 000137

# Adjustments To The Original Proposal From American Renewables

(Continued)

- Restructured To Minimize Financial Liabilities
  - Met with bond rating agencies
  - Only pay for energy produced
  - Designed for 3rd party prepayment contract
- Right Of First Offer And Buy Out Option
- Capacity Guarantee Enhanced
  - 95% available summer
  - 90% annual average

090451 Hearing Exhibit - 000138

# Economic Risk Assessment

- Project Costs And Benefits
- Risk Factors
- Comparison To Natural Gas Combined Cycle
- Long Term Generation Optimization Studies
- Short Term Effects On Fuel Adjustment

090451 Hearing Exhibit - 000139

# Project Costs And Benefits

- Project Costs
  - Capital, labor, facility maintenance, renewal and replacement
    - Fixed 30 years
  - Variable Costs (i.e. chemicals, auxiliary power)
    - Indexed to CPI
    - Wholesale Power Contract for auxiliary power
  - Fuels
    - Long term contracts
    - Some exposure to diesel and labor costs
    - Shared price risk

090451 Hearing Exhibit - 000140

# Project Costs And Benefits

(Continued)

- Tangible Property Taxes
  - Pass through
  - Prorated based on performance
- Pay For Performance
  - Satisfies rating agencies
- Avoids More Expensive Fuels
  - Best to grow into capacity
- Meets All Anticipated Renewable Portfolio Standard Requirements
  - 20% Renewable by 2014 @ 50% of output

090451 Hearing Exhibit - 000141

# Project Costs And Benefits

(Continued)

- Offsets Potential Cost of Carbon Taxes or Cap and Trade Programs
  - Worth $11 to $15 per MWh (Waxman-Markey Bill)
  - Has not happened yet
- Creates Over 500 New Jobs In The Region
- Adds Over $5,500,000/year to Local Tax Base in Tangible Property Taxes
  - Excluding City of Gainesville tax revenues
  - Initially half from out of county participants

090451 Hearing Exhibit - 000142

# Project Costs And Benefits

(Continued)

- Substantially Reduces Open-Burning Of Waste Biomass – Cleaner Air In Region
- 100% Recycling Of Wood Ash
- Zero Surface Water Discharge
- Reduces Landfill Requirements
- Promotes Ecosystem Restoration, Fire Fuel Hazard Reduction, And Supports Silviculture
- Takes Advantage Of New Stimulus Bill Grant Opportunity
  - January 1, 2014 deadline
- Replaces Capacity Lost From Retirement Of Older Fossil Fuel Units

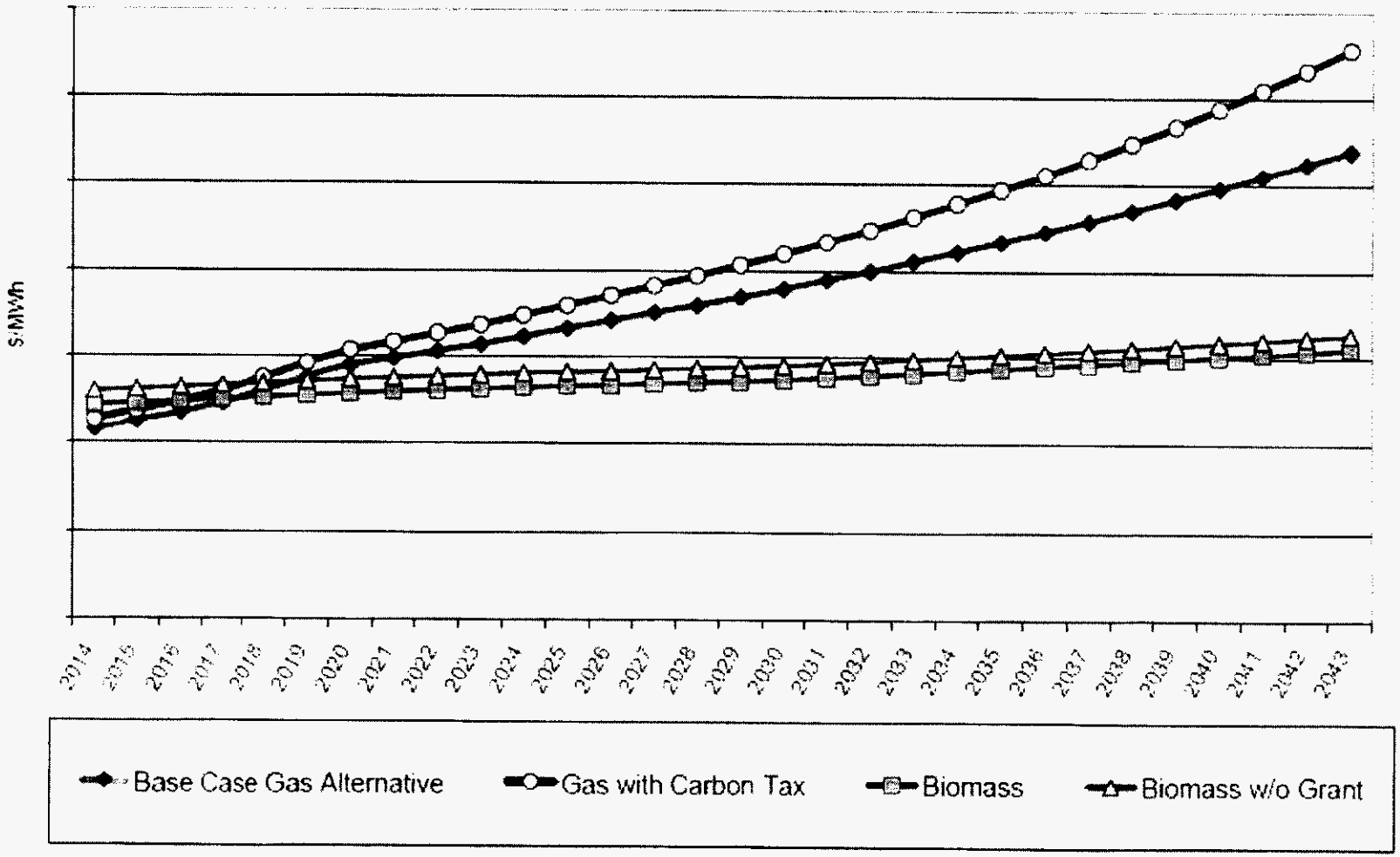
090451 Hearing Exhibit - 000143

# Risk Factors

- Need Third Party Participant For Early Years
  - Several interested utilities
- Carbon Legislation Has Not Been Enacted Yet
- The Value Of Avoided Fossil Fuel Is Fluctuating
- Missing The Deadline For ITC Grants Or Production Tax Credits (PTC)
  - PTC very likely to be extended

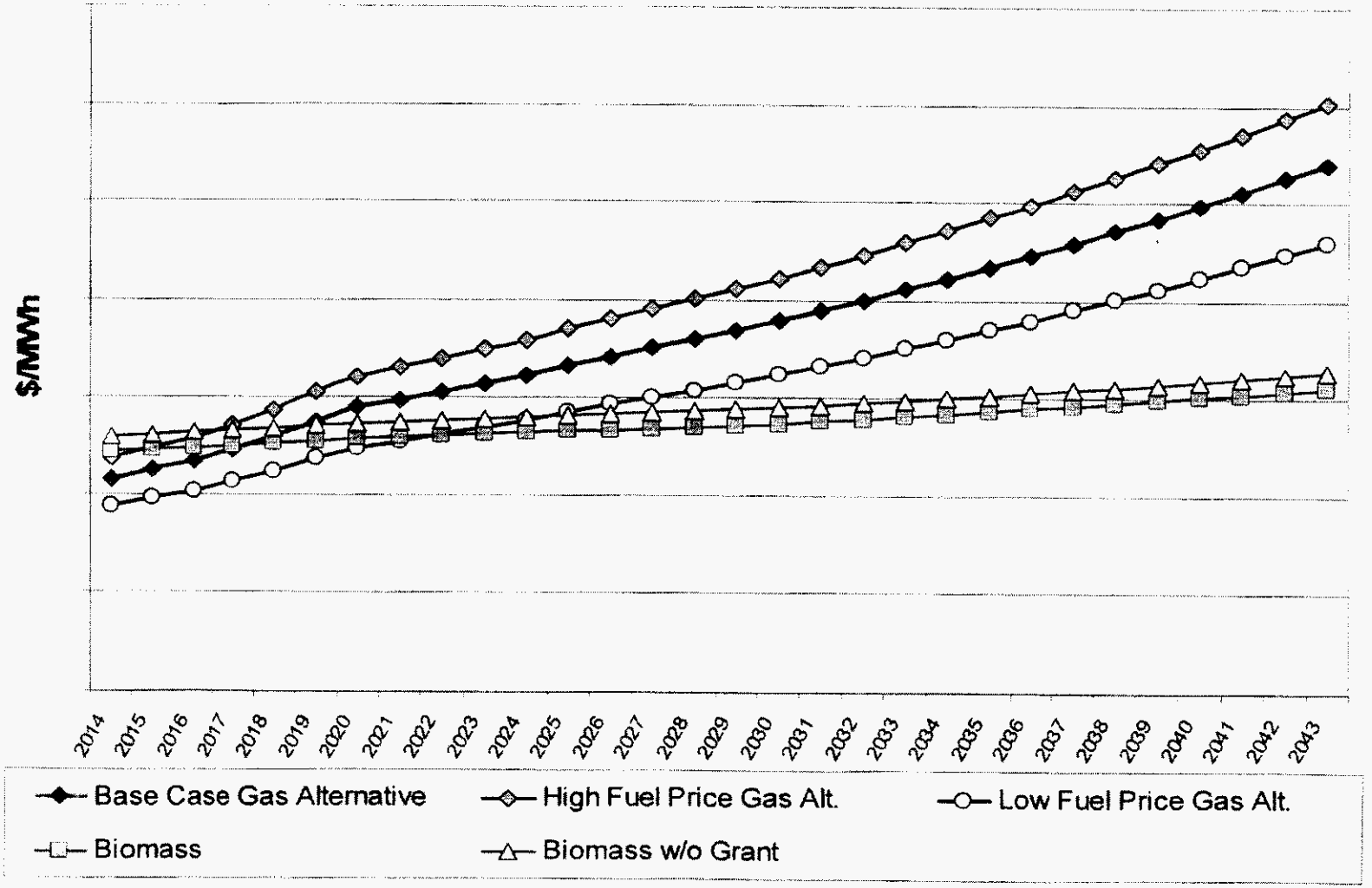
090451 Hearing Exhibit - 000144

# Comparison Of Biomass vs. Gas Fueled Market Purchase




090451 Hearing Exhibit - 000145

# Biomass vs. Gas Alternative: High and Low Gas Price Forecasts




090451 Hearing Exhibit - 000146

# Long Term Generation Optimization

- 30 Year Optimization Studies Using EGEAS Modeling System
- Carbon Taxes As Low As $5.00 Per MWh Result In The Biomass Plant In 2014 Being The Best Option
- The Proposed Unit Might Increase Fuel Adjustment Charges In The Early Years But Result In Savings Over It's Life

090451 Hearing Exhibit - 000147

# Factors Affecting Short Term Fuel Adjustment And Community Values

- Direct Utility Bill Effects
  - Avoided fuel costs
  - Prepayment arrangements
  - Avoided REC and $CO_2$ regulation costs and/or revenue from selling excess
- Indirect Utility Bill Effects
  - The value of avoided capacity
  - Improved reliability and price stability
- Other Community Benefits
  - Tangible property tax
  - Job creation
  - Cleaner air

090451 Hearing Exhibit - 000148

# Biomass Plant Risk Assessment

Measured as Equivalent Effect on
1000 KWH Residential Bill
$/Month

Scenario: Base Load and Energy Price Forecast

| Parameter | 2014 Item | 2014 Cumulative Effect on Bill | 2019 Item | 2019 Cumulative Effect on Bill |
|---|---|---|---|---|
| Direct Utility Bill Cash Flows | | | | |
| Net Effect After Fuel Savings | $10.56 | $10.56 | $5.12 | $5.12 |
| Effect of Prepayment Restructure | -$2.25 | $8.31 | -$2.27 | $2.85 |
| $CO_2$ Regulation savings @ $12/MWH | -$2.22 | $6.10 | -$2.10 | $0.75 |
| Indirect Utility Bill Benefits | | | | |
| Avoided capacity in 2023 | -$4.73 | $1.37 | -$4.49 | -$3.75 |
| Other Community Benefits From Off-System Sales | | | | |
| Prop Tax Revenue for County, Schools, Library | -$1.35 | $0.02 | -$1.28 | -$5.03 |
| Other Regulatory Risk From Delay | | | | |
| Missing ITC Grant Deadline 1/1/2014 | $1.48 | $1.50 | $1.40 | -$3.62 |
| PTC Not Extended | $3.14 | $4.63 | $3.29 | -$0.34 |

090451 Hearing Exhibit - 000149

# Biomass Plant
# Risk Assessment

Measured as Equivalent Effect on
1000 KWH Residential Bill
$/Month

Scenario: 20% Lower Energy Price Forecast

| Parameter | 2014 Item | 2014 Cumulative Effect on Bill | 2019 Item | 2019 Cumulative Effect on Bill |
|---|---|---|---|---|
| Direct Utility Bill Cash Flows | | | | |
| Net Effect After Fuel Savings | $12.78 | $12.78 | $8.50 | $8.50 |
| Effect of Prepayment Restructure | -$2.25 | $10.53 | -$2.27 | $6.22 |
| $CO_2$ Regulation savings @ $12/MWH | -$2.22 | $8.32 | -$2.10 | $4.12 |
| Indirect Utility Bill Benefits | | | | |
| Avoided capacity in 2023 | -$4.73 | $3.59 | -$4.49 | -$0.37 |
| Other Community Benefits From Off-System Sales | | | | |
| Prop Tax Revenue for County, Schools, Library | -$1.35 | $2.24 | -$1.28 | -$1.65 |
| Other Regulatory Risk From Delay | | | | |
| Missing ITC Grant Deadline 1/1/2014 | $1.48 | $3.72 | $1.40 | -$0.25 |
| PTC Not Extended | $3.14 | $6.85 | $3.29 | $3.04 |

090451 Hearing Exhibit - 000150

# Biomass Plant
# Risk Assessment

Measured as Equivalent Effect on
1000 KWH Residential Bill
$/Month

Scenario: 20% Higher Energy Price Forecast

| Parameter | 2014 Item | 2014 Cumulative Effect on Bill | 2019 Item | 2019 Cumulative Effect on Bill |
|---|---|---|---|---|
| Direct Utility Bill Cash Flows | | | | |
| Net Effect After Fuel Savings | $8.34 | $8.34 | $1.75 | $1.75 |
| Effect of Prepayment Restructure | -$2.25 | $6.10 | -$2.27 | -$0.53 |
| $CO_2$ Regulation savings @ $12/MWH | -$2.22 | $3.88 | -$2.10 | -$2.63 |
| Indirect Utility Bill Benefits | | | | |
| Avoided capacity in 2023 | -$4.73 | -$0.85 | -$4.49 | -$7.12 |
| Other Community Benefits From Off-System Sales | | | | |
| Prop Tax Revenue for County, Schools, Library | -$1.35 | -$2.20 | -$1.28 | -$8.40 |
| Other Regulatory Risk From Delay | | | | |
| Missing ITC Grant Deadline 1/1/2014 | $1.48 | -$0.72 | $1.40 | -$7.00 |
| PTC Not Extended | $3.14 | $2.41 | $3.29 | -$3.71 |

090451 Hearing Exhibit - 000151

# Biomass Plant: Economical Over Long Term

- Short Term Effect on Typical Residential Bill

| | 2014 | 2019 |
|---|---|---|
| High Fuel Prices | 2.7% | -1.6% |
| Base Case | 4.3% | 0.5% |
| Low Fuel Prices | 5.8% | 2.5% |

(negative value indicates bill reduction)

- Long Term – Reduced Bills
  - Avoided Capacity Benefit
  - Increasing Fossil Fuel Prices

090451 Hearing Exhibit - 000152

# Next Steps

- Establish Zoning For Current Deerhaven Site
  - Include Solar
  - Allow industrial symbiosis
- Need Certification From The FPSC
  - GRU's lead responsibility
- Obtain Site Certification
  - GREC's responsibility
  - Transportation
  - Air
  - Water
- GREC Obtains Financing
  - Requires firm fuel contracts
- Commence Construction
- Capacity And Operational Testing

090451 Hearing Exhibit - 000153

# Recommendation

The City Commission:

1) approve the Power Purchase Agreement (PPA) between the City and Gainesville Renewable Energy Center, LLC for power generated by the nominal 100MW biomass generating plant; and
2) authorize the General Manager or his designee to execute such documents and take all steps as may be necessary to implement the terms of the PPA, including but not limited to filing of all required applications with jurisdictional governmental bodies and agencies; and, the lease of and easements over portions of the Deerhaven Generating Station site necessary for the construction and operation of the biomass generating plant.

090451 Hearing Exhibit - 000154

CITY OF GAINESVILLE FLORIDA

# Questions

GRU℠ More than Energy™

090451 Hearing Exhibit - 000155

# 4

# GRU/GREC LLC's Responses to Staff's First Request for Production of Documents (No. 1, items 1-5 and 7; No. 2, items 2-6; and Nos. 3-8)

## DOCUMENTS REQUESTED

1. **Please provide the purchase power agreement, including all correspondence between Gainesville Renewable Energy Center and Gainesville Regional Utilities.**

**Response to Request No. 1**

Please refer to the enclosed CD labeled "GRU Disk # 2 Non-Confidential Responses POD # 1 & POD # 2." The CD includes all documents in response to Production of Documents Request Nos. 1 and 2 that are not considered confidential, proprietary business information by GREC LLC.

A second CD has been prepared and it includes all documents in response to Production of Documents Request Nos. 1 and 2 that are considered confidential, proprietary business information by GREC LLC. Florida Public Service Commission Staff may examine the contents of this CD in the offices of Young van Assenderp, P.A. (located at 225 South Adams Street, Suite 200, Tallahassee, Florida 32302-1833) and any documents selected by Staff for retention will either be redacted or provided under confidentiality.

**ADDENDUM NO. 1**
**BIOMASS FUELED GENERATION FACILITY**
**Request for Proposals 2007-135**

DATE: November 19, 2007

PROPOSAL DUE DATE: December 14, 2007 @ 2:00 p.m.

NOTE: This addendum has been posted on the GRU website where the original RFP was posted. Only respondents to that posting have been notified via email. The original Specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

RFP 2007-135, Biomass Fueled Generation Facility:

Section 5.0 SUBMISSION OF PROPOSALS
Add the following sentence:
"Three separate CDs containing electronic pdf. files of the Proposal shall be included."

Section 25.0 SUSTAINABLE FOREST RESOURCE I
Should read, "SUSTAINABLE FOREST RESOURCE MANAGEMENT"

Section 30.0 EVALUATION CRITERIA
Item (l). Delete "Project Risk Profile" and substitute "Proposer's Financial Strength".
Item (n). Delete "Ability to execute the project" and substitute "Local Economic Impact"

From the Pre-proposal Meeting held November 9, 2007, a question was raised about the use of metcoke. GRU's response is process additives other than coal and petroleum coke that are not biogenic may be included for consideration if it can be shown that their addition is less than ten percent (10%) by weight, needed for the process, and that the price of the additive is such that it is not being added to reduce the production cost of energy.

A.J. Sontag, C.P.M.
Senior Buyer
Utilities Purchasing

ACKNOWLEDGEMENT:
Each Bidder shall acknowledge receipt of this Addendum No. 2 by signature below, and shall attach a copy of this Addendum to its bid.

CERTIFICATION BY BIDDER
The undersigned acknowledges receipt of this Addendum No. 1 and the Bid submitted is in accordance with the information, instructions and stipulations set forth herein.

Bidder: _____

By: _____

(352) 334-3400 ext. 1240 P.O. Box 147117, Station A130, Gainesville, Florida 32614-7117 Fax: (352) 334-2989

# ADDENDUM NO. 2
# BIOMASS FUELED GENERATION FACILITY
# Request for Proposals 2007-135

DATE: February 15, 2008

BINDING PROPOSALS DUE DATE: April 11, 2008 @ 2:00 P.M.

## DISCOVERY SESSIONS

Discovery sessions have been scheduled (local time) as follows:

| | | |
|---|---|---|
| Nacogdoches Power, LLC | Thursday | 2/21/08, 1:00 - 5:00 |
| Sterling Planet, Inc. | Friday | 2/22/08, 8:00 12:00 |
| Covanta Energy Corp. | Friday | 2/22/08, 1:00 - 5:00 |

The purpose of the discovery session is to afford Proposers the opportunity to ask questions about the project, including, but not limited to GRU's goal, intent and constraints to gain a better understanding of the business issues and circumstances driving this project. The questions and answers will not be documented or provided in an addendum unless GRU deems the information to be material to the specifications of the RFP. If GRU determines certain information discovered during the session to be material to the RFP, such information will be issued to all Proposers in the form of an addendum. Documented information contained in the RFP and addenda shall take precedence if any conflict arises between the RFP, addenda, and understanding a Proposer may take away from the discovery session.

**NOTE:** This addendum has been sent only to the three Proposers invited to submit binding proposals based on City Commission approval authorization on January 28, 2008. The original specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

## SUBMISSION OF PROPOSALS

Ten (10) copies of the binding proposal and one (1) electronic copy shall either be mailed or delivered to Gainesville Regional Utilities, Purchasing Division, 301 S.E. 4th Avenue, Gainesville, FL 32601, and received by **2:00 P.M., local time. April 11, 2008.**

## SECTION 17.0 PUBLIC RECORDS

*The following section is replaced in its entirety with the following:*

Responses to this Request for Proposals, upon receipt by the City, become public records subject to the provisions of Chapter 119 F.S., Florida's Public Records Law. If you believe that any portion of your response is exempt, you should clearly identify the specific documents for which confidentiality is claimed, and provide specific legal authority of the asserted exemption. It is also strongly recommended that those specific materials that you assert qualify for exemption from Chapter 119 be submitted in a separate envelope and clearly identified as "TRADE SECRETS EXCEPTION," with your

firm's name and the proposal number marked on the outside. Please also note that details of proposals, including alleged trade secrets, with the exception of a company's financial statements, may be disclosed at a public meeting.

**In the event the City determines that any materials claimed to be exempt as trade secrets do not qualify as such, the Proposer will be contacted and will have the opportunity to rescind their proposal and have all materials returned to the Proposer, or waive their claim to confidentiality. Please be aware that the designation of an item as a trade secret by you, and the refusal to disclose any materials submitted to the City, may be challenged in court by any person. By your designation of material in your proposal as a "trade secret" you agree to hold harmless the City for any award to a plaintiff for damages, costs or attorneys' fees and for costs and attorneys' fees incurred by the City by reason of any legal action challenging your claim, and the City's refusal to disclose.**

(signed)

Joann A. Dorval
Purchasing Manager
Utilities Purchasing

Attachments

ACKNOWLEDGEMENT:

Each Proposer shall acknowledge receipt of this Addendum No. 2 by signature below, and shall attach a copy of this Addendum to its proposal.

CERTIFICATION BY PROPOSER:

The undersigned acknowledges receipt of this Addendum No. 2 and the proposal submitted is in accordance with the information, instructions and stipulations set forth herein.

Proposer: _____

By: _____



090451 Hearing Exhibit - 000160

# ADDENDUM NO. 2
# BIOMASS FUELED GENERATION FACILITY
# Request for Proposals 2007-135

## GENERAL INSTRUCTIONS

1. The following supplemental background data, information requests, and additional proposal requirements are to be addressed in the binding proposal to be submitted pursuant to Step 2 of the RFP process described in Section 31 of RFP 2007-135 ("RFP"). **The requested information is supplemental to the original RFP and all requirements in the original RFP and addenda remain in effect except unless noted.** The information requested in the original RFP and all information requested in this and all other addenda subsequent to the original RFP must be included in the binding proposals for Step 2 of the RFP process.
2. The numbering and heading of the sections and subsections in this Addendum correspond to the section contained in the original RFP. If a section or subsection is not modified herein, the original RFP requirements withstand.
3. Proposers are requested to amend their original submittals to include the additional information requested by any addenda by including the additional information with the original submittal so that the submitted binding proposal is a consolidated response which includes all the requirements of the original RFP and addenda. The submitted binding proposal will be used as the basis for negotiating a final contract.
4. If any of the requirements in the RFP or addenda create hardship or excessive costs, Proposers are requested to indicate as such in their response, providing an alternative solution in the form of an exception to the RFP for GRU's evaluation and consideration.
5. Additional information requested in this Addendum was requested by the Gainesville City Commission ("Commission"). This information includes:
    a) The feasibility of disposing of the City of Gainesville's ("City") wastewater biosolids in the proposed facility
    b) The tradeoffs between a 100% biomass facility and one that includes the use of municipal solid waste, tires, or construction debris ("MSW")
    c) The advantages and disadvantages of a PPA contract structure versus City ownership and operation of the facility
    d) Local economic impact and job creation
6. Failure to submit required information may result in the disqualification of the proposal.
7. Proposers are required to review Section 17.0 Pages 1 and 2 of this Addendum related to proprietary information. Any information considered a trade secret should not be contained in the main body of the response. Non-proprietary information will be posted on GRU's website at www.gru.com.
8. Note the schedule and submittal requirement changes.

*The following information is hereby added to the following sections:*

**SECTION 1.2, THE DEERHAVEN SITE**

**Land Use**

The Deerhaven site contains property with two different land use and zoning designations. The current site (tax parcel - 05884-001-000 ) has been in the City of Gainesville since 1981. The remainder of the property, shown in Attachments 1A and 1B, was annexed into the City in February 2007 and is available for use for the proposed facility. The schedule for changing the land use on these properties will be of interest to the Proposer. Provisions for buffers and avoiding wetlands should be a key consideration.

The existing site has Public Facilities Land Use and Public Service and Operations Zoning. The prevailing regulations are available at:

http://www.municode.com/Resources/gateway.asp?pid=10819&sid=9.

Specific Public Service and Operations District regulations can be found at:

Sec. 30-75. Public services and operations district (PS).

The current Future Land Use Element of the City of Gainesville Comprehensive Plan can be reviewed at:

http://cityofgainesville.org/comdev/common/docs/compplan/futureland01.pdf.

Page 16 of the Comprehensive Plan contains information about Public Facilities Land Use. The data and analyses supporting the Comprehensive Plan policies are at:

http://cityofgainesville.org/comdev/common/docs/compplan/futureland02.pdf.

The remainder of the property has not been incorporated into the City of Gainesville Comprehensive Plan and does not have City of Gainesville Land Use or Zoning designations. Currently, the parcels have Alachua County Agricultural designation. In March 2008, the City of Gainesville intends to initiate the process to request Public Facilities Land Use and Public Service and Operations Zoning, in conjunction with Conservation Land Use and Zoning in areas where wetlands exist. The process will require a Large Scale Comprehensive Plan amendment. This approval is obtained from the State of Florida Department of Community Affairs in conjunction with the Gainesville City Commission. A final land use change will not be made before December 2008.

**Site Facilities**

GRU does not have excess landfill or water storage capacity on site. The Proposer shall be required to provide all the necessary facilities to manage and store process by-products and water. GRU's excess consumptive use allocation will be made available to the Proposer (see Subsection 1.2 of the original proposal). GRU does not have excess raw water or pond water treatment capacity for boiler water or cooling tower makeup and the Proposer will be required to provide the necessary facilities. GRU does have potable and fire protection water sources available on the site.

## SECTION 18.0 ALLOWABLE FUELS

The original RFP stated that proposals may include facilities fueled by 100% biomass (as defined in Section 18.0 of the original RFP) or some combination of biomass and MSW. However, the City is interested in receiving additional information to comprehend and communicate to the public the tradeoffs between a 100% biomass facility and one that includes the use of MSW. In the response to Subsection 29.3, provide a response to the following:

1. On a Btu basis, what estimated percentage of the total heat input in your proposal is anticipated to be derived from MSW? Approximately how many tons, and of what assumed heat content, does this represent?
2. GRU can only commit that portion of non-recycled MSW collected in the incorporated areas of the City of Gainesville. The fraction that is available after recycling may change substantially over time. How does your fuel acquisition strategy involving MSW ameliorate this concern?
3. The question of using MSW to generate electricity has become a topic of considerable public discussion in Gainesville. How would your proposal change in terms of power production cost and size if MSW were not employed as a fuel?

## SECTION 21.0 FUEL AVAILABILITY & UNIT SIZE

The original RFP stated that GRU preferred that the City's MSW continue to be routed through the Alachua County waste collection facility (the Leveda Brown Environmental Park and Transfer Station) because this facility provides valuable and important services in terms of waste inspection, sorting, tire shredding and processing, grinding of wood waste, and compaction into transfer vehicles for delivery to the final disposal site. Pursuant to this Addendum, routing of the City's MSW through the Leveda Brown facility will be a requirement for any project that proposes to use the City's MSW as a fuel source.

## SECTION 23.0 PURCHASE POWER CONTRACT STRUCTURES

The original RFP stated that GRU's preferred contract structure is a take and pay PPA with an option to buy the facility. However, the City is interested in the consideration of other alternatives. Proposers are instructed to address this issue below in Subsection 29.2 and provide the pricing associated with alternative structures in Subsection 29.4.

## SECTION 24.0 ENVIRONMENTAL AND TAX CREDITS

GRU must retain title to all renewable attributes of the proposed project. Any PPA that results from this RFP must deliver to GRU the Renewable Energy Credits ("RECs") associated with the project.

## SECTION 25.0 SUSTAINABLE FOREST RESOURCE MANAGEMENT

GRU's objective is to promote sustainable forestry practices in conjunction with the operation of the proposed facility, including the option of providing financial incentives for fuel harvested under certified forest stewardship programs. GRU will be responsible for establishing the certification standards, setting the levels of incentives, and setting the target percentages of fuels to be obtained from certified forests.[1] GRU also seeks to discourage excessive nutrient removal as part of certain procurement practices and the proliferation of harmful exotic invasive species. In order to achieve these objectives, the Proposer must describe how their proposed operations comply with the following minimum requirements for fuel procurement from sources other than municipal solid waste.

1. Before being accepted, the type and source of any forest related biomass must be documented in sufficient detail to allow the location of its source to be ascertained. GRU will be responsible for establishing a quality control program to verify this information, and may choose, at its own discretion and with its own resources, to randomly sample loads and/or visit loading and harvest sites in order to monitor and verify this documentation. Suppliers engaged in fraudulent practices will be penalized, which may result in permanent disqualification from providing additional fuel to the facility.
2. Forest waste products are acceptable fuels. This includes logging residues, residuals from urban vegetation management and land clearing. Also included are materials harvested from tree stand thinning such as from natural forest restoration, reducing forest plantation overstocking to promote timber production, and fire fuel reduction. Stumps will not be permissible unless obtained from urban land clearing. The intent of these requirements is to encourage sustainable forest management and discourage (a) clear-cutting and high-grading of natural forests for biomass and (b) conversion of natural forest to plantation.
3. The Proposer must pay the stewardship premiums applicable for any fuel purchased, and will bill those premiums directly to GRU separate and apart from any other pricing elements. GRU will assume the risk of payments made to fraudulent claims unless the Proposer has not required the appropriate level of documentation.
4. GRU intends to ensure long term sustainable soil fertility by encouraging that the maximum amount of leafy matter be left at the site. Fuel derived from whole tree harvesting will not be permissible without prior approval of the harvesting plan by GRU. GRU will randomly test loads and provide guidance to the Proposer on the visual indications of excess leafy matter.

[1] The Forest Stewardship Certification Program premium is an incentive program that will provide a percentage premium over biomass fuel prices paid under normal procurement (or a reduction in tipping fee). The premium levels may reflect different amounts (tiers) based on the level of stewardship associated with different certification programs, and may vary over time. GRU will provide a stable pricing environment by honoring the premiums offered at the time that the land owner committed to a certification program. GRU will be responsible for the educational and other aspects of promoting participation in the program, and will provide the Proposer with lists of program participants and the level of premium they are eligible for.

5. Wood harvested as the primary product of forest plantations may or may not be accepted pending development of GRU's Forest Stewardship program.

## SECTION 29.0 SUBMITTAL REQUIREMENTS

Proposers must review the requirements and guidelines contained in Section 29.0 of the original RFP to ensure conformance. (See Item 3 of the General Instructions above for instructions on submitting a consolidated proposal)

## SECTION 29.2 Financial Structure of the Proposal

The following supplemental information for the financial and contractual structure of the proposed transaction requested in this Subsection is essential and will be considered binding. Proposers shall provide information for all transaction structures, i.e., PPA; engineer, procure, and construct (EPC); or other proposed structure for GRU's consideration:

a) The original RFP stated that GRU's preferred transaction structure is a take and pay PPA with an option to buy the facility. Indicate if this is the Proposer's preferred transaction structure, and, if not, provide an alternative for GRU's consideration.

b) Indicate the Proposer's interest in providing the proposed facility on an EPC basis, with GRU retaining ownership.

c) Describe how the proposed project will be financed, through design, construction, commissioning, and operation, including the corporate structure and key partnerships and the sources of collateral and credit.

d) Provide the terms and conditions for an option for City purchase of the facility at ten years, and at the termination of the proposed PPA.

e) Provide detailed requirements for a final agreement(s), including, but not limited to, land lease, insurance and bonding, Force Majeure provisions, events of termination, performance guarantees (as applicable), and dispute resolution.

f) If available, provide a sample agreement.

*The following sections replace the information contained in the original RFP:*

## SECTION 29.3 Technical Information

The following supplemental technical information shall be included in this section, as applicable for the project being proposed:

a) Description of technology and configuration
Will there be a char re-injection system? If so, please describe.

b) Major equipment manufacturers
1) Provide a current list of proposed facility equipment and suppliers.
2) What standards will be employed to ensure that the facilities constructed will be compliant with prudent utility practice and will provide full service over the life of the project (30-45 years)?

c) Fuel supply and requirements including any backup fuels

1) Describe the fuels to be used for startup, backup, and stabilization. Specify estimated maximum and daily average mmBtu per hour, and how these usage volumes will be priced.

2) On a Btu basis, provide the planned composition of the fuel supply for the facility for each of the following elements:
   - Biomass (list specific types/categories and the percentage of the total fuel supply volume)
   - Municipal Solid Waste (describe components/characteristics and percentage of total fuel supply volume)
   - Other (describe components/characteristics and percentage of total fuel supply volume)

3) For each of the above categories (i.e., Biomass, MSW, and Other) provide the planning assumptions being made including:
   - Projected annual consumption
   - Each currently identified potential source of fuel supply for annual consumption and inventory
   - Projected annual volumes available from each source
   - The mechanism for procurement of the fuel from the source (i.e., owned, term purchase agreement with non-affiliated supplier, spot market purchases)
   - Transportation mode to generating unit
   - Maximum annual and daily delivery capability
   - On-site fuel storage capacity

4) For each of the above sources (i.e., Biomass, MSW, and Other), provide the planning assumptions being made including:
   - Heat content (Btu/lb)
   - Moisture (% by weight)
   - Complete trace element analysis
   - Projected procurement costs
   - Fuel cost F.O.B. load point ($/ton)
   - Transportation cost ($/ton)
   - Method/calculation of price adjustment(s)

5) GRU can commit only the portion of MSW collected in the incorporated areas of the City of Gainesville. The fraction that is available after recycling may change substantially over time. How does your fuel acquisition strategy involving MSW accommodate this concern?

6) How would your proposal change in terms of power production cost and size if MSW were not employed as a fuel?

7) Describe the feasibility of disposing of the City's wastewater biosolids in your proposed facility, including any energy credits or tipping fees that would be associated with this practice. Information on the quantity and quality of the biosolids is provided in Attachment 2.

8) Describe the fuel unloading and handling process and equipment, such as screening and sizing, and scales. What is the maximum sustained unloading capacity in tons per hour?

9) How will fuel be transferred from the pile to the plant?

10) How much surge capacity will the boiler have at full load if a feed conveyor malfunctions?

d) Net capacity rating

No change from RFP

e) Indicative net heat rates

No change from RFP

f) Site requirements and layout

Provide preliminary layouts and proposals for the site including design drawings showing the general arrangement and the designated location. Include:

1) Estimated acreage required for:
   - Fuel delivery, preparation, and storage
   - Power block, including boiler and turbine generator
   - Solid waste storage
   - Process or stormwater ponds
   - Balance of plant
2) Estimated boiler chimney height
3) Description and depiction of:
   - Access roadways and impervious surfaces
   - Fencing and security systems
   - Rail access requirements, new spurs, or crossings
   - Communications systems and requirements
   - Ammonia or urea systems and requirements
   - Auxiliary steam requirements in maximum and daily average lbs. per hour (if any)
   - Other systems that may require on-site integration or interface, including quantities and required resources

g) Projected permitting and construction schedule and in-service date

Provide project milestones and a proposed schedule. In particular, GRU is interested in the Proposer's requirements as to exit clauses, if any, and when and how firm pricing will be set.

h) Dispatchability of the project, including facility limitations that may constrain operation or dispatch

No change from RFP

i) Environmental characteristics and emission rates (see Subsection 1.2 and Section 27.0 in the original RFP)

1) To the maximum extent possible, GRU will require the Proposer to be liable and accountable for meeting the environmental requirements of the proposed facilities and operations. Identify the resources that will be performing the requisite permitting activities and describe the proposed permitting strategies and activities related to local, state, and federal requirements.

2) Provide a detailed description of the specific air emissions control technologies that will be employed in the proposed facility, and the materials they require, such as lime, ammonia, or urea.

3) Provide maximum air emissions rates for the facility in both lb/mmBtu and lb/net MWh for each of the following:
   - Sulfur Dioxide ($SO_2$)
   - Oxides of Nitrogen (NOx)
   - Mercury (Hg)
   - Particulate Matter (PM)
   - Carbon Monoxide (CO)
   - Volatile Organic Compounds (VOCs)
   - Lead (Pb)
   - Fluorides

4) Provide a detailed greenhouse gas emissions analysis.

5) Will there be any materials stored on site that will require Process Safety Management or Department of Homeland Security regulations? If so, please identify estimated types and quantities.

j) Ash and other by-products (see section above on Environmental Considerations)

1) Provide a detailed description of all solid waste produced by the facility and the relevant environmental emission control systems.

2) Provide estimated quantities of all solid waste products produced by the facility in total tons per year and tons per net MWh. Identify each as hazardous and/or non-hazardous solid waste.

3) Provide a detailed description of the disposition of each of the types of solid waste products described above. Include:
   - Quantities
   - Landfill type
   - Recycling potential
   - Recycling value
   - Costs of disposal

4) Provide maximum and daily average production in tons per day for:
   - Bed ash or bottom ash
   - Fly ash
   - Fuel preparation or processing waste
   - Waste oils, grease, or similar waste
   - Other solid waste
   - Hazardous waste

5) How will bottom ash be segregated and handled to facilitate recycling (if appropriate), and will this system be wet or dry?

6) Describe how fly ash will be collected and conveyed, and if this system is wet or dry.

7) How many days capacity will the fly ash system accumulate or hold?

k) Water use (see section above on Environmental Considerations)

1) Describe your plan for providing each of the following. Provide estimates of maximum and daily average GPM requirements.
   - Cooling tower makeup
   - Cooling tower blow down
   - Demineralized water
   - Potable water
   - Other service water and fire protection
   - Process wastewater
   - Sanitary wastewater
   - Stormwater

2) Discuss the feasibility of accepting reclaimed water from the municipal wastewater system that is treated to public access reuse standards.

l) Electrical interconnection requirements

Provide electrical interconnection requirements including voltages and ratings of generators, step-up transformers, station service or run transformers, breakers, switchgear, and other electrical equipment. Include a preliminary schematic showing numbers, sizes, and ratings of the equipment.

m) Readiness of the proposed technology

No change from RFP

n) Reliability of the proposed technology (see section above on Technology Considerations)

Provide the following anticipated operational assumptions used to perform the required "per net MWh" calculations.
   - Scheduled outage hours per year
   - Forced outage hours per year
   - Service (operating) hours per year
   - Annual availability factor (%)
   - Annual capacity factor (%)
   - Net MWh per year

o) Performance guarantees, warranties and risk mitigation

No change from RFP

p) Backup systems and fuels

No change from RFP

q) Estimated truck traffic associated with fuel supply

1) Provide the estimated truck fuel delivery schedule in hours per day and trucks per day.

2) Provide the estimated rail delivery schedule in deliveries per week and rail cars per delivery.

3) Provide the proposed traffic routing plan for fuel procurement, employees and contractors.

r) Description of how fuel procurement practices are consistent with GRU's commitment to Sustainable Forest Resource Management

Discuss standards for non-MSW fuel quality, approach toward fuel quality control, and how the non-MSW fuel procurement standards provided in Section 25.0 above will be met.

**SECTION 29.4 Economic Information**

Provide the following essential information for all transaction structures, i.e., PPA; engineer, procure, and construct (EPC); or other preferred structure that your organization would consider for the project being proposed. State whether or not the anticipated taxes to be paid have been included in the cost information provided pursuant to this Subsection. Items a) and b) will be considered to be binding.

a) Provide a detailed description of all billing charges, including initial values, how they will be applied to billing elements, how they will be adjusted before and after the in-service date of the facility, and the approach and timing for setting final prices. Identify any escalation indices that will be applied.

b) If the Proposer's response submitted in Step 1 of the RFP did not transfer title to the RECs produced by the facility to GRU, provide the requisite pricing arrangement that would allow GRU to retain title to the RECs.

c) Provide a financial model(s), including a detailed description of pricing terms and conditions for all billing elements and RECs.

d) Provide GRU's energy prices for calendar years 2012 through 2022 given the Proposer's current benchmark assumptions. Provide the forecasted values of the factors used to change these prices over time.

e) Provide the estimated tangible property value.

f) Provide the estimated ad valorem or real property value.

g) Provide the estimated average salaries for plant employees.

h) Provide the estimated number and salary of jobs created for fuel procurement and transportation.

**SECTION 29.5 Production Cost Information**

Tables 2 and 3 do not apply to Addendum No. 2.

**SECTION 29.6 Respondent Information**

Proposers who do not provide, at minimum, a copy of their most recent financial statements (audited preferred), will be automatically disqualified from further consideration and evaluation as a Proposer to GRU RFP 2007-135. **Proposers who wish to make such financial information exempt from the public records provisions of Chapter 119, Florida Statutes, are advised to follow the instructions in Section 17.0 of this Addendum.**

The following information shall be included in this section:

a) Provide detailed information on the proposed project management team and operation management team including names, responsibilities, and résumé. Include architects, engineers, operations, and permitting personnel.

b) Provide the corporate and financial structure of the Proposer as well as the entities that will be designing, constructing, and/or operating the facility.

c) Provide a recent annual report for the Proposer and any other parties involved in the proposed project or a recent copy of an audited income statement and balance sheet.

d) Provide the bond rating of the Proposer, its parent company, and/or guarantor by Moody's, Fitch, Standard & Poor's, and/or Dunn & Bradstreet.

e) Provide financial guarantees from affiliates or others, as appropriate.

## SECTION 35.0 ANTICIPATED SCHEDULE

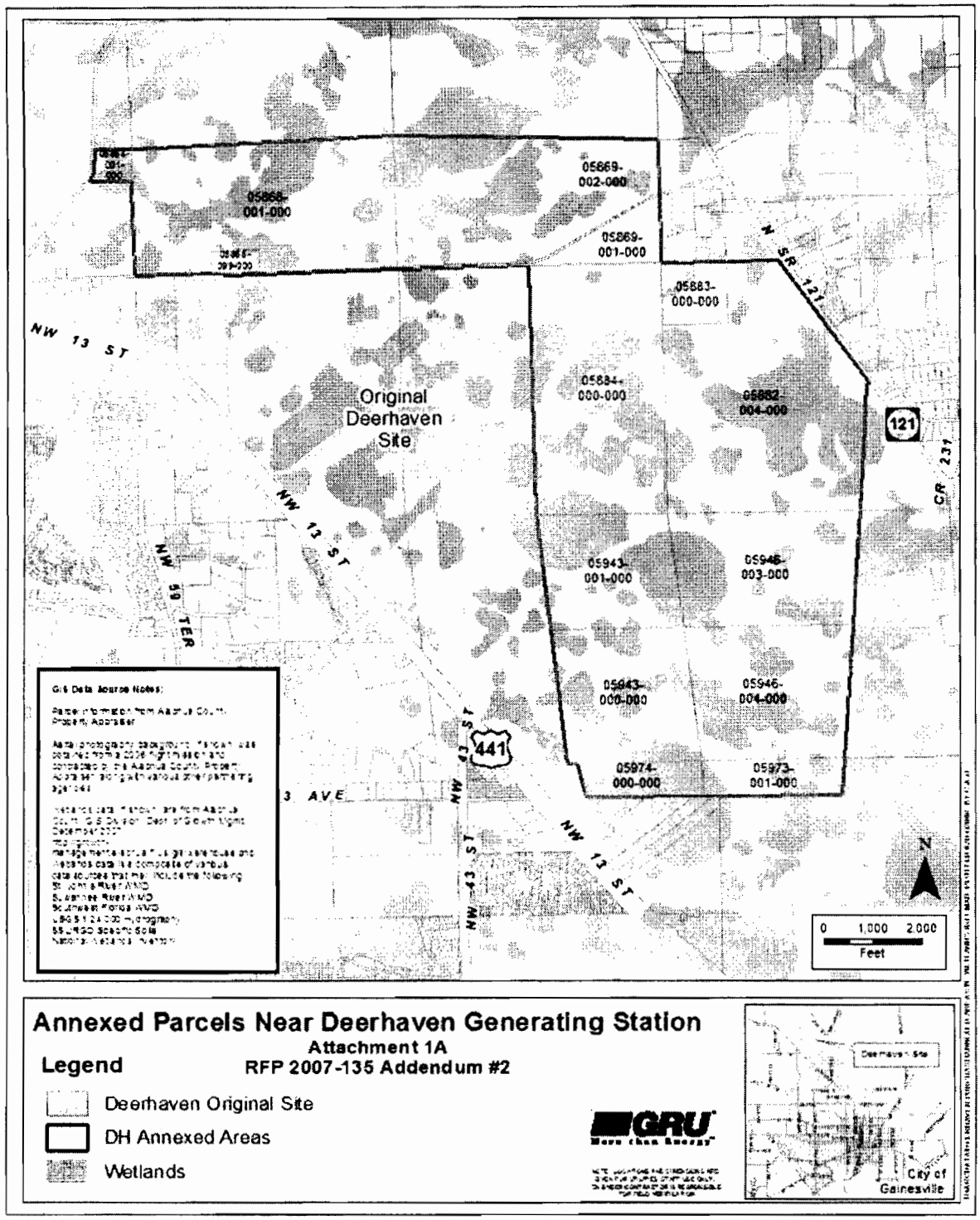
The anticipated schedule for this RFP is as follows:

| | |
|---|---|
| October, 2007 | Issue RFP |
| November 9, 2007 | Pre-submission Workshop and site review |
| December 14, 2007 | Proposal due |
| January 28, 2008 | Short list approval by City Commission |
| **April 11, 2008** | **Binding proposals due** |
| **April 28, 2008** | **City Commission Meeting** |

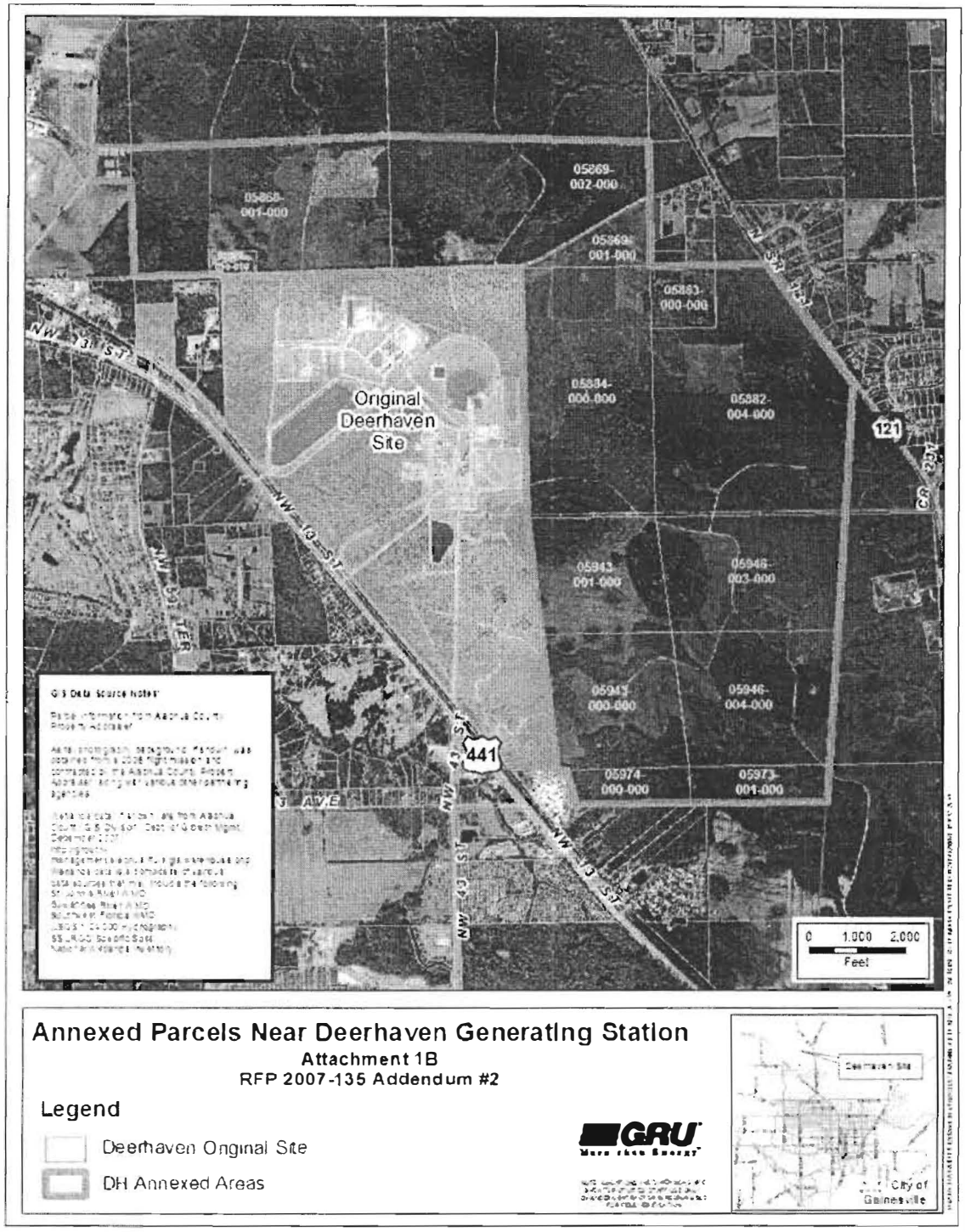


090451 Hearing Exhibit - 000171

# Attachment 1A: Properties and Wetlands



## Attachment 1B: Aerial Photographs for General Information



# Attachment 2: GRU Wastewater Biosolids Characteristics

**Summary of GRU Biosolids Characteristics for Fuel**

| | Undigested | | Digested | |
|---|---|---|---|---|
| | Thickened | Dewatered | Thickened | Dewatered |
| % Solids | 5.3% | 16.0% | 5.3% | 16.0% |
| FHV (BTU/lb dry solids) | 8085 | | 6411 | |
| Ash Content (lb ash/lb dry solids) | 23% | | 33% | |
| **2007 Quantities** | | | | |
| Weight as dry solids (dry ton/d) | 13.93 | | 9.85 | |
| Weight of wet material (wet tons/day) | 261.5 | 87.1 | 185.0 | 61.6 |
| Total Energy Content (MBTU/day) | 225.3 | | 126.4 | |
| **2027 Quantities (Projected)** | | | | |
| Weight as dry solids (dry ton/d) | 18.96 | | 13.41 | |
| Weight of wet material (wet tons/day) | 355.9 | 118.5 | 251.8 | 83.8 |
| Total Energy Content (MBTU/day) | 306.6 | | 172.0 | |

| Chemical Analysis (Dry Weight Basis)[1] | Undigested (estimated) | Digested (actual 2006) |
|---|---|---|
| TOTAL N (% DRY WEIGHT) | 5.1% | 7.2% |
| TOTAL P (% DRY WEIGHT) | 3.3% | 4.6% |
| TOTAL K (% DRY WEIGHT) | 0.6% | 0.9% |
| ARSENIC mg/KG | 3.9 | 5.6 |
| CADMIUM mg/KG | 1.2 | 1.7 |
| CHROMIUM mg/KG | 11.1 | 15.7 |
| COPPER mg/KG | 219 | 309 |
| MERCURY mg/KG | 0.7 | 1.1 |
| MOLYBDENUM mg/KG | 8.9 | 12.6 |
| NICKEL mg/KG | 9.9 | 14.0 |
| LEAD mg/KG | 21.8 | 30.8 |
| SELENIUM mg/KG | 6.8 | 9.7 |
| ZINC mg/KG | 528.4 | 747.0 |
| PH | ~6.0 - 8.0 | 5.6 |

[1]Concentrations expressed as mg/kg of dry solids.
"MBTU" = Million Btu

**ADDENDUM NO. 3**
**BIOMASS FUELED GENERATION FACILITY**
**Request for Proposals 2007-135**

DATE: March 4, 2008

BINDING PROPOSALS DUE DATE: April 11, 2008 @ 2:00 P.M.

NOTE: This addendum has been sent only to the three proposers invited to submit binding proposals. The original specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

Discovery sessions between GRU staff and the three proposers invited to submit binding proposals were held on February 21 and 22, 2008. As a result of these discovery sessions, GRU is providing additional information to assist proposers in developing their proposals.

Much of the information identified in this addendum is in electronic data format due to the nature and size of the document and is therefore provided on CD-ROM. This information will be identified where relevant.

**SUPPLEMENTAL INFORMATION FOR GRU RFP 2007-135**

1. Ground water quality from Deerhaven production wells

   See the following file on the CD-ROM:

   - Ground Water Monitoring Report_2007-08.pdf

2. Reclaimed water quality and potential volumes

   GRU's Kanapaha Water Reclamation Facility ("KWRF") can provide up to 9.0 MGD of flow (annual average day). At this time there is a planned project, Payne's Prairie Sheetflow Restoration, which would utilize almost all of the reclaimed water flow from GRU's Main Street Water Reclamation Facility ("MSWRF") for environmental restoration. If this project proceeds, no reclaimed water would be available from MSWRF; however, if the project does not proceed, an additional 5.5 MGD of reclaimed water would be available from MSWRF.

   See the following file on the CD-ROM for KWRF reclaimed water quality and other information:

   - 070927 KWRF PERMIT APP FORM 2A.pdf

3. Deerhaven substation one-line electrical diagram

   See the following files on the CD-ROM:

   - Excerpt from GRU '06 TYSP_transmission (MS Word)

- DEERHAVEN_one-line_11x17.DWG
- Deerhaven Site Transformer Data (MS Excel)

4. Base drawings of site layouts

   See the following files on the CD-ROM:

   - Deerhaven_exhibit 1_Retrofit Constr Area.DWG
   - Deerhaven_exhibit 2.DWG
   - Deerhaven_exhibit 3.DWG
   - Deerhaven_exhibit 1_Retrofit Constr Area.pdf
   - Deerhaven_exhibit 2.pdf
   - Deerhaven_exhibit 3.pdf

5. Indicative foundation data from the Deerhaven retrofit project

   See the following files on the CD-ROM:

   - GRU Pile Load Test Report - Deerhaven AQCS.pdf
   - Final Soil Boring Report - Deerhaven AQCS.pdf

6. Clarification of land use issues

   Details on the Deerhaven site were provided in Addendum 2. To clarify the responsibilities of the GRU staff and the Proposer, the following additional information is offered:

   GRU, in conjunction with City of Gainesville Community Development staff, will be responsible for the proposing Public Facilities land use and Public Service and Operations zoning, in conjunction with Conservation land use and zoning in areas where wetlands exist. The process will require a Large Scale Comprehensive Plan amendment. This approval is obtained from the State of Florida Department of Community Affairs in conjunction with the Gainesville City Commission. A final decision will not be made before December 2008.

   Beyond the establishment of zoning and land use, all site plan requirements, concurrency management studies, and other development related concerns will be the responsibility of the Proposer.

7. Auxiliary Power rates

   GRU does not currently have a standby power tariff for backup, maintenance, or supplemental service. GRU would implement such a tariff prior to the operation of the proposed facility. For informational purposes, the unbundled components of GRU's Large Power tariff are presented below. Proposers may use this tariff as a guide for the maximum charges that GRU would apply to standby power at the current time. However, the actual charges for auxiliary power would depend on GRU's costs at the time the standby tariff is developed and implemented.

| GRU Electric Unbundled Rate Components - FY 2008 | | | | | |
|---|---|---|---|---|---|
| **Large Power** | **Taxable Fuel** | **Generation** | **Transmission** | **Distribution** | **Total** |
| Customer | | | | | $ 265.00 |
| Demand | | $ 3.95 | $ 0.66 | $ 4.39 | $ 9.00 |
| Energy | $ 0.0065 | $ 0.0053 | $ 0.0020 | $ 0.0132 | $ 0.0270 |

8. FRCC interconnections/under-frequency standards and GRU substation construction standards

   See the following files on the CD-ROM:
   - FRCC Generator Coordination_Standard5.pdf
   - GRU Facility Connection Requirements_020408 (MS Word)
   - DeerhavenOption1_NewGenerationTiedToBuses.pdf
   - DeerhavenOption2_NewGenerationTiedToLine.pdf

9. Interlocal Agreements for Solid Waste Disposal

   See the following files on the CD-ROM:
   - OriginalAgreement_SolidWaste_AlachuaGainesville.pdf
   - FirstAmendment_SolidWaste_AlachuaGainesville.pdf
   - SecondAmendment_SolidWaste_AlachuaGainesville.pdf
   - InterlocalAgreement_SolidWaste_AlachuaNewRiver.pdf

10. Current cost of biosolids

    See the following file on the CD-ROM:
    - GRU Biosolids Management Plan.pdf

11. Stormwater Pollution Prevention Plan

    See the following file on the CD-ROM:
    - Deerhaven Stormwater Pollution Prevention Plan.pdf

12. Deerhaven groundwater well site location map

    See the following file on the CD-ROM:

    - Deerhaven Site Map of Wells.pdf

13. Deerhaven site use restrictions

    Deerhaven_SiteUseRestrictions.pdf

    Note: Existing railway system must not be encumbered so as to prevent deliveries.

14. Natural gas price forecasts including commodity and transportation

    Below is GRU's Budget Year 2008 Base Case forecast for the delivered cost of natural gas, including transportation. Please note that GRU is in the process of updating this forecast.

| Budget Year 2008 Delivered Cost of Natural Gas 100% Load Factor | |
|---|---|
| **Year** | **$/MMBtu** |
| 2007 | 7.79 |
| 2008 | 7.76 |
| 2009 | 8.20 |
| 2010 | 8.06 |
| 2011 | 8.13 |
| 2012 | 8.21 |
| 2013 | 8.47 |
| 2014 | 8.88 |
| 2015 | 9.21 |
| 2016 | 9.62 |
| 2017 | 0.03 |
| 2018 | 10.45 |
| 2019 | 10.86 |
| 2020 | 11.14 |
| 2021 | 11.30 |
| 2022 | 11.76 |
| 2023 | 12.23 |
| 2024 | 12.73 |
| 2025 | 12.97 |
| 2026 | 13.27 |
| 2027 | 13.71 |
| 2028 | 14.23 |
| 2029 | 14.66 |
| 2030 | 15.00 |

15. Contacts for Alachua County and City of Gainesville MSW representatives

**Karen Deeter**
Assistant Director of Public Works, Alachua County
5620 NW 120th Lane
Gainesville, FL 32602-1188
(352) 374-5245, ext. 278
KJD@alachuacounty.us

**Teresa Scott**
Public Works Director, City of Gainesville
P.O. Box 490, Station 58
Gainesville, FL 32606-0490
(352) 334-5070, ext. 5801
SCOTTTA@cityofgainesville.org

16. Air quality modeling

See the following file on the CD-ROM:

- Final Air Quality Impact Study_Jan2004.pdf

Joann A. Dorval
Purchasing Manager
Utilities Purchasing

ACKNOWLEDGEMENT:

Each Proposer shall acknowledge receipt of this Addendum No. 3 by signature below, and shall attach a copy of this Addendum to its proposal.

CERTIFICATION BY PROPOSER
The undersigned acknowledges receipt of this Addendum No. 3 and the proposal submitted is in accordance with the information, instructions and stipulations set forth herein.

Proposer: _____

By: _____

# GAINESVILLE REGIONAL UTILITES
# ENERGY SUPPLY DEVELOPMENT
# REQUEST FOR PROPOSALS
# FOR BIOMASS-FUELED GENERATION FACILITY

## PURPOSE AND SCOPE

The City of Gainesville, d/b/a Gainesville Regional Utilities ("GRU") is seeking initial proposals for additional renewable base load electric generation to be constructed at its Deerhaven Generating Station ("Deerhaven") site. Off-site opportunities will be considered as well. Biomass and Municipal Solid Waste ("MSW") are the sole primary fuel options for any facility or participation to be considered. Accordingly, GRU is requesting that any entity interested in either developing or participating in these opportunities submit a response to this Request for Proposals ("RFP") **by December 14, 2007, 2:00 PM EST**. ("Closing Date and Time" or "Call for Proposals").

A **NON-MANDATORY** pre-proposal meeting and site visit will be held **November 9, 2007, 1:00-5:00 PM Eastern** at the site, Deerhaven Power Generating Station, Second Floor Conference Room, 10001 N.W. 13th Street, Gainesville, FL 32653. Photo ID is required for admission to the site.

GRU anticipates a wide range of technologies and contractual structures to be represented in the proposals. GRU seeks proposals that offer the greatest value to GRU customers based on an evaluation of the new renewable generation resource's ability to provide: i) cost effective renewable capacity and/or energy benefits, ii) environmental attributes consistent with the preferences of the Gainesville community, and iii) enhanced and reliable energy supply for the GRU system.

The process GRU proposes to follow has two steps designed to provide structure while allowing flexibility and creativity in selecting an option or set of options to pursue this element of GRU's Integrated Resource Plan. In particular, GRU understands the significant difference in resources required to prepare a conceptual proposal with estimated pricing, compared to developing a binding proposal with firm pricing that will form the basis of a final contract. Accordingly, the first step of the process is to solicit the widest possible range of non-binding technological and financial structure proposals with this RFP. The second step of the process will be to invite no more than three Respondents to submit final binding proposals that will form the basis of contract negotiations. Step 1 of the evaluation process includes:

1. Solicitation of proposals for biomass/MSW-fueled generation capacity via this RFP;
2. A pre-submission workshop and Deerhaven site visit;
3. Submission of initial non-binding proposals;
4. Preliminary evaluation and screening of proposals, including limited discovery to clarify intent and technical details;
5. Selection of Respondents to be invited to make on-site presentations of their proposals to staff and consultants; and

6. Selection of no more than three Respondents to be invited to submit binding proposals for final selection.

Eight (8) copies of the Proposal shall be sent to be received **at the following address no later than 2:00 P.M., local time, December 14, 2007, at which time all proposals will be opened:**

Gainesville Regional Utilities
Purchasing Division
301 S.E. 4th Avenue
Gainesville, FL 32601

**Submittals shall indicate on the envelope and cover sheet the following information:**

"Gainesville Regional Utilities RFP 2007-135, Biomass Fueled Generation Facility"

ANY PROPOSAL RECEIVED AFTER THE DUE DATE AND TIME SPECIFIED WILL NOT BE CONSIDERED.

(signed)
Joann A. Dorval
Purchasing Manager
Utilities Purchasing

## 1.0 BACKGROUND.

### 1.1 ABOUT GRU

GRU is a municipally owned and operated electric, water, wastewater, natural gas, and telecommunication utility located in north central Florida. GRU serves approximately 90,000 retail and wholesale electric customers in Gainesville and the surrounding unincorporated areas. GRU reached a record peak demand of 481 net MW on August 8, 2007 and owns 611 MW of net summer generation capacity located at two sites, Deerhaven and John R. Kelly.

### 1.2 THE DEERHAVEN SITE

The Deerhaven site is located north of the City of Gainesville and includes approximately 3,000 acres (some of which is wetlands) with existing infrastructure which includes rail access, coal handling facilities, and 138 kilovolt looped transmission interconnected to both Florida Progress Energy and Florida Power and Light. The transmission system can accommodate additional generation capacity at Deerhaven up to 100 MW, but some upgrades may be required depending on the amount of capacity proposed.

A Florida Gas Transmission ("FGT") pipeline delivers natural gas to GRU. FGT's most recent assessment (November 27, 2006) indicates an available capacity of 10,867 mmBtu/day or 652 mmBtu/hr at the Deerhaven site while maintaining minimum pressures of 325 psig at Deerhaven and 400 psig at Kelly. In late 2003 GRU received a planning level estimate of $14,650,000 for the cost required to upgrade the pipeline to support a re-powering configuration of approximately 225 MW of additional CT capacity at Deerhaven.

The Deerhaven site currently uses approximately half of its 6.5 million gallons per day groundwater allocation. Reclaimed water may be made available to the site in the future. The site is licensed as a zero discharge facility requiring on-site recycling and/or treatment of all process waters via a brine concentrator. This is a requirement any new capacity at the Deerhaven site will be expected to adhere to. The site also has two clay-lined landfills for the management of combustion ash and brine salts as well as several process water ponds. The status and descriptions of the coal, natural gas and/or oil fired units existing on the site, together with anticipated emission control upgrades, may be found in GRU's 2006 Ten Year Site Plan submission to the Florida Public Service Commission available at www.GRU.com. Potential Respondents will be given the opportunity to view the site and ask questions.

## 3.0 EXAMINATION OF CONTRACT DOCUMENTS.

3.1 It is the responsibility of each Proposer before submitting a proposal, to (a) examine the RFP thoroughly, (b) visit the sites to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work, (c)

consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work, (d) study and carefully correlate Proposer's observations with the Request for Proposal, and (e) notify the Purchasing representative of all conflicts, errors or discrepancies in the RFP. Failure to do so will be at Proposer's own risk. A Proposer shall not be relieved of a requirement of this RFP on the plea of error.

3.2 A Proposer who is aggrieved in connection with the specifications of this proposal may protest in writing to Purchasing prior to the time and date Proposals are due.

**4.0 PREPARATION OF PROPOSAL.**

4.1 Proposals by corporations must be executed in the corporate name by the president, a vice-president, or other corporate representative accompanied by evidence satisfactory to the City of such person's authority to sign. The corporate address and state of incorporation must be shown below the signature.

4.2 Proposals by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature, and the official address of the partnership must be shown below the signature.

4.3 All names must be typed or printed below the signature.

4.4 The proposal shall contain an acknowledgment of receipt of all Addenda.

4.5 Unless stated otherwise, Proposers must respond to all items requested these specifications.

4.6 Only one proposal from any individual, firm, corporation, organization or agency under the same or different name shall be considered. Should it appear to the City that any Proposer has interest in more than one proposal, all proposals in which such Proposer has interest shall be rejected.

4.7 Proposals will be available for inspection after such time as an award is recommended or within ten (10) days after shortlist ranking, whichever is earlier.

4.8 The Proposer, by affixing the authorized signature to the proposal, declares that the proposal is made without any previous understanding, agreement, or connections with any persons, firms, or corporations submitting a proposal on the same scope of work and that it is in all respects fair and in good faith without any outside control, collusion or fraud.

4.9 No City Commissioner, other City officer, or City employee may directly or indirectly own more than five (5) percent of the total assets or capital stock of the proposing entity, nor directly or indirectly benefit by more than five (5) percent from the

profits or emoluments of this contract. [For purposes of this paragraph, indirect ownership or benefit does not include ownership or benefit by a spouse or minor child.]

## 5.0 SUBMISSION OF PROPOSALS.

5.1 Eight (8) copies of the proposal shall either be mailed or delivered to Gainesville Regional Utilities, Purchasing Division, 301 S.E. 4th Avenue, Gainesville, FL 32601, to be received by **2:00 P.M., local time. December 14, 2007**

## 6.0 MODIFICATION AND WITHDRAWAL OF PROPOSALS.

6.1 Proposals may be modified or withdrawn by an appropriate document duly executed (in the manner that a proposal must be executed) and delivered to the place where proposals are to be submitted at any time prior to the Closing Date and Time.

6.2 After Closing Date and Time, corrections in the proposals shall be permitted: 1) only to the extent that the Proposer can show by clear and convincing evidence a mistake of a nonjudgmental character was made; 2) the nature of the mistake is evident; and 3) the proposal price intended is evident. After the Closing Date and Time, no changes in proposal prices or other provisions of the proposal prejudicial to the interest of the City or fair competition shall be permitted. In lieu of proposal correction, an apparent low evaluated Proposer alleging a material mistake of fact may be permitted to withdraw its proposal, at the option of the City if: (a) the mistake is clearly evident on the face of the proposal but the intended correct proposal is not similarly evident; or, (b) the Proposer submits evidence which clearly and convincingly demonstrates that a good faith mistake (without negligence of the Proposer) was made.

## 7.0 COSTS IN DEVELOPMENT OF PROPOSAL.

7.1 Costs for developing a response to this RFP are entirely the obligation of the Proposer and shall not be charged in any manner to the City.

## 8.0 NON-SUBMITTAL OF PROPOSAL.

8.1 If a firm in receipt of this RFP does not wish to submit a proposal for this work, please advise Utilities Purchasing at (352) 334-3400, Ext. 1240, of the firm's decision and reason for not submitting a proposal no later than the stated proposal submittal date. Failure to respond may cause removal of the firm's name from the Bid List for future work.

## 9.0 GENERAL TERMS OF AWARD.

9.1. The City reserves the right to reject any and all proposals, to waive any and all informalities or irregularities, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional proposals. Also, the City reserves the right to reject the proposal of any Proposer if the City believes that it would not be in its best interest to make an award to that Proposer, whether because the proposal is not

responsive or the Proposer is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

9.2. The City may conduct such investigations as it deems necessary to assist in the evaluation of any Proposal and to establish the responsibility, qualifications and financial ability of proposers, proposed subcontractors and suppliers and other persons and organizations to perform and furnish the work in accordance with the contract documents to the City's satisfaction within the prescribed time.

9.3 If the contract is to be awarded, the City will give the successful proposer a Notice of Award within sixty (60) days after the final day of oral presentations.

9.4 As a result of this RFP, the City seeks to negotiate and enter into a contract with the successful Proposer. The proposal will not constitute a contract but, rather, will supply provisions which will, if accepted, be incorporated by reference into the contract between the parties. All material submitted with the proposal shall be considered a part of the proposal and will be incorporated into the contract to the extent accepted by the City. Responses to questions that occur during the proposal evaluation period may be included as part of the contract. The contract awarded under this RFP will require approval of the Gainesville City Commission.

9.5 Any contract negotiated as a result of this RFP shall be interpreted under and governed by the laws of the State of Florida.

## 10.0 INTERPRETATIONS AND ADDENDA.

All questions about the meaning or intent of the RFP must be made in writing and directed to:

Joann A. Dorval
Purchasing Manager
P.O. Box 147117, Station A-130
Gainesville, FL 32614-7117
(352) 393-1253
Fax: (352) 334-2989
Email: dorvalja@gru.com

or

A.J. Sontag, Senior Buyer
(352) 393-1252
Email: sontagaj@gru.com

Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda and mailed or delivered to all parties recorded as having received the RFP. Only questions answered by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Addenda may also be issued to modify the proposal documents as deemed necessary by GRU's Purchasing Division.

Addenda issued by the City before the proposal opening shall be binding as if written into the RFP. Proposers shall acknowledge receipt of the same with the proposal.

## 11.0 CONDITIONS ESTABLISHED BY THE CITY.

11.1 Late Submittals: Any responses submitted after the due date and time specified in the RFP will not be considered and will be returned.

11.2 Rejection of Submittals: the City reserves the right to reject any and all submittals received in response to the RFP as determined to be in the best interest of the City. Non-acceptance of any proposal will not imply any criticism of the proposal or convey an indication that the proposal was deficient. Non-acceptance of any proposal will mean that another proposal was deemed more advantageous to the City.

11.3 All materials submitted in response to the RFP become the property of the City and will be returned only at the option of the City.

11.4 LOCAL VENDOR PREFERENCE.

The Local Vendor Preference Ordinance applies to bids for goods or services estimated to exceed $50,000. A copy of the Ordinance is included for reference.

In bidding of, or letting contracts for procurement of, supplies, materials, equipment and services, as described in the purchasing policies, the City Commission, or other purchasing authority, may give a preference to local businesses in making such purchase or awarding such contract in an amount not to exceed five percent of the local business' total bid price, and in any event the cost differential should not exceed $25,000.00.

A "local business" means the vendor has a valid occupational license, issued by the City of Gainesville at least six months prior to bid or proposal opening date, to do business in said locality that authorizes the business to provide the goods, services, or construction to be purchased, and a physical business address located within the limits of said locality, in an area zoned for the conduct of such business, from which the vendor operates or performs business on a day-to-day basis. Post office boxes are not verifiable and shall not be used for the purpose of establishing said physical address. In

order to be eligible for local preference, the vendor must provide a copy of the occupational license.

11.5 LIVING WAGE ORDINANCE

The City of Gainesville has a Living Wage Ordinance 020663 as amended at 030168 (Living Wage Ordinance), which requires that during the time a contractor is directly involved in providing services under the contract with the City of Gainesville for Biomass Fueled Generation Facility, its employees be paid a living wage of **$9.93** per hour to covered employees who receive health benefits and **$11.18** per hour to covered employees not offered health care benefits by the contracted employer. For details see Appendix D.

**12.0 SALES TAX.**

12.1 The Proposal shall not include Florida sales taxes on the proposal price for equipment, materials or services provided to the City. The City of Gainesville and Gainesville Regional Utilities are exempt from Florida sales taxes for certain purchases and will provide a tax exempt certificate upon request.

**13.0 USE OF RFP IDEAS.**

13.1 Except as otherwise prohibited by law, the City has the right to use any and all ideas presented in response to this RFP, whether amended or not. Selection or rejection of the proposal does not affect this right.

**14.0 PUBLIC ENTITY CRIME.**

14.1 A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for Category Two for a period of 36 months from the date of being placed on the convicted vendor list.

**15.0 DEBARMENT/SUSPENSION/TERMINATION.**

15.1 Proposers shall be responsible for any violation of the current policies regarding debarment/suspension/termination which have been issued by the Utilities Purchasing Department, a copy of which is attached hereto and is incorporated herein by reference.

## 16.0 LOBBYING.

16.1 To ensure fair consideration and consistent and accurate dissemination of information for all proposers, the City prohibits communication to or with any department, employee, or agent evaluating or considering the proposals during the submission process, except as authorized by the contact person.

16.2 During the blackout period as defined herein, except as pursuant to an authorized appeal, no person may lobby, as defined herein, on behalf of a competing party in a particular procurement process, City officials or employees except the purchasing designated staff contact in the purchasing division. Violation of this provision shall result in disqualification of the party on whose behalf the lobbying occurred.

16.3 The blackout period means the period between the time the submittals for invitation for bid or the request for proposal, or qualifications, or information, or the invitation to negotiate, as applicable, are received by the City of Gainesville purchasing division and the time City officials and employees award the contract. Lobbying means when any natural person, for compensation, seeks to influence the governmental decision-making, to encourage the passage, defeat or modification of any proposal, recommendation or decision by City officials and employees, except as authorized by procurement documents.

## 17.0 PUBLIC RECORDS

17.1 Responses to this RFP, upon receipt by the City, become public records subject to the provisions of Chapter 119, *Florida Statutes*, Florida's Public Records Law. Should a Proposer feel that any portion or all of its response is exempt from the Florida Public Records Law, its response should clearly assert such exemption and the specific legal authority for the asserted exemption. All material that qualifies for exemption from Chapter 119 must be submitted in a separate envelope, clearly identified as "TRADE SECRETS EXCEPTION," with your firm's name and the proposal number marked on the outside.

17.2 Please be aware that the designation of an item as a "trade secret" by the Proposer may be challenged in court by any person. In designating material in a proposal as "trade secret," the Proposer agrees to hold the City harmless from any award to a plaintiff of damages, costs, or attorneys' fees incurred by the City by reason of any legal action challenging the Proposer's trade secrets claim.

## 18.0 ALLOWABLE FUELS

Biomass and Municipal Solid Waste are the only allowable fuel options for any facility to be constructed or for any participation by GRU in response to this RFP. Proposals may include facilities fueled by 100% biomass or some fuel combination of biomass and MSW. GRU does not intend that a project using MSW as a fuel should displace or reduce, but should supplement, the City of Gainesville's efforts to minimize the amount of MSW that must be disposed of in landfills through source reduction, re-use, recycling, and composting.

Biomass fuel is categorized as forest, land clearing, and vegetative management products and by-products, excluding stumps from silviculture. Biomass fuel options to be considered for this RFP include, but are not limited to:

- Logging and Land Clearing Residues
- Urban Wood Waste (non-bagged)
- Forest Thinnings
- Pulpwood

**Municipal Solid Waste generating technologies will only be considered if they employ advanced pollution controls. Also, MSW fuel options shall be limited to materials that are not feasibly recycled. MSW fuel options include:**

- Residential Class 1
- Commercial Class 1
- Automobile and Truck Tires
- Sorted Construction & Demolition Debris
- Bagged Urban Wood Waste

Natural gas and/or fuel oil are acceptable as backup fuels. **COAL AND PETROLEUM COKE ARE NOT ACCEPTABLE AS EITHER PRIMARY OR BACKUP FUEL OPTIONS.**

## 19.0 CAPACITY REQUIREMENTS

GRU requires economic base load capacity to diversify its energy supply portfolio. The amount of base load capacity that GRU requires under its most conservative set of assumptions (including conservation goals and non-renewal of wholesale contracts) is provided in Table 1 below. This table assumes that the energy produced has all-in production costs (including capital and financing, operation, maintenance, and fuel costs) at or below that of a new, natural gas-fired, F-class combined cycle plant. GRU is willing to consider larger sized units than the capacity requirements listed, especially in the earlier years, if appropriate to capture the benefits of cost and efficiency associated with various sized units balanced against fuel costs. GRU prefers to retain title to the power from any excess capacity and will manage marketing it off-system. For the same reasons, GRU is willing to consider smaller units that could be expanded through time as conditions warrant.

**Table 1: Base Load Capacity Requirements**
**(Cumulative Net Megawatts "MW")**

| YEAR | MW |
|---|---|
| 2008 | 63 |
| 2013 | 70 |
| 2018 | 92 |
| 2022 | 136 |

## 20.0 TYPE/COST OF CAPACITY

GRU is seeking firm base load capacity with a design capacity factor of 85% or higher. Capacity must have costs below that of new natural gas-fired, F-class combined cycle units on an all-in basis (including capital and financing, operation, maintenance, and fuel costs) to meet GRU's economic criteria. The variable production cost, used to economically dispatch and/or remarket the resource(s), will be among the factors considered in evaluating the proposals as it affects the ability to market any excess capacity. Finally, the Proposals involving integration with other manufacturing processes, such as ethanol production or wood products, will be considered.

## 21.0 FUEL AVAILABILITY & UNIT SIZE

GRU has conducted a number of studies of biomass fuel availability which are listed in Appendix A and are available from www.GRU.com. The most recent study, conducted by faculty of the University of Florida School of Forest Resources and Conservation in 2007 ("UFSFRC") is considered by GRU to be the most definitive and reliable. The study is still in a draft form as of the date of this proposal, and is subject to change. It takes into account the stumpage, harvesting, and transportation costs of a number of different types of biomass, and in particular, takes into account the competing markets for these resources and the effects of higher transportation fuel costs. This study clearly illustrates that the cost of biomass increases as the size of a unit and corresponding collection area is increased. GRU cannot guarantee the volume or price of the available biomass. The City can contract for the ultimate disposal of MSW collected within the incorporated City limits.

The UFSFRC study also addresses MSW from the area within a two hour travel distance from Deerhaven. Information on the contract commitments and plans of each of the agencies responsible for the collection and disposal of this material was not available, suggesting that this information should be treated with caution.

As shown in Appendix A, Table 3 (from the Alachua County department of Public Works) approximately half of the MSW generated in Alachua County is collected from the incorporated area of the City of Gainesville. Accordingly, the City of Gainesville can commit to supply this volume of MSW to the proposed project. The remainder of the MSW from Alachua County is committed to be taken to the New River Landfill through 2018.

An assumption must be made concerning any tipping fees that might be collected, which in turn requires assumptions related to whether or not Gainesville's MSW is routed through the Alachua County waste collection facility (the Leveda Brown Environmental Park and Transfer Station). GRU prefers that the MSW be routed through this facility, which provides valuable and important services in terms of waste inspection, sorting, tire shredding and processing, grinding of wood waste, and compaction into transfer vehicles for delivery to the final disposal site. Accordingly the tipping fees available at Deerhaven are equal to what the City currently pays at the New River Landfill (approximately $25.00 per ton based on a sliding scale).

GRU prefers proposals in which the project operator is responsible for fuel acquisition and price, and power costs are relatively stable and non-volatile. GRU is willing to consider arrangements in which the fuel cost for power is indexed to conventional commodity costs.

Should a Respondent wish to propose some other arrangement which would require GRU to acquire fuel, it should be noted that staff will not commit to an overly aggressive estimate of fuel availability and cost. For proposals requiring GRU to acquire fuel, options assuming fuel volumes with associated costs more optimistic than those estimated by the UFSFRC study as summarized in Appendix A, Table 2 will not be considered.

Table 2 in Appendix A contains results from the UFSFRC study manipulated by GRU staff to produce the cumulative available volume of biomass fuel in the order of increasing price. The cumulative weighted price per mmBtu is also shown. The data in Table 2 is drawn from UFSFRC scenarios assuming competition for biomass resources and higher transportation fuel costs. Pulp wood availability was adjusted to 0.5% as discussed in the text of the UFSFRC report. Only MSW from City of Gainesville operations as shown in Table 3 is assumed to be available and represented in Table 2. Finally, GRU reserves the right to consider in its evaluations new data regarding biomass availability or the level of commitment that other experienced biomass project developers are willing to make.

## 22.0 TRANSMISSION

No transmission upgrade costs will be incurred for projects up to 100 MW that are located on the Deerhaven site. For projects not located at Deerhaven, the Respondent must secure with the appropriate transmission providers all required interconnection agreements, transmission facilities, and related arrangements required to deliver firm capacity and/or energy to the GRU system on a firm basis for the entire term of the proposal and is responsible for the charges associated with all transmission requirements.

## 23.0 PURCHASE POWER CONTRACT STRUCTURES

GRU would prefer a Long-Term "Take-and-Pay" Purchased Power Agreement ("PPA") of fifteen (15) years or longer with an option to purchase and own the project at a future date. Under a Take-and-Pay PPA, GRU would be financially responsible only for the energy actually delivered from the project. GRU would also consider a Long-Term Take-and-Pay PPA without the option to purchase.

GRU encourages the submission of innovative contract structures and will consider contractual arrangements other than or additional to those identified above if they are consistent GRU's needs and requirements.

## 24.0 ENVIRONMENTAL AND TAX CREDITS

GRU wishes to retain the market value for all renewable attributes of the proposed project. Any PPA that results from this RFP must deliver to GRU the renewable attributes of the project including but not limited to Renewable Energy Credits ("RECs") and any associated offsets for carbon as well as oxides of sulfur and nitrogen and any other emission constituents that may be associated with the project either now or in the future.

GRU recognizes that recently enacted tax and production credits and IRS regulations create added value for the development of emerging generation technologies, and are subject to change through time. The Respondent should identify how any such tax or IRS benefits that result from the development of a project pursuant to this RFP will affect GRU's costs as they become available or change.

Respondents should note that privately owned facilities will be subject to ad valorem property taxes, which is a millage rate of 24.6135, of which 4.2544 mills is the City of Gainesville's share. The City of Gainesville's share may be treated as beneficial revenue from the project when computing all-in production costs.

## 25.0 SUSTAINABLE FOREST RESOURCE I

GRU supports the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, and vitality. Sustainable forest management involves practicing a multiple-use land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products while conserving soil, air and water quality, as well as wildlife and fish habitat and aesthetics.

Forest sustainability involves the continued existence and use of forests to meet human physical, economic, and social needs, the desire to preserve the health of forest ecosystems in perpetuity; and the ethical choice of preserving options for future generations while meeting the needs of the present.

Among the non-economic criteria that GRU will employ in evaluating proposals is whether the fuel procurement practices associated with the proposed biomass-fueled generation projects are consistent with GRU's vision and support of sustainable forest resource management.

## 26.0 TECHNOLOGY CONSIDERATIONS

The following screening criteria establish the minimum requirements for the technology to advance to further consideration in the evaluation process:

- **Readiness.** The technology must be at a commercially proven stage of development. To be considered, a proposal must employ technology that has been demonstrated in commercial operation employing at least 25 tons per day of biomass in continuous operation to produce electricity for at least one year.

- **Reliability.** The number of units in commercial operation of the size being proposed and their reliability record will be considered in evaluating the risk associated with each proposal. The financial strength of the Respondent and proposed risk mitigation plans will be used to balance this factor.

## 27.0 ENVIRONMENTAL CONSIDERATIONS

The proposed technology must be capable of meeting environmental permitting and regulatory requirements in the State of Florida as well as US EPA New Source Standards applicable to the fuels and/or technologies being proposed for use. The facility owner/operator will be responsible for acquiring all necessary environmental authorizations, licenses, or permits from, by or with any governmental or regulatory authority related to a proposal and for maintaining compliance with all obligations that are or will be required by current federal, state, or local laws, regulations, or ordinances of any governmental authority necessary for the implementation of the proposal.

Respondents should provide detailed descriptions of the environmental characteristics of the proposals including, but not limited to:

- **Air Emissions.** Air emission controls must be commensurate with the potential contaminants in the fuels used or products of the process being proposed. Projects must meet all legal and regulatory permitting requirements.
- **Water Use.** Deerhaven is licensed as a zero discharge facility requiring on-site recycling and/or treatment of all process waters via a brine concentrator. Any new capacity at the Deerhaven site will be expected to adhere to this requirement.
- **By-products/Wastes.** Respondents should provide a detailed description of all process by-products and waste materials including class and final disposition.

## 28.0 RISK CONSIDERATIONS

Proposals must include a statement of the Respondent's financial resources and proof of creditworthiness. Respondents should also describe how they would mitigate GRU's financial and performance risk. Describe any contractual approaches to risk mitigation including but not limited to (1) liquidated damages, (2) replacement energy or capacity, or (3) performance standards or guarantees. Risk mitigation may also take the form of backup fuels or systems.

## 29.0 SUBMITTAL REQUIREMENTS

Proposals shall be prepared in accordance with the guidelines set forth in this section. Failure to follow the preparation instructions may result in the exclusion of the proposal from consideration.

Each proposal shall be organized by section as described below. Each page of the proposal shall have the following information in the top right corner.

- GRU Biomass Supply RFP No. 2007-135
- Name of Bidder



090451 Hearing Exhibit - 000193

- Project Name

All of the following sections shall be completed or identified as "Not Applicable".

**29.1 Section 1 – Executive Summary**

The executive summary should provide an overall description of the proposal. The summary should include the technology and location of the facility or facilities that will be the source of the power supplied for the proposal and should discuss the general contractual and pricing arrangements for the proposal. The summary should be limited to two (2) pages.

**29.2 Section 2 – Financial Structure of the Proposal**

Describe the financial structure being proposed (i.e., PPA, GRU ownership of facility or equity participation). This should include a description of the proposed contractual arrangements.

**29.3 Section 3 – Technical Information**

The following technical information should be included in this section, as applicable for the project being proposed:

a) Description of technology and configuration
b) Major equipment manufacturers
c) Fuel supply and requirements including any backup fuels
d) Net capacity rating
e) Indicative net heat rates
f) Site requirements and layout
g) Projected permitting and construction schedule and in-service date
h) Dispatchability of the project, including facility limitations that may constrain operation or dispatch
i) Environmental characteristics and emission rates (see section above on Environmental Considerations)
j) Ash and other by-products (see section above on Environmental Considerations)
k) Water use (see section above on Environmental Considerations)
l) Electrical interconnection requirements
m) Readiness of the proposed technology (see section above on Technology Considerations)
n) Reliability of the proposed technology see section above on Technology Considerations)
o) Performance guarantees, warranties and risk mitigation
p) Backup systems and fuels
q) Estimated truck traffic associated with fuel supply
r) Description of how fuel procurement practices are consistent with GRU's commitment to Sustainable Resource Forest Management

### 29.4 Section 4 – Economic Information

The following economic information should be included in this section, as applicable for the project being proposed:

a) Capacity offered and all relevant pricing information including, but not limited to:
   - Capacity charge by year
   - Energy charges by year or guaranteed conversion rates and fuel cost index
   - Variable O&M charges and index
   - Start charges and index
   - Transmission wheeling charges
   - Other charges

   If the Respondent is proposing an innovative or non-traditional pricing arrangement that does not easily conform to the categories listed above, a detailed description of the proposed pricing is required.

b) Fuel cost assumptions
c) REC and environmental allowance management (see section above on Environmental and Tax Credits)
d) Treatment of tax credits and other financial incentives (see section above on Environmental and Tax Credits)
e) Liquidated damages
f) Limitations on damages and remedies
g) Replacement power or capacity
h) Other proposed forms of risk mitigation
i) Land purchase or lease assumptions
j) Number of employees on-site under normal operations



090451 Hearing Exhibit - 000195

## 29.5 Section 5 – Production Cost Information

GRU expects a wide range of contractual structures and technologies that are adapted to various fuel types. Accordingly, GRU requests that indicative all-in production costs (including capital and financing, operation, maintenance, and fuel costs) be given for each of the scenarios presented in Table 2 to clearly illustrate how the proposed contract structures would be applied. If the power is from a site other than Deerhaven, please include transmission wheeling costs. The information in Tables 2 and 3 will be considered proprietary and confidential if submitted in a separate, sealed envelope as described elsewhere in the RFP.

**Table 2: Illustrative All-in Production Costs ($/MWh)**

| Unit Capacity Factor | Average Delivered Fuel Cost ($/mmBtu) or Index Value (% of base) | | | | |
|---|---|---|---|---|---|
| | $2.25 70% | $2.75 85% | $3.25 100% | $3.75 115% | 4.25 130% |
| 90% | | | | | |
| 85% | | | | | |
| 80% | | | | | |
| 70% | | | | | |
| 65% | | | | | |
| Off line (Daily Payment) | | | | | |

Notes: a. If based on index, attach description of index and indicate on table. 100% should represent a current value for the index.
b. Payments while unit is offline will not be in units of $/MWh.
c. State assumed % MSW by heat content and assumed tipping fee per ton. Multiple tables to reflect different scenarios allowed.

The ability to economically dispatch a unit depends upon its variable production costs. All things being equal, GRU prefers lower variable production costs. Table 3 is designed to allow consideration of this factor.

**Table 3: Illustrative Variable Costs for Economic Dispatch ($/MWh)**

| Unit Capacity Factor | Average Delivered Fuel Cost ($/mmBtu) or Index Value (% of base) | | | | |
|---|---|---|---|---|---|
| | $2.25<br>70% | $2.75<br>85% | $3.25<br>100% | $3.75<br>115% | 4.25<br>130% |
| 90% | | | | | |
| 85% | | | | | |
| 80% | | | | | |
| 70% | | | | | |
| 65% | | | | | |
| Off line<br>(Daily Payment) | | | | | |

Notes: a. If based on index, attach description of index and indicate on table. 100% should represent a current value for the index.

### 29.6 Section 6 – Respondent Information

The following Respondent information should be included in this section:

a) Respondent's qualifications and experience in the provision of energy supply
b) Respondent's qualifications and experience with the technology being proposed including references
c) Respondent's financial capability including, but not limited to:
   - Recent annual report for the Respondent and any other parties involved, or a recent copy of an audited income statement and balance sheet
   - Bond rating of Respondent or its parent company by Moody's, Fitch, Standard & Poor's, and/or Dunn & Bradstreet
   - Description of financing for the project
   - Financial guarantees from affiliates or others, as appropriate

### 29.7 Section 7 – Attachments for Section 6

## 30.0 EVALUATION CRITERIA

30.1 Foremost among the evaluation criteria for Step 1 will be the proposed project's all-in cost, reliability, environmental impacts, and contribution to GRU's fuel diversity. The evaluation criteria to be utilized include:

a) Project All-in Production Cost
b) Project Variable Production Costs
c) Technology Readiness and Project Reliability
d) Environmental Emissions
e) Fuel Requirements and Sources
f) Anticipated Project In-Service Date and/or Energy Delivery
g) Project Commitment to Sustainable Forest Resource Management
h) Project Site Requirements
i) Project Size and Design
j) Experience and Resources of Project Developer/Sponsor
k) Proposed Contractual Terms and Conditions
l) Project Risk Profile
m) By-product/Waste Production and Disposition
n) Ability to execute the project.

## 31.0 SELECTION PROCESS

31.1 The objective of the RFP is to solicit proposals that allow GRU to assess the best biomass/MSW generating alternatives that satisfy the RFP requirements on a cost-effective basis. It is anticipated that GRU will receive a variety of proposals that may vary in length of term, capacity, price, technology, fuel, environmental impacts, and other characteristics.

Following the issuance of the RFP, GRU will hold a workshop and Deerhaven site review. Proposal submission will be followed by a discovery and evaluation phase, which will result in the selection of a short list of proposals.

The selection process is summarized below.

### 31.2 Step 1

**Proposal submission, discovery, and initial screening**
Based on the criteria listed above, GRU will compile a short list of proposals that warrant further consideration. Proposals that best meet GRU's initial evaluation criteria may be selected for further evaluation.

**Short listed proposal presentations and further screening**
Short listed Respondents selected from the initial screening may be invited to make an on-site presentation of their proposal. Respondents should be available to present the proposal in a time period designated by GRU (current expectation is early 2008). The short listed Respondents requested to make an on-site presentation shall have up to 90 minutes to present an overview of their proposal, followed by a question and answer session. Travel and other expenses incurred to make the presentations shall be at the Respondent's expense.

### 31.3 Step 2

**Submission of binding proposals and final selection**
A maximum of three of the Respondents with the most advantageous proposals and qualifications will be asked to competitively submit binding proposals. The proposal selected from this process will then be used as the basis for final contract negotiations, subject to the approval of the Gainesville City commission.

## 32.0 FINANCIAL AND OPERATIONAL CONSIDERATIONS

GRU is financially strong with "Aa" bond ratings from Moody's Investor Services and "AA" bond ratings from Standard and Poor's. Although GRU has a long corporate history of owning and operating its own generation capacity, there are a number of factors that would lead GRU to consider other arrangements. For a relatively new and innovative generation technology, GRU recognizes the potential benefits of operation and maintenance by an entity with a long term vested interest in that specific technology. GRU also recognizes that recently enacted tax and production credits, IRS regulations, and emerging opportunities for supplemental grant funding could create value leading to something other than a conventionally owned and financed unit and is willing to consider innovative financial arrangements.

## 33.0 RESERVED RIGHTS

GRU reserves the right to reject any or all submitted proposals.

## 34.0 PROPRIETARY INFORMATION

The body of the submittals will be posted on the web at www.GRU.com. Respondents are responsible for submitting proprietary information in a clearly marked manner separate from the information that will be posted on the web.

## 35.0 ANTICIPATED SCHEDULE

The anticipated schedule for this RFP is as follows:

| | |
|---|---|
| October, 2007 | Issue RFP |
| November 9, 2007 | Pre-submission Workshop and site review |
| December 14, 2007 | Proposal due<br>Discovery/evaluation Phase |
| January 28, 2008 | Short list approval by City Commission |
| March 19, 2008 | Binding proposals due |
| April 14, 2008 | City Commission authorization to negotiate & execute |

# APPENDIX A

## Regional Woody Biomass And Urban Waste Materials

All the information contained in this summary have been extracted (except where explicitly stated otherwise) from: Economic Availability of Alternative Biomass Sources for Gainesville, Florida, Part I and Part II, Principal Investigator, Dr. Douglas R. Carter, University of Florida, School of Forest Resources and Conservation ("UFSFRC"). Co-Principal Investigators, Dr. Matthew Langholtz, University of Florida, School of Forest Resources and Conservation, Drs. Timothy Townsend and Brajesh Dubey, University of Florida, College of Engineering, Department of Environmental Engineering Sciences, and Mr. Richard Schroeder, BioResource Management, Inc., October, 2007, University of Florida.

### 1.0 Woody Biomass

#### 1.1 Quantity Assumptions

##### 1.1.1 Commercial Pulpwood

1. Pulpwood refers to small diameter trees, typically 3.6 to 6.5 inches diameter at breast height, that are usually harvested for manufacturing paper products.

2. Pulpwood is a major industrial forest product in Florida.

3. Harvesting methods include clear cutting, typically from forest plantations on private lands, and to a lesser extent commercial thinnings, in both plantations and natural stands on public and private ownerships.

4. Unlike pre-commercial thinnings, commercial thinnings provide a profit to the forest landowner.

5. In conditions of low pulpwood stumpage prices and high biomass demand, some portion of this pulpwood supply could be allocated to bioenergy production (Perlack, Wright et al. 2005).

6. Annual pulpwood harvests are also derived from the FIA TPO database.

7. We assume that all current pulpwood commercial harvests are available for use in energy production in the supply assessment.

8. Care should be taken not to interpret these results to suggest that all the current pulpwood harvests are available at current pulpwood prices for bio-energy.

### 1.1.2 Logging Residue

1. Logging operations leave residues following timber harvests.

2. Logging residues are typically piled and often burned on site for disposal and to allow for replanting.

3. To estimate woody biomass quantities from logging residues, we accessed Timber Product Output ("TPO") reports (http://srsfia2.fs.fed.us/php/tpo2/tpo.php) maintained by the Forest Inventory and Analysis ("FIA") work unit of the USDA Forest Service, Southern Research Station ("SRS").

4. This database provides forest inventory and harvest information, including annual yields of logging residues and pulpwood at the county level.

5. The SRS derives these values by updating FIA harvest data with more frequent regional harvest information based on mill surveys (Tony Johnson, pers. Com., January 2006).

6. To account for increased harvesting efficiencies and utilization, we assume current logging residues are **60%** available.

7. Stumps were excluded from this analysis, and represent an additional 435,000 dry tons (6.5 Tbtu) per year within the three-facility woodshed (GRU, JEA, and TAL).

### 1.1.3 Thinnings from Forests

1. Forest growth exceeds forest harvests in Florida by about **35%**.

2. This combined with fire suppression results in high-density forests.

3. 2005 FIA data for Florida reports about **8%** of timberland acres in Florida are classified as "overstocked".

4. Overstocked stands are fairly evenly distributed across age classes in Florida.

5. Removing small diameter trees from overstocked stands can improve forest health and productivity; reduce the likelihood, intensity and costs of forest fires; and help forest landowners meet various forest management objectives (e.g. Perlack, Wright et al. 2005; Condon and Putz 2007).

6. Pre-commercial thinnings were restricted to young stands to avoid competition for larger diameter and higher-value commercial timber.

7. In this analysis we include three scenarios of forest thinnings:

   **Longleaf Pine Ecosystem Restoration,** Thinning consisting of removing 20 dry tons of invasive hardwoods per acre from 1/40$^{th}$ of longleaf pine forest acreages annually.

   **Overstocked Natural,** An annual pre-commercial thinning of **36%** of all standing biomass from **1/5$^{th}$** of overstocked *natural stands* aged 5-15 years old. This 36% of the biomass is based on harvesting every 5$^{th}$ row of trees (20%) plus a selective thinning of 20% of the remaining 80% of the stand (20%*80%=16%), removing a total of 36% of the stand (20%+16%). The harvesting frequency is based on **two pre-commercial thinnings**, one between 5-10 years of age, and one between 11-15 years of age.

   **Overstocked Plantation,** Pre-commercial thinning of 36% of all standing biomass from **1/5$^{th}$** of overstocked *plantations* aged 5-15 years old annually. This **36%** of the biomass is based on harvesting every 5$^{th}$ row of trees (20%) plus a selective thinning of 20% of the remaining 80% of the stand (20%*80%=16%), removing a total of 36% of the stand (20%+16%). The harvesting frequency is based on **two pre-commercial thinnings**, one between 5-10 years of age, and one between 11-15 years of age.

### 1.1.4 Urban Wood Waste

1. The resource identified here is comprised of large-diameter urban wood typically handled by tree servicing companies, rather than yard waste and leaves.

2. Based on Wiltsee (1998) we assume an average of 0.203 green tons (40% moisture content) per person per year.

3. This estimate excludes an additional 0.103 green tons capita$^{-1}$ year$^{-1}$ Wiltsee reported from industrial wood (e.g. cabinet and pallet production) and construction and demolition debris.

4. Wiltsee's study of thirty metropolitan areas across the US showed relative consistency per capita nation wide; values tended to be higher in southern states.

5. To exclude urban wood waste that may be too dirty or already allocated to commercial uses, we assume an availability of **60%**.

6. We multiply this average annual per capita yield by county level 2005 US Census population estimates (www.census.gov/popest/counties/) to estimate total annual yield of urban wood waste per county.

7. On a per capita basis, these calculations for urban wood waste are lower than those found by Post and Cunillio (2003), which may be explained in part by the large amount of biomass produced by land clearing in Alachua County.

## 1.2 Cost Assumptions

In addition to physical availability, information about the resource costs is required to construct supply curves. The delivered cost of woody biomass, as with conventional forest products, can be defined as a sum of procurement, harvest, transportation, and miscellaneous management costs. The results of the cost assumptions described below are summarized in Table 1.

### 1.2.1 Fuel Cost

These costs are assumed relevant for the 1st Quarter of 2007, when diesel prices are quoted as $2.12 and $2.49 per gallon for off-road and highway, respectively.

### 1.2.2 Procurement Cost

"Procurement cost" is the amount paid to gain ownership of a biomass resource. Procurement cost is equivalent to the term "stumpage price" in the forest industry, i.e. the price paid to a timber owner for the right to harvest.

### 1.2.3 Logging Residues

1. Forest plantation owners pay post-harvest site preparation costs of about $462 $ha^{-1}$ ($186 $acre^{-1}$), including raking and piling of logging residues (Smidt, Silveira Folegatti et al. 2005).

2. Removal of logging residues reduces these site preparation costs for replanting plantations (Watson and Stokes 1989).

3. Therefore, logging residues also represent a liability to the resource owner and are currently available at no or low cost (Watson, Ragan et al. 1986).

4. However, some small procurement cost may be required to draw logging residue resources.

5. Therefore, we assume procurement costs of \$3 dry ton$^{-1}$ (\$1.89 green ton$^{-1}$ at 37% moisture content).

### 1.2.4 Thinnings

1. By definition, pre-commercial thinnings are forest thinnings done at a cost to the forest landowner as a stand treatment, rather than as a profitable harvest.

2. However, to ensure the economic availability of forest thinnings, we assume a stumpage price of \$6 dry ton$^{-1}$ (\$3.18 green ton$^{-1}$), about half that of current stumpage prices.

### 1.2.5 Pulpwood

1. Pulpwood is a more expensive woody biomass resource that can be employed to meet demand beyond that available from waste resources.

2. In an initial analysis, we used south-wide averages of softwood pulpwood stumpage for the 4$^{th}$ Quarter of 2006 of \$13.00 dry ton$^{-1}$.

3. In this analysis we have increased prices to \$15.21 dry ton$^{-1}$ (\$8.06 green ton$^{-1}$) as reported by Timber Mart-South for Florida in the 1$^{st}$ Quarter of 2007.

4. This price is at the higher end of the range of stumpage prices seen over the past several years.

## 1.3 Harvest and Processing Costs

### 1.3.1 Urban Wood Wastes

1. The cost of processing urban wood waste ranges from \$6.45-\$27.50 green ton$^{-1}$ in a 2006 bid request in Florida (Osceola County Board of County Commissioners 2006).

2. We assume that urban wood waste can be received, screened, and chipped for \$30 dry ton$^{-1}$ (\$18.90 green ton$^{-1}$).

### 1.3.2 Logging residues, thinnings, and pulpwood harvests

1. To estimate chipping costs, we use Timber-Mart South 1$^{st}$ Q 2007 delivered pulp chip prices (\$30.00 green ton$^{-1}$) and subtracted average stumpage (\$8.06 green ton$^{-1}$), harvest (\$11.64 green ton$^{-1}$), and delivery costs (\$4.65 green ton$^{-1}$) yielding \$5.74 green ton$^{-1}$.

2. Adding chipping costs (\$5.74 green ton$^{-1}$) and reported harvest costs (\$11.64 green ton$^{-1}$) yields \$33.00 dry ton$^{-1}$ (\$17.38 green ton$^{-1}$) for total harvest and processing costs.

3. Harvesting and processing costs would increase on a per-ton basis for low-density stands or for widely dispersed logging residues, or may be less where logging residues are handled and piled along with conventional harvesting operations.

## 1.4 Transportation Costs

1. To calculate transportation cost as a function of road conditions (see Haul Time Calculation below) we estimate transportation cost as a function of transportation time rather than distance.

2. Based on the operational assumptions for each resource shown in Appendix A, we assume one-way transportation costs to be \$3.41, \$3.26, \$2.68, and \$3.00 green ton$^{-1}$ hour$^{-1}$ for urban wood waste, logging residues, pulpwood, and thinnings, respectively.

3. We then double these values to account for return trips with empty loads, and add \$0.86-\$1.25 green ton$^{-1}$ to account for loading and unloading.

4. These values are conservative compared to the hauling rate of \$0.12 green ton$^{-1}$ loaded mile$^{-1}$ reported by Timber Mart-South for the 1$^{st}$ Quarter of 2007.

5. During this period, diesel prices are quoted as $2.12 and $2.49 per gallon for off-road and highway, respectively.

**Table 1: Cost Assumptions for Four Woody Biomass Resources**

| | *Urban Wood Waste* | *Logging Residue* | *Thinnings* | *Pulpwood* |
|---|---|---|---|---|
| | ($ dry ton$^{-1}$) | | | |
| Procurement cost[a] | -25.00 | 3.00 | 6.00 | 15.21 |
| Harvest and process | 30.00 | 33.00 | 33.00 | 33.00 |
| Load and unload | 1.98 | 1.80 | 1.92 | 1.72 |
| Two-way haul (per hour) | 11.86 | 10.78 | 11.54 | 10.30 |
| Example total delivered cost of a one hour haul[b] | 18.84 | 48.58 | 52.46 | 60.23 |

[a] Negative costs for urban wood waste reflect disposal costs, known as "tipping fees".
[b] Equals the sum of the four cost categories.

### 1.4.1 Total cost by resource-haul time category

1. Based on the above cost assumptions, we calculate the delivered cost of each woody biomass resource within a given haul time at fifteen minute increments.

2. We feel this approach most accurately reflects site-specific variation in road networks, speed limits, and geographical constraints.

3. By ranking these resources from lowest cost to highest cost, we estimate the progression of most to least economically available woody biomass resources, accounting for travel time from the point of delivery.

4. Transportation costs comprise 10-85% of total delivered costs, depending on the resource type and travel time.

## 2.0 Other Urban Waste Materials

### 2.1 Municipal Solid Waste ("MSW") / Refuse Derived Fuel ("RDF")

GRU will only consider MSW fuel options that are limited to materials which are not feasibly recycled. MSW is usually burned as it is after some preliminary steps (mass burn). However, at some plants refuse derived fuel (RDF) is used. RDF is a fuel produced by shredding MSW or steam pressure treating in an autoclave. RDF consists largely of organic components of municipal waste such as plastics and biodegradable waste (paper, food waste, textiles. Etc). RDF processing facilities are normally located near a source of MSW. RDF can be produced and used for energy production from the day to day waste components disposed of from domestic and industrial areas. RDF is produced essentially to facilitate the burning of the waste.

Municipal solid waste (MSW) is incinerated either as a mass burn or as refuse derived fuel (RDF). Though the style most often used has been mass burn, there are quite a few RDF plants in use. These facilities are distinguished from mass burn plants by the presence of waste pre-processing equipment. RDF is the name given both to the residual end product created by the processing and to the plant which burns the material. In RDF plants the truck usually dumps unprocessed MSW onto a conveyor which leads into a facility separate from the incinerator for preprocessing and sorting into resource streams. Though RDF plant designs differ according to the types of resources recovered and the degree of resource purity achieved in the end product, RDF is generally derived by removing noncombustible metals, glass and grit, and subsequently processing the remaining combustible waste to a uniform size. The RDF is a highly combustible and versatile feedstock containing mainly paper and plastic, which can be burned either as-is (a fluffy material) or in a dense, easily transported alletized form. It can be burned either alone in a dedicated furnace/boiler attached to the processing facility (as most RDF plants are configured) or commingled with another fuel (e.g., sewage sludge, wood) and shipped in pellet form off-site to another facility. For the calculations presented in this report, the fraction of waste that is reported to be combustible includes paper, plastics, textile, food waste, and other organics.

A value of 5,000 Btu/lb was used for the energy conversion.

The processing cost of MSW for fuel applications is approximately $40/ ton.

**2.2 Tires**

Tires can be used as a fuel alternative. Combustion facilities currently using tires as fuel include: (1) power plants; (2) tire manufacturing plants; (3) cement kilns; (4) pulp and paper plants; and (5) small package steam generators. In order to prevent discarded automobile tires from damaging the environment, it is highly desirable to recycle this material. However, the total mass quantity of tires currently recycled in a given year (not including reuse, retreading, or combustion) is less than 7% of the annual tire production rate. The number of tires produced each year will continue to far exceed the demand for scrap and



090451 Hearing Exhibit - 000207

used tires. Only a small portion of waste tires are retreaded, and a very small portion is devulcanized by tedious processes. Tires that are not recycled or reused are usually shredded and disposed of in landfills, or stockpiled whole. Stockpiling whole tires creates two significant hazards: mosquitoes and fires.

In 2006, 86% of waste tires produced in Florida were constructively utilized. Potential uses include asphalt modification, playground/sports surfacing, soil covers and incineration, among others.

A value of 14,000 Btu/lb was used for the energy conversion.

### 2.3 Yard Waste

Yard waste is defined as the part of solid waste composed of vegetative matter resulting from landscaping maintenance or land clearing operations and includes materials such as tree and shrub trimmings, grass clippings, palm fronds, trees, and tree stumps (Chapter 62-701, Florida Administrative Code). In Florida yard waste is banned from disposal in lined landfill facilities. It is collected either by separate curbside collection or by the use of drop off facilities where a resident can go and drop off the yard waste. Disposal pathways for yard waste include mulch, composting/co-composting, tilled into the soil, and combustion.

Yard waste projections are in potential Btu of energy if all yard waste produced is used as fuel. A value of 4,200 Btu/lb was used for the energy conversion.

Within a specific region yard waste is collected at several clean wood recycling facilities. Part of yard waste from households also gets dropped off at an active landfill site or at a transfer station. This yard waste gets ground and composted on site and given away to the public free as mulch. The processing cost of yard waste for fuel applications (grinding and producing mulch type end product) is approximately $20/ ton (personal communication, Florida Wood Recycling, Town of Medley, 2007).

## 3.0 Fuel Volume and Availability: Tables 2 And 3

Table 2 Appendix A contains results from the UFSFRC study manipulated by GRU staff to produce the cumulative available volume of biomass fuel in the order of increasing price. The cumulative weighted price per mmBtu is also shown. The data in Table 2 is drawn from UFSFRC scenarios assuming competition for biomass resources and higher transportation fuel costs. Pulp wood availability was adjusted to 0.5% as discussed in the text of the UFSFRC report. Only MSW from City of Gainesville operations as shown in Table 3 is assumed to be available and represented in Table 2. GRU reserves the right to consider in its evaluations new data regarding biomass availability or the level

of commitment that other experienced biomass project developers are willing to make.



090451 Hearing Exhibit - 000209

## Table 2: Biomass Resources by Type and Collection Distance, Sorted by Price

**Developed Using Resource Competition and High Diesel Price Scenario, Limited to the City of Gainesville's MSW**

| Resource/haul time category | Dry tons [4] recoverable | TBtu/year recoverable | Cumulative TBtu/year recoverable | Price ($/MMBtu) | Cumulative Price ($/MMBtu) |
|---|---|---|---|---|---|
| Alachua Co. MSW [2] | 73,847 | 0.738 | 0.738 | $0.00 | $0.00 |
| Alachua Co. waste wood [2] | 465 | 0.005 | 0.743 | $0.00 | $0.00 |
| Alachua Co. Tires [2] | 316 | 0.009 | 0.752 | $0.00 | $0.00 |
| Alachua Co. C&D [2] | 12,625 | 0.148 | 0.900 | $0.00 | $0.00 |
| Urban wood, 0-15 min. | 1,934 | 0.030 | 0.930 | $1.28 | $0.04 |
| Urban wood, 15-30 min. | 8,214 | 0.120 | 1.050 | $1.52 | $0.21 |
| Urban wood, 30-45 min. | 10,881 | 0.160 | 1.210 | $1.76 | $0.42 |
| Urban wood, 45-60 min. | 10,310 | 0.150 | 1.360 | $2.00 | $0.59 |
| Urban wood, 60-75 min. | 10,623 | 0.160 | 1.520 | $2.24 | $0.76 |
| Urban wood, 75-90 min. | 12,922 | 0.190 | 1.710 | $2.48 | $0.95 |
| Urban wood, 90-105 min. | 16,054 | 0.240 | 1.950 | $2.72 | $1.17 |
| Urban wood, 105-120 min. | 21,471 | 0.320 | 2.270 | $2.96 | $1.42 |
| Logging residues, 0-15 min. | 4,222 | 0.070 | 2.340 | $3.32 | $1.48 |
| Overstocked natural, 0-15 min. | 0 | 0.000 | 2.340 | $3.32 | $1.48 |
| Overstocked plantation, 0-15 min. | 4,637 | 0.070 | 2.410 | $3.32 | $1.53 |
| Overstocked natural, 15-30 min. | 498 | 0.010 | 2.420 | $3.50 | $1.54 |
| Overstocked plantation, 15-30 min. | 18,555 | 0.280 | 2.700 | $3.50 | $1.75 |
| Logging residues, 15-30 min. | 21,111 | 0.330 | 3.030 | $3.55 | $1.94 |
| Longleaf restoration, 0-15 min. | 552 | 0.010 | 3.040 | $3.62 | $1.95 |
| Overstocked natural, 30-45 min. | 2,245 | 0.030 | 3.070 | $3.68 | $1.96 |
| Overstocked plantation, 30-45 min. | 16,288 | 0.240 | 3.310 | $3.68 | $2.09 |
| Logging residues, 30-45 min. | 41,033 | 0.640 | 3.950 | $3.77 | $2.36 |
| Overstocked natural, 45-60 min. | 3,158 | 0.050 | 4.000 | $3.86 | $2.38 |
| Overstocked plantation, 45-60 min. | 8,032 | 0.120 | 4.120 | $3.86 | $2.42 |
| Pulpwood [3], 0-15 min. | 86 | 0.001 | 4.121 | $3.94 | $2.42 |
| Longleaf restoration, 15-30 min. | 3,166 | 0.050 | 4.171 | $3.98 | $2.44 |
| Logging residues, 45-60 min. | 41,327 | 0.640 | 4.811 | $4.00 | $2.65 |
| Overstocked natural, 60-75 min. | 2,086 | 0.030 | 4.841 | $4.04 | $2.66 |
| Overstocked plantation, 60-75 min. | 11,330 | 0.170 | 5.011 | $4.04 | $2.70 |
| Pulpwood [3], 15-30 min. | 450 | 0.007 | 5.019 | $4.14 | $2.71 |
| Overstocked natural, 75-90 min. | 2,347 | 0.040 | 5.059 | $4.22 | $2.72 |
| Overstocked plantation, 75-90 min. | 16,093 | 0.240 | 5.299 | $4.22 | $2.79 |
| Logging residues, 60-75 min. | 46,367 | 0.720 | 6.019 | $4.22 | $2.96 |
| Longleaf restoration, 30-45 min. | 12,567 | 0.190 | 6.209 | $4.34 | $3.00 |
| Pulpwood [3], 30-45 min. | 930 | 0.015 | 6.224 | $4.35 | $3.00 |
| Overstocked natural, 90-105 min. | 1,719 | 0.030 | 6.254 | $4.40 | $3.01 |
| Overstocked plantation, 90-105 min. | 15,078 | 0.230 | 6.484 | $4.40 | $3.06 |
| Logging residues, 75-90 min. | 58,186 | 0.910 | 7.394 | $4.45 | $3.23 |
| Pulpwood [3], 45-60 min. | 978 | 0.016 | 7.409 | $4.55 | $3.23 |
| Overstocked natural, 105-120 min. | 1,769 | 0.030 | 7.439 | $4.57 | $3.24 |
| Overstocked plantation, 105-120 min. | 6,549 | 0.100 | 7.539 | $4.57 | $3.26 |
| Logging residues, 90-105 min. | 56,461 | 0.880 | 8.419 | $4.67 | $3.40 |
| Longleaf restoration, 45-60 min. | 20,690 | 0.310 | 8.729 | $4.69 | $3.45 |
| Pulpwood [3], 60-75 min. | 1,055 | 0.017 | 8.747 | $4.76 | $3.45 |
| Logging residues, 105-120 min. | 34,098 | 0.530 | 9.277 | $4.89 | $3.53 |
| Pulpwood [3], 75-90 min. | 1,334 | 0.022 | 9.298 | $4.96 | $3.54 |
| Longleaf restoration, 60-75 min. | 18,472 | 0.280 | 9.578 | $5.05 | $3.58 |
| Pulpwood [3], 90-105 min. | 1,175 | 0.019 | 9.597 | $5.17 | $3.59 |
| Pulpwood [3], 105-120 min. | 631 | 0.010 | 9.607 | $5.39 | $3.59 |
| Longleaf restoration, 75-90 min. | 23,168 | 0.350 | 9.957 | $5.41 | $3.65 |
| Longleaf restoration, 90-105 min. | 28,733 | 0.430 | 10.387 | $5.77 | $3.74 |
| Longleaf restoration, 105-120 min. | 27,853 | 0.410 | 10.797 | $6.12 | $3.83 |

(1) From University of Florida Study

(2) From Alachua County Waste Management records for fiscal year 2006 and only allowing the estimated portion collected from incorporated area of the City of Gainesville to be available for generation of electricity.

(3) Pulpwood limited to 0.5% of resource available from region. Price elasticity adjusted from an average of $15.21 to $15.41 per dry ton.

(4) American standard short (net) tons = 2000 lb.

(5) Diesel prices set to $4.24 and $4.98 per gallon for off-road and highway respectively.

## Table 3: MSW Summary for Alachua County

| | YTD Fiscal Year 07 | | | YTD Prior year | | |
|---|---|---|---|---|---|---|
| | City | County | Totals | City | County | Totals |
| **INBOUND** | | | | | | |
| **Alachua County Residential** | | | | | | |
| - Household Garbage | 20,490.42 | 42,515.49 | 63,005.91 | 20,265.57 | 41,805.83 | 62,071.40 |
| - Woodwaste (a) | 269.61 | 559.42 | 829.03 | | | |
| - tires (a) | 205.77 | 426.95 | 632.72 | | | |
| | 20,965.80 | 43,501.86 | 64,467.66 | 20,265.57 | 41805.83 | **62,071.40** |
| **Alachua County Commericial** | | | | | | |
| *Commercial, Governmental & Institutional (b) | 49,936.22 | 33,290.82 | 83,227.04 | 59,510.00 | 39673.332 | 99,183.33 |
| **Alachua County Total** | 70,902.03 | 76,792.67 | 147,694.70 | 79,775.57 | 81,479.16 | 161,254.73 |
| Waste Management's Transfer Station (c ) | 26974.704 | 17,983.14 | 44,957.84 | 2401.95 | 1601.3 | 4,003.25 |
| | 97,876.73 | 94,775.81 | **192,652.54** | 82,177.52 | 83,080.46 | **165,257.98** |

(a) Woodwasle and tires are broken down into proportion of city and county household garbage
(b) Commerical waste is broken down into portion of 60% city, 40% county
(c) Waste Management MSW is broken down into 60% city, 40% county

# APPENDIX B
# DEBARMENT

## DEBARMENT/SUSPENSION/TERMINATION

Debarment/Suspension. The purchasing representative is authorized to suspend a person from consideration for award of contracts if there is probable cause to believe that the person has engaged in activity which might lead to debarment. The suspension shall be for a period not to exceed three months. After reasonable notice to the person involved and reasonable opportunity for that person to be heard, the purchasing representative, after consulting with the City Attorney, is authorized to debar a person for cause from consideration for award of contracts. The debarment shall be for a period of not more than three years. The causes for debarment include:

(a) Conviction for commission of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of such contract or subcontract, within five years of a proposed award;

(b) Conviction under State or Federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a City contractor, within five years of a proposed award;

I Conviction under state or federal antitrust statutes arising out of the submission of bids or proposals, within five years of a proposed award;

(d) Violation of contract provisions, as set forth below, of a character which is regarded by the purchasing representative to be so serious as to justify debarment action, within five years of a proposed award:

(i) Deliberate failure without good cause to perform in accordance with the specifications or within the time limit provided in the contract; or

(ii) A record of failure to perform or of unsatisfactory performance in accordance with the terms of one or more contracts; provided that failure to perform or unsatisfactory performance caused by acts beyond the control of the contractor shall not be considered to be a basis for debarment;

(e) For any provision of, or offer, gift or agreement to provide, any gratuity, kickback or offer of employment to any City employee or former City employee in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase requisition, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor, within three years of a proposed award; and

(f) For any payment, gratuity, kickback or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order, within three years of a proposed award; and

(g) For retaining a person or soliciting or securing a City contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies for the purpose of securing business, within three years of a proposed award; and

(h) During the period of a contract with the City, employing, or offering employment to, any current City employee participating directly or indirectly in the procurement process, within three years of a proposed award; and

(i) Any other cause the purchasing representative determines to be so serious and compelling as to affect responsibility as a City contractor, including debarment by another governmental entity for any cause listed in this Section.

## REJECTION OF BIDS/TERMINATION OF CONTRACT

Previously solicited and/or accepted bids may be rejected or acceptance revoked prior to beginning of performance upon discovery by the City that the bidder or its affiliates have committed any act which would have been cause for debarment.

If the City discovers, after a contract is awarded and performance has begun, that the bidder or its affiliates have committed any subsequent to or prior to award or acceptance which would have been cause for debarment had it been discovered prior to solicitation or acceptance, the City may consider such to be a material breach of the contract and such shall constitute cause for termination of the contract.

Revised 10/06/86

# APPENDIX C
# LOCAL VENDOR PREFERENCE ORDINANCE

## ARTICLE X. LOCAL PREFERENCE POLICY

**Sec. 2-620. Findings of fact.**

The city annually spends significant amounts on purchasing personal property, materials, and contractual services and in constructing improvements to real property or to existing structures. The dollars used in making those purchases are derived, in large part, from taxes, fees, and utility revenues derived from local businesses in the corporate city limits of Gainesville, and the city commission has determined that funds generated in the community should, to the extent possible, be placed back into the local economy. Therefore, the city commission has determined that it is in the best interest of the city to give a preference to local businesses in the corporate city limits of Gainesville in making such purchases whenever the application of such a preference is reasonable in light of the dollar-value of proposals received in relation to such expenditures.
(Ord. No. 001261, § 1, 3-29-04)

**Sec. 2-621. Definition.**

"Local business" means the vendor has a valid occupational license, issued by the City of Gainesville at least six months prior to bid or proposal opening date, to do business in said locality that authorizes the business to provide the goods, services, or construction to be purchased, and a physical business address located within the limits of said locality, in an area zoned for the conduct of such business, from which the vendor operates or performs business on a day-to-day basis. Post office boxes are not verifiable and shall not be used for the purpose of establishing said physical address. In order to be eligible for local preference, the vendor must provide a copy of the occupational license.
(Ord. No. 001261, § 2, 3-29-04)

**Sec. 2-622. Local preference in purchasing and contracting.**

In bidding of, or letting contracts for procurement of, supplies, materials, equipment and services, as described in the purchasing policies, the city commission, or other purchasing authority, may give a preference to local businesses in making such purchase or awarding such contract in an amount not to exceed five percent of the local business' total bid price, as described below, and in any event the cost differential should not exceed $25,000.00. Total bid price shall include not only the base bid price but also all alterations to that base bid price resulting from alternates which were both part of the bid and actually purchased or awarded by the city commission or other authority. In the case of requests for proposals, letters of interest, best evaluated bids, qualifications or other solicitations and competitive negotiation and selection in which objective factors are used to evaluate the responses, local businesses are assigned five percent of the total points of the total evaluation points.
(Ord. No. 001261, § 3, 3-29-04)

**Sec. 2-623. Exceptions to local preference policy.**

The preference set forth in this Article X shall not apply to any of the following purchases or contracts:
(1) Good or services provided under a cooperative purchasing agreement;
(2) Contracts for professional services procurement of which is subject to the Consultants' Competitive Negotiation Act (F.S. § 287.055) or subject to any competitive consultant selection policy or procedure adopted or utilized by the city commission or charter officer;
(3) Purchases or contracts which are funded, in whole or in part, by a governmental entity and the laws, regulations, or policies governing such funding prohibit application of that preference; or
(4) Purchases made or contracts let under emergency or noncompetitive situations, or for litigation related legal services, etc., as such are described in the city's purchasing policies;
(5) Purchases with an estimated cost of $50,000.00 or less;
(6) Application of local preference to a particular purchase, contract, or category of contracts for which the city commission is the awarding authority may be waived upon written justification and recommendation of the charter officer and approval of the city commission. The preferences established herein in no way prohibit the right of the city commission or other purchasing authority to compare quality or fitness for use of supplies, materials, equipment and services proposed for purchase and compare qualifications, character, responsibility and fitness of all persons, firms, or corporations submitting bids or proposals. Further, the preferences established herein in no way prohibit the right of the city commission or other purchasing authority from giving any other preference permitted by law in addition to the preference authorized herein.
(Ord. No. 001261, § 4, 3-29-04)

**Sec. 2-624. Application, enforcement.**

The local preference shall apply to new contracts for supplies, materials, equipment and services first solicited after October 1, 2004. This article shall be implemented in a fashion consistent with otherwise applicable city purchasing policies and procedures.
(Ord. No. 001261, § 5, 3-29-04)

## APPENDIX D
## LIVING WAGE

For a copy of the full Living Wage Ordinance see:
http://www.cityofgainesville.org/gov/municode.shtml



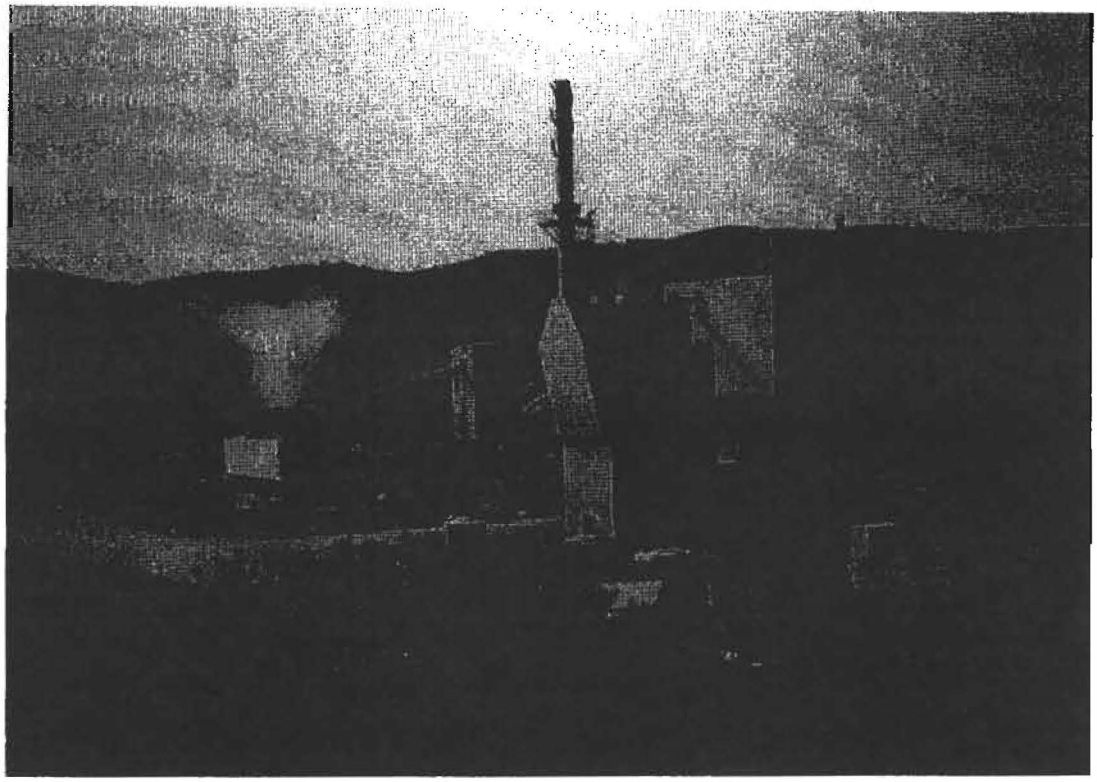
090451 Hearing Exhibit - 000215

NACOGDOCHES POWER, LLC

# Revised Confidential Proposal for Renewable Energy Generation

in response to

## Gainesville Regional Utilities RFP 2007-135, Biomass Fueled Generation Facility



* The 15 MW biomass-fired Alexandria Power Project developed by Energy Management, Inc.

Nacogdoches Power, LLC
c/o Energy Management, Inc.
75 Arlington Street, Suite 704
Boston, Massachusetts 02116
Tel: (617) 904-3100
Fax: (617) 904-3109

April 11, 2008

# TABLE OF CONTENTS

SECTION 1 - EXECUTIVE SUMMARY ..... 6
Revised Proposal Summary ..... 6
Florida Clean Energy Center Project Summary ..... 8
The Florida Clean Energy Center Will Produce the Greatest Economic Value for GRU ..... 8
Nacogdoches Power Has Developed the Most Reliable Proposal ..... 9
The Florida Clean Energy Center Will Produce the Best Environmental Performance ..... 13
The Florida Clean Energy Center Will Generate the Greatest Local Benefits and Support ..... 16
Biomass-fired Electricity Generation is the Best Renewable Solution for GRU ..... 16
Nacogdoches Power Will Work with GRU to Provide the Best PPA Terms ..... 17
Proposer Information ..... 17
Primary and Secondary Proposal Contacts ..... 17
Proposal Certification ..... 17
SECTION 2 – FINANCIAL AND CONTRACTUAL STRUCTURE OF THE PROPOSAL ..... 18
Contractual Structure and Power Purchase Agreement Options ..... 18
Evaluation of PPA Contract Structure versus GRU Ownership and Operation ..... 18
Description of Project Financing ..... 19
Development Phase ..... 19
Construction Phase ..... 20
Option for GRU Purchase After Ten Years ..... 21
PPA Terms ..... 21
Sample PPA Agreement ..... 31
SECTION 3 - TECHNICAL INFORMATION ..... 32
Project Description ..... 32
Choice of Combustion Technology ..... 33
Bubbling Fluidized Bed Boiler ..... 33
Char Re-injection System ..... 35
Steam Turbine Generator ..... 35
Fuel Handling System ..... 35
Balance of Plant and Zero Liquid Discharge ..... 37
Fuel Supply and Requirements Including Any Backup Fuels ..... 38
Start-up Fuel ..... 38
Wastewater Biosolids ..... 38

Fuel Procurement Strategy ..... 39
Forest Residue ..... 40
Mill Residue ..... 41
Thinnings ..... 42
Urban Wood Waste ..... 43
Summary of Biomass Fuel Procurement Strategy ..... 44
Net Capacity Rating ..... 44
Indicative Net Heat Rates ..... 44
Site Requirements and Layout ..... 44
Projected Permitting and Construction Schedule and In-Service Date ..... 47
Dispatchability of the Project, Including Facility Limitations that May Constrain Operation or Dispatch ..... 48
Permits and Approvals ..... 48
Site Certification (Power Plant Siting Act) ..... 48
Determination of Need (Power Plant Siting Act) ..... 50
Air Permit (Construction Permit, Prevention of Significant Deterioration Review and Title V Operating Permit) ..... 50
Acid Rain Permit (Title IV Acid Rain Permit) and Clean Air Interstate Rule (CAIR) ..... 51
FAA (Notice of Proposed Construction and Alteration) ..... 51
Industrial Wastewater Discharge Permit (National Pollutant Discharge Elimination System "NPDES") ..... 51
Beneficial Reuse; Non-Hazardous Waste Disposal ..... 52
Environmental Characteristics and Emission Rates ..... 52
Storm Debris Management ..... 56
Ash and Other By-products ..... 56
Water Use and Wastewater Discharges ..... 57
Electrical Interconnection Requirements ..... 58
Reliability of the Proposed Technology ..... 61
Performance Guarantees, Warranties and Risk Mitigation ..... 62
Backup Systems and Fuels ..... 62
Estimated Truck Traffic Associated with Fuel Supply and Traffic Management Plan ..... 62
Construction Phase ..... 63
Operational Phase ..... 63
Description of How Fuel Procurement Practices are Consistent with GRU's Commitment to Sustainable Resource Forest Management ..... 64
Community Support Plan ..... 66

SECTION 4 - ECONOMIC INFORMATION ..... 67
Pricing ..... 67
Fuel Adjuster ..... 68
Fuel Cost Assumptions ..... 68
Environmental Attributes are Included in Proposal Price ..... 69
REC and Environmental Allowance Management ..... 69
Treatment of Tax Credits and Other Financial Incentives ..... 69
Property Taxes and Value ..... 70
Local Economic Impact ..... 70
SECTION 5 – PRODUCTION COST INFORMATION ..... 72
SECTION 6 – RESPONDENT QUALIFICATIONS ..... 73
Nacogdoches Power, LLC ..... 73
Florida Clean Energy Center Project Team Diagrams ..... 73
Description of Florida Clean Energy Center Project Team Members ..... 73
CBX Energy Engineering, Inc. ..... 73
David S. Dee ..... 73
Environmental Consulting & Technology, Inc. ..... 74
Metso Paper USA, Inc. ..... 74
Natural Resource Planning Services, Inc. ..... 74
North American Energy Services, Inc. ..... 75
Siemens Industrial Turbomachinery, Inc. ..... 75
Wolf Material Handling Systems, Inc ..... 75
WorleyParsons Group, Inc ..... 75
Current and Past Power Supply Ventures ..... 76
BayCorp Power Supply Venture References ..... 76
EMI Power Supply Venture References ..... 77
Recent Annual Report for the Respondent and Any Other Parties Involved, or a Recent Copy of an Audited Income Statement and Balance Sheet ..... 80
Bond Rating of Respondent or its Parent Company by Moody's, Fitch, Standard & Poor's, and/or Dunn & Bradstreet ..... 80
Financial Guarantees from Affiliates or Others, as Appropriate ..... 80
Attachment – GRU RFP Addenda
Appendix 1 – Representative Project Layouts

Appendix 2 – Project Design Standards

Appendix 3 – Major Equipment Manufacturers and Suppliers

Appendix 4 – Conceptual Water Balance

Appendix 5 – Representative Biomass Fuel Supply Contract

Appendix 6 – Fuel Analyses

Appendix 7 – Key One Line Diagram

Appendix 8 – Electrical Information

Appendix 9 – Project Schedule

Appendix 10 – Project Ownership Information

Appendix 11 – Project Team Diagrams

Appendix 12 – Letters of Intent with Project Partners

Appendix 13 – Project Financial Statements

Appendix 14 – Updated Société Générale Letter

Appendix 15 – Partner Financial Statements

## SECTION 1 - EXECUTIVE SUMMARY

### Revised Proposal Summary

Nacogdoches Power, LLC ("Nacogdoches Power") is pleased to submit this revised confidential proposal to Gainesville Regional Utilities ("GRU") for the sale of capacity, renewable energy and environmental attributes from a 100 MW biomass-fired electric generating facility being developed in Florida (the "Florida Clean Energy Center" or "Project"). This proposal further refines the concepts and structure presented in the confidential proposal previously submitted to GRU on December 14, 2007.

Nacogdoches Power thanks GRU for providing the opportunity to submit this revised proposal and has worked to address issues raised by GRU and the Gainesville City Commission. As further described below, Nacogdoches Power has advanced the development of the Project over the last few months to provide additional value to GRU. Nacogdoches Power has made the following changes in this revised proposal as compared to its original proposal:

1. Definition of proposed power purchase agreement ("PPA") options;
2. Examination of advantages and disadvantages of a power purchase agreement contract structure versus GRU ownership and operation of facility;
3. Evaluation of feasibility of combusting wastewater biosolids;
4. Analysis of tradeoffs between 100% biomass facility and one that utilizes municipal solid waste, tires, or construction debris;
5. Completion of a detailed fuel supply study;
6. Improvement of fuel supply strategy to eliminate municipal solid waste, waste tires, and refuse-derived fuel;
7. Expansion of commitment to meet sustainable forest resource management goals;
8. Refinement of primary and alternative location for project at the existing GRU Deerhaven Power Plant Site (the "Deerhaven Site");
9. Reduction of project footprint and project site requirements;
10. Improvement of management of project by-products;
11. Selection of an alternative location for project not at Deerhaven Site;
12. Adjustment of expected output to better reflect expected performance;
13. Description of local economic impact and job creation;
14. Further review of project and proposal with prospective lenders;
15. Enhancement of detail regarding resources of project team; and
16. Entry into binding agreements with project team members.

Nacogdoches Power compared the advantages and disadvantages of a power purchase agreement contract structure versus GRU ownership and operation of the facility and concluded that the PPA structure would provide the most value to GRU. Nacogdoches Power proposes to sell capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; the environmental attributes would include any and all renewable energy credits, carbon dioxide emission reduction credits, and future environmental attributes associated with the capacity and energy sold to GRU.

Nacogdoches Power proposes to sell the output from the Project to GRU on a firm capacity and energy basis, rather than on an as-delivered energy basis. The firm capacity and energy basis PPA structure will provide GRU with energy supply portfolio flexibility as GRU will be able to dispatch the Project as needed. This type of power purchase agreement structure is preferred by lenders because it aligns dispatch incentives between the Project and its offtakers. In addition, a twenty-year PPA would allow Nacogdoches Power to reduce the cost of constructing and financing the Project by maximizing the tenor of project debt.

Nacogdoches Power was recently awarded a similar 50 MW power purchase agreement by another Florida utility and has begun the formal development of the Project. Therefore, Nacogdoches Power proposes the following three power purchase agreement options to be evaluated separately (listed in order of Nacogdoches Power's preference):

Proposal Option 1: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at the existing Deerhaven Site and sells 50 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; Nacogdoches Power sells 50 MW to another utility under a twenty-year power purchase agreement with substantially similar terms.

Proposal Option 2: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at an alternative site and sells 50 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; Nacogdoches Power sells 50 MW to another utility under a twenty-year power purchase agreement with substantially similar terms.

Proposal Option 3: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at the existing Deerhaven Site and sells 100 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement.

**Florida Clean Energy Center Project Summary**

The Florida Clean Energy Center Project will be a new 100 MW (total net) biomass-fired electric generating facility, consisting of a fuel handling system, a bubbling fluidized bed ("BFB") boiler, a condensing steam turbine generator with evaporative cooling towers and auxiliary support equipment. The Project will also utilize a Zero Liquid Discharge ("ZLD") system to eliminate wastewater discharges. The Florida Clean Energy Center will employ state of the art boiler and emissions control technologies to minimize emissions.

The primary fuels for the Project will be forest residue, mill residue, thinnings and urban wood waste. Supplementary fuels could include agricultural residues, such as rice hulls, woody storm debris, whole tree chips and pulpwood chips. Nacogdoches Power will not utilize municipal solid waste ("MSW"), waste tires, or refuse-derived fuel ("RDF"). Nacogdoches Power has explored the use of wastewater biosolids and believes the use of such biosolids will not meet the economic or environmental goals for the Project.

Nacogdoches Power will seek to purchase as much fuel as possible under long-term contracts and will employ a dedicated staff to manage fuel purchases. The biomass fuel handling system will consist of truck tippers, screens and hogs, an automatic stacker/reclaimer system and a manual stacker/reclaimer system to maintain two fuel storage piles. Fuel will be transported into and out of on-site storage via a series of conveyors.

**The Florida Clean Energy Center Will Produce the Greatest Economic Value for GRU**

A long-term power purchase agreement for output from the Project will supply GRU with the best combination of economic and environmental performance from a renewable generating facility.

At 100 MW, the Florida Clean Energy Center will be the most efficient size for a modern biomass-fired electric generating facility. Nacogdoches Power evaluated a 50 MW design and a 100 MW design for this Project. Nacogdoches Power contacted equipment vendors and received budgetary price quotations for critical components for a 50 MW project. The rate of cost increase for project components, such as boilers, steam turbines, truck tippers, stacker/reclaimer systems and feed conveyors, is rather minor for facility sizes between 30 and 100 MW. For example, a steam turbine for a 100 MW facility costs less than 20% more than a steam turbine for a 50 MW facility. In addition, the operating staff necessary to operate a 100 MW facility is nearly identical in size to that necessary to operate a 30 MW or 50 MW facility. Therefore, a well-designed 100 MW biomass-fired electric generating facility will have significant economies of scale in capital costs and operating costs when compared to a well-designed smaller facility. Nacogdoches Power performed a detailed cost estimate for a 50 MW facility designed to the same performance standard as the Florida Clean Energy Center and determined that the delivered cost of electricity from such a facility will be more than 25% higher than that of the Florida Clean Energy Center.

Nacogdoches Power recognizes the importance that the Gainesville City Commission has placed upon overall plant efficiency and has developed the most efficient design possible for a modern biomass-fired electric generating facility. Although bubbling fluidized bed boilers are inherently more efficient than previous technologies, Nacogdoches Power evaluated BFB boilers from leading manufacturers and selected the most efficient BFB boiler for the Florida Clean Energy Center. Nacogdoches Power further evaluated steam turbines from the leading manufacturers and selected the most efficient steam turbine for the Florida Clean Energy Center. Nacogdoches Power has optimized the Project steam cycle, which will utilize four feedwater heaters. Therefore, the Florida Clean Energy Center should have a very low heat rate for any biomass-fired electric generating facility using pure biomass fuel.

**Through the Development of its Texas Project, Nacogdoches Power Has Acquired the Most Current Experience Developing Biomass-Fired Generating Facilities in the United States**

Nacogdoches Power has the most up-to-date experience developing state of the art biomass-fired generating facilities in the United States. Currently, Nacogdoches Power is finalizing the development of a 100 MW biomass-fired electric generating facility in Nacogdoches County, Texas (the "Texas Project"). Nacogdoches Power has achieved the following significant milestones for the Texas Project that are relevant to the development of the Florida Clean Energy Center:

- ✓ received all environmental permits necessary for construction;
- ✓ completed all interconnection studies;
- ✓ entered into contracts for major plant components;
- ✓ selected an engineering and construction management firm;
- ✓ performed preliminary design and engineering;
- ✓ performed trace chemical analyses of biomass fuels;
- ✓ worked with timber harvesting companies to estimate costs and job creation; and
- ✓ executed contracts for supply of wood fuel.

The development of the Texas Project has provided Nacogdoches Power with a distinct advantage in ensuring that the Florida Clean Energy Center will be completed in a timely manner with the fewest surprises.

**Nacogdoches Power Has Developed the Most Reliable Proposal**

Nacogdoches Power is concerned that other proposers may submit unreliable information in the hope of being selected for a power purchase agreement and revising such information at a later date. Numerous evaluation criteria, such as development schedule, emission rates, heat rate, fuel prices, fuel consumption, by-product production, water usage, production cost and job creation, depend on critical assumptions. Nacogdoches Power strongly urges GRU to evaluate the sources of data used by the other proposers.

In contrast, Nacogdoches Power has used the best available information to prepare its proposal. Nacogdoches Power has spent a significant amount of money and effort to ensure that its proposal will be reliable. Nacogdoches Power has used actual data developed for this Project or for its Texas Project wherever possible. Nacogdoches Power has used publicly available data to supplement actual data. Where actual data and publicly available data were not available, Nacogdoches Power has relied upon the expert opinions of a highly-qualified and experienced project team. Below, Nacogdoches Power has summarized several of the attributes that make its proposal extremely reliable.

First, Nacogdoches Power has performed preliminary design and engineering for the Florida Clean Energy Center. Nacogdoches Power has hired WorleyParsons Group, Inc. ("WorleyParsons") to perform engineering, procurement and construction management services for the Project. WorleyParsons has over 100 years of power industry experience, tracing its roots in power sector to Charles T. Main and Gilbert/Commonwealth in the USA and John Thompson, SECVI and Burmot in Australia. WorleyParsons has supplied over 150,000 MW of generating capacity worldwide. Energy Management, Inc. ("EMI"), a member of the Nacogdoches Power team, had previously worked with a predecessor of WorleyParsons on the construction of its Dartmouth Power and Dighton Power projects. WorleyParsons is working with Nacogdoches Power on the engineering, procurement and construction management of the Texas Project. WorleyParsons adapted the design of the Texas Project to meet the specifications for the Florida Clean Energy Center.

Second, Nacogdoches Power has received proposals from, and entered into letters of intent with, other major project partners, including the boiler manufacturer, biomass fuel handling system supplier, electrical engineering firm and third-party operations and maintenance provider. Such proposals allow Nacogdoches Power to accurately calculate the cost and performance of the Project. Nacogdoches Power has interviewed local Florida contractors to evaluate construction costs for the Project. The remaining pricing for the Nacogdoches Power proposal is based on contracts and vendor proposals for the Texas Project, an actual project under advanced development.

Nacogdoches Power has entered into a letter of intent with Metso Paper USA, Inc., formerly Aker Kvaerner Power, Inc. ("Metso"), to design and supply a bubbling fluidized bed boiler for the Project. Nacogdoches Power selected Metso to design and supply the boiler for its Texas Project after a competitive bid process. Metso will design and supply the BFB boiler under a firm-price, firm-schedule contract. In order to reduce potential interface issues, Metso will design and supply the remainder of the boiler island, including the SNCR system, baghouse, stack, and support steel. Metso has proven that its equipment can meet the proposed emission limits. In addition, Metso will provide a full emissions guarantee under its contract. Nacogdoches Power urges GRU to consider whether other proposers have permitted facilities with similar emission rates and whether boiler manufacturers for other proposers have committed to guarantee such emission rates.

Metso is the leading manufacturer of biomass-fired boilers, having supplied more than 200 worldwide. Since its introduction in the 1970s, Metso's fluidized bed boiler technology has offered an economical, flexible, cost-effective and environmentally acceptable solution for burning low heating value, high moisture bio-fuels. Over the last fifteen years, Metso has supplied nearly all of the bubbling fluidized bed boilers sold to the pulp and paper industry in Scandinavia and North America. Metso's patented bubbling fluidized bed boiler design features the innovative HYBEX™ floor. The HYBEX™ floor, which was designed for fuels containing stones or other coarse materials, features an extended free removal area where coarse material can be evacuated from the bed. More than thirty percent of the total floor area is open for tramp material removal compared with approximately one percent in a conventional floor design. Metso's fleet of HYBEX™ floor bubbling fluidized bed boilers has achieved high levels of availability.

Nacogdoches Power has entered into a letter of intent with Wolf Material Handling Systems, Inc. ("Wolf") to design and supply the wood fuel handling system for the Project. Founded in 1978, Wolf specializes in bulk material handling systems for the pulp and paper, power generation and mining industries. Wolf is the leading supplier of biomass-fuel handling systems in the United States. Arlin Wolf, the founder of Wolf Material Handling Systems, has been called upon in a number of cases to repair and redesign biomass-fuel handling systems supplied by other vendors.

CBX Energy Engineering, Inc. ("CBX") will perform electrical engineering to support the utility interconnection for the Project. Christopher M. Bryan, P.E., principal engineer, has more than twenty-five years of experience as a consulting engineer to the power industry. He specializes in the design, analysis, project management, and engineering review of power generating stations, substations, transmission interconnections, and electrical distribution systems.

Nacogdoches Power has entered into a letter of intent with North American Energy Services, Inc. ("NAES") to operate and maintain ("O&M") the Project. NAES is the premiere third-party O&M contractor in the United States. In addition, NAES has proven experience operating wood-fired generating facilities: NAES has operated 9 biomass-fired electric generating facilities totaling 246.9 MW of capacity. NAES has worked with Nacogdoches Power to develop an accurate operating budget for the Project and to transfer key wood-procurement knowledge. Steam boiler facilities operated by NAES have an average availability rating nearly 4% higher than the industry average availability rating. Several prospective lenders recommended that Nacogdoches Power contract with NAES for O&M services.

Third, Nacogdoches Power has selected the most experienced team of consultants to assist with the permitting and development of the Florida Clean Energy Center. Wherever possible, Nacogdoches Power sought out and selected consultants based in Gainesville with local experience.

Nacogdoches Power has hired David S. Dee, of Young van Assenderp, P.A. ("David Dee"), to provide permitting and other legal support for the Florida Clean Energy Center Project. Mr. Dee has considerable experience with the Florida Electrical Power Plant Siting Act; he has handled the permitting of 13 major construction projects involving electrical generating facilities, including nine facilities on greenfield sites.

Nacogdoches Power has hired Environmental Consulting & Technology, Inc., of Gainesville, Florida ("ECT"), to manage the permitting for the Florida Clean Energy Center Project. ECT's services to the power industry include site selection studies and overall permitting for new power plants; specialty permitting projects involving air quality modeling, wetlands, water supply, wastewater discharges, and solid waste disposal; compliance auditing; and remediation programs. Nacogdoches Power, ECT and David Dee have worked together to develop an accurate permitting and development schedule for the Project. Moreover, ECT and David Dee have evaluated potential project configurations and options and advised Nacogdoches Power on the most appropriate choices for Florida and the City of Gainesville.

Nacogdoches Power hired Natural Resource Planning Services, Inc., of Gainesville, Florida ("NRPS") to provide biomass fuel procurement and ash disposal consulting services for the Florida Clean Energy Center Project. NRPS manages over 300,000 acres of timberland in Florida for a variety of clients including TIMO's, investors, family trusts, individuals, and government agencies. Jack Vogel, one of the principals of NRPS, is the current president of the Florida Forestry Association.

Fourth, Nacogdoches Power has performed a detailed biomass fuel supply study to evaluate biomass resources. At the request of Nacogdoches Power, NRPS conducted a detailed biomass fuel resource study (the "Biomass Fuel Study") for the Project. The Biomass Fuel Study evaluated all potential sources of biomass fuel, analyzed potential competition for each biomass fuel and determined that sufficient biomass fuel resources will be available to operate the Project at a reasonable cost and on a sustainable basis.

Fifth, Nacogdoches Power has used hard science to evaluate issues such as water consumption, by-product production and job creation. WorleyParsons developed preliminary water and heat balances for the Project. Nacogdoches Power utilized trace chemical analyses of biomass fuels performed for its Texas Project to estimate ash production. Nacogdoches Power obtained vendor proposals for ZLD systems. Nacogdoches Power used published data and detailed source estimates to analyze lifecycle greenhouse gas impacts and economic development impacts.

Finally, Nacogdoches Power has updated the capital structure and financing assumptions for the Project to meet the current challenging market conditions. Several prospective lenders, including Société Générale, have evaluated the Florida Clean Energy Center financial model and indicated that they are highly confident that they would be able to arrange financing for the Project under current market conditions.

**The Florida Clean Energy Center Will Produce the Best Environmental Performance**

The Project will be consistent with policies espoused by Florida Governor Charlie Crist, the Florida Legislature and the Florida Department of Environmental Protection ("DEP"). In July 2007, Governor Charlie Crist signed three Executive Orders committing Florida to reduce greenhouse gases and increase energy efficiency. Governor Crist signed Executive Order 07-126, titled "Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government"; Executive Order 07-127, "Immediate Actions to Reduce Greenhouse Gas Emissions within Florida"; and Executive Order 07-128, "Florida Governor's Action Team on Energy and Climate Change." The Executive Orders require the state government to develop a governmental carbon scorecard and work to reduce governmental emissions, direct the adoption of maximum emission levels of greenhouse gases for electric utilities and request that the Public Service Commission adopt a 20 percent Renewable Portfolio Standard by 2020.

In May 2007, the Florida Legislature passed a comprehensive energy bill that promoted the use of renewable energy through a number of programs, including tax incentives, grants, and a study to create a Renewable Portfolio Standard ("RPS"). The Florida DEP has begun a rulemaking procedure to enact Governor Crist's Executive Order regarding the adoption of maximum emission levels of greenhouse gases for electric utilities. In 2007, the Florida DEP prepared a preliminary inventory of Florida greenhouse gas emissions to help guide planning efforts in the state. The Project will help make a significant contribution to the development of new renewable resources in Florida. It will take significant investment to reach the 20% RPS goal set forth by Governor Crist in his Executive Orders; the Florida Clean Energy Center will be an important step in this process.

The Florida Clean Energy Center may result in net greenhouse gas ("GHG") emission reductions. The global warming potential ("GWP") of methane is 21 times higher than that of $CO_2$. Depending on the amount of forest residue and urban wood waste used as fuel that would otherwise decompose, the Project may result in a reduction of GHG emissions on a $CO_2$ equivalent basis due to the replacement of methane emissions (a by-product of wood decomposition) with $CO_2$ emissions (a by-product of wood combustion). A January 2004 report by the National Renewable Energy Laboratory ("NREL") compared the greenhouse gas emission potential of direct-fired biomass facilities to other types of generation, such as coal-fired and natural gas combined-cycle units. The report estimated that direct-fired biomass facilities consuming wood residue materials would result in a 148% reduction in global warming potential when compared to a coal-fired unit on a lifecycle basis. Nacogdoches Power calculated the expected carbon dioxide emissions from the harvesting, processing and transport of forest residue material based upon data provided by timber harvesters for its Texas Project and verified the accuracy of the NREL report. In addition, Nacogdoches Power has performed a detailed fuel study that demonstrates that the Project can be fueled with the noted residue fuels. Utilizing the NREL methodology, Nacogdoches Power estimates that the Project will result in a net reduction of 170,000 metric tons of $CO_2$ equivalent per year. Since the amount of net reduction is related

to the output of the project, the 100 MW Florida Clean Energy Center will result in a greater net reduction of $CO_2$ equivalent than a 30 MW or 50 MW facility.

Nacogdoches Power has improved the fuel supply strategy for the Florida Clean Energy Center and eliminated the use of municipal solid waste, waste tires, and refuse-derived fuel. Nacogdoches Power believes that the negative environmental impacts of such fuels will outweigh any potential benefits. Nacogdoches Power recognizes the importance that GRU and the Gainesville City Commission have placed on expanding recycling in the community. The combustion of MSW could frustrate the attempt to increase recycling. In addition, the combustion of MSW could cause increased emissions of hazardous air pollutants such as mercury, lead and dioxins. Moreover, the Biomass Fuel Study demonstrated that there is no need for such fuels on an economic or supply security basis. Finally, Nacogdoches Power believes that a project fueled strictly by biomass will be more consistent with policies espoused by Florida Governor Charlie Crist, the Florida Legislature and the Florida DEP and will be less likely to provoke public opposition or trigger controversy.

Nacogdoches Power will utilize Best Available Control Technology ("BACT") to minimize air emissions. Nacogdoches Power has received all environmental permits required for construction of the Texas Project and recently set the standard for BACT in Texas at .10 lb/mmbtu of $NO_x$ for biomass-fired generating facilities. Metso has proven that its equipment can meet the proposed emissions limits. In addition, Metso will provide a full emissions guarantee under its contract with Nacogdoches Power.

Nacogdoches Power has improved the fuel supply strategy for the Florida Clean Energy Center and eliminated the use of municipal solid waste, waste tires, and refuse-derived fuel. Nacogdoches Power believes that the negative environmental impacts of such fuels will outweigh any potential benefits. The use of municipal solid waste, waste tires, and refuse-derived fuel may result in the increased emission of hazardous air pollutants such as mercury, lead and dioxins. The renewable and greenhouse gas benefits of such fuels are uncertain. Moreover, the Biomass Fuel Study demonstrated that there is no need for such fuels on an economic or supply security basis. Finally, Nacogdoches Power believes that a project fueled strictly by biomass will be more consistent with policies espoused by Florida Governor Charlie Crist, the Florida Legislature and the Florida DEP and will be less likely to provoke public opposition or trigger controversy.

The Florida Clean Energy Center will result in the least production of waste by-products on a per MWh basis. Based on data from its Texas Project, Nacogdoches Power believes that it will be possible to beneficially reuse ash produced by the Project as a soil amendment. Nacogdoches Power conducted extensive testing of woody biomass materials in Texas to design the Texas Project and predict the likely chemical composition of the ash. In this manner, the Project will be consistent with other biomass power projects in the United States. Ash from wood-fired power plants is typically spread on agricultural fields as a soil enhancer.

Generally, bubbling fluidized bed boilers generate minimal ash because surface contact between fluidized sand bed particles and fuel particles ensures the complete combustion of fuel within the target temperature range. However, the Metso BFB has further features designed to minimize the production of ash. Metso's innovative HYBEX™ floor design provides an extended free removal area where coarse material can be evacuated from the bed. More than thirty percent of the total floor area is open for tramp material removal compared with approximately one percent in a conventional floor design. Bottom ash that falls through the HYBEX™ floor will be screened, and lighter material, including any ash or sand, will be re-injected into the boiler.

Nacogdoches Power has redesigned the Florida Clean Energy Center to have minimal site impacts should GRU select Proposal Option 1 or Proposal Option 3. Nacogdoches Power has compressed the project layout to occupy fewer acres. The Florida Clean Energy Center will now occupy a total of 45 acres. Nacogdoches Power believes this represents the most efficient use of space at the Deerhaven Site as the Project will occupy less than 1/2 acre per MW of output.

If GRU selects Proposal Option 1 or Proposal Option 3, Nacogdoches Power recommends the utilization of the original Deerhaven Site parcel for the Project because this parcel is already zoned "PS" for Public Services and Operations. By researching existing aerial photogrammetric databases, Nacogdoches Power has identified two potential sites for the Project within the original Deerhaven Site parcel. Each site has unique characteristics and advantages, but, in general, our preferred "Site A", located in the southeast quadrant of the original Deerhaven Site parcel, appears to mitigate any potential impacts relating to existing operations and future upgrades to the GRU facility. By choosing potential sites within the original Deerhaven Site parcel, Nacogdoches Power's site selection strategy eliminates the risk associated with the annexed parcels not receiving the zoning change required to construct a biomass facility.

Nacogdoches Power has prepared two conceptual designs of the Project within the original Deerhaven Site parcel. Site A represents Nacogdoches Power's preferred location and Site B represents Nacogdoches Power's alternate location. Please refer to the Conceptual Project Layout drawings attached as Appendix 1 for a representation of the Project configurations. In the event that GRU does not allow utilization of the original Deerhaven Site parcel, Nacogdoches Power will develop the Project on portions of the annexed parcels acceptable to GRU provided that the parcels are rezoned for public service and operations purposes.

Nacogdoches Power has found an attractive alternative site for the project in northern Florida (the "Alternative Site"). Nacogdoches Power is currently negotiating terms and conditions for an option to lease the Alternative Site. The Alternative Site will provide Nacogdoches Power with needed features, including: available land zoned for industrial use, transportation access for fuel delivery, access to the bulk transmission system, available water for plant makeup and proximity to fuel resources.

**The Florida Clean Energy Center Will Generate the Greatest Local Benefits and Support**

Nacogdoches Power recognizes the importance of providing a project that is broadly supported by citizens of Gainesville and Alachua County. To that end, Nacogdoches Power has refined its proposal to address issues, such as the use of MSW, raised by GRU and the Gainesville City Commission. If selected by GRU, Nacogdoches Power will develop and implement a public relations program for the Florida Clean Energy Center similar to the program that it successfully employed in Nacogdoches County, Texas. Nacogdoches Power has been able to secure strong local and county support for the Texas Project because the Texas Project will provide substantial economic stimulus to Nacogdoches and neighboring counties.

Biomass-fired electric generating facilities that utilize woody biomass provide significant economic stimulus because fuel dollars stay in the local community. One estimate of the employment benefit of a wood-fired power plant has been prepared by the National Renewable Energy Laboratory of the Department of Energy in its publication, "The Value of the Benefits of U.S. Biomass Power" in which it concluded that 4.9 jobs per MW of installed capacity will be created. Following this methodology, the Florida Clean Energy Center will produce approximately 490 new jobs. Because the amount of job creation is related to the installed capacity of the project, the 100 MW Florida Clean Energy Center will result in significantly greater job creation than a 30 MW or 50 MW facility.

Nacogdoches Nacogdoches Power has sought out and selected wood resource and environmental consultants based in Gainesville with local experience.

**Biomass-fired Electricity Generation is the Best Renewable Solution for GRU**

Biomass-fired generating facilities have attractive attributes when compared to other potential renewable and carbon-neutral resources:

- ✓ biomass-fired generating facilities operate as baseload generating resources;
- ✓ modern biomass-fired generating facilities have extremely high availability factors;
- ✓ biomass-fired generating facilities offer long-term price stability;
- ✓ biomass fuel is not subject to the same price risks that may affect natural gas and coal-fired units;
- ✓ biomass-fired generating facilities are renewable generating resources; and
- ✓ biomass-fired generating can benefit from financial incentives included in state or federal renewable portfolio standards.

In addition to using state of the art emission controls, the Project would offer other significant environmental benefits. As noted above, biomass-fired generating facilities may result in net greenhouse gas emission reductions due to the replacement of methane emissions (a by-product of wood decomposition) with $CO_2$ emissions (a by-product of wood combustion). Biomass-fired generating facilities also have the potential to help alleviate environmental problems caused by

natural disasters such as hurricanes, floods and tornados. Large volumes of various types of storm debris, including trees, brush, vegetative matter and clean lumber, need to be disposed of or burned following such disasters. Disposal of such materials incurs costs and utilizes valuable landfill capacity. Open burning of such material, while generally permitted by state regulatory authorities after such disasters, can cause significant air quality impacts. Biomass-fired generating facilities have the capacity to consume this debris as fuel, reducing disposal costs and air quality impacts while transforming the storm debris into a valuable product—electricity.

**Nacogdoches Power Will Work with GRU to Provide the Best PPA Terms**

Nacogdoches Power will work together with GRU to fashion a power purchase agreement that provides the most value to GRU. Nacogdoches Power recognizes that publicly owned electric utilities approach electric power supply with perspectives that are focused on the long-term health of their communities. Nacogdoches Power will work with GRU as a partner, not an adversary, in order to provide a Project that the City of Gainesville will embrace.

**Proposer Information**

Florida Clean Energy Center
Nacogdoches Power, LLC
c/o Energy Management, Inc.
75 Arlington Street, Suite 704
Boston, Massachusetts 02116

**Primary and Secondary Proposal Contacts**

Ari Mervis
Vice President
Tel: (617) 904-3100 x 118
Fax: (617) 904-3109
amervis@emienergy.com

Tony Callendrello
Vice President
Tel: (603) 766-8748
Fax: (603) 457-6013
acallendrello@baycorpholdings.com

**Proposal Certification**

We acknowledge receipt of addenda numbered 1 through 5.

SIGNATURE: _____ DATE: 04/10/08

NAME OF CERTIFYING OFFICIAL: Ari Mervis

TITLE: Vice President

# SECTION 2 – FINANCIAL AND CONTRACTUAL STRUCTURE OF THE PROPOSAL

## Contractual Structure and Power Purchase Agreement Options

Nacogdoches Power proposes to sell capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; the environmental attributes would include any and all renewable energy credits, carbon dioxide emission reduction credits, and future environmental attributes associated with the capacity and energy sold to GRU. Nacogdoches Power proposes three power purchase agreement options (listed in order of Nacogdoches Power's preference):

Proposal Option 1: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at the existing Deerhaven Site and sells 50 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; Nacogdoches Power sells 50 MW to another utility under a twenty-year power purchase agreement with substantially similar terms.

Proposal Option 2: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at an alternative site and sells 50 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement; Nacogdoches Power sells 50 MW to another utility under a twenty-year power purchase agreement with substantially similar terms.

Proposal Option 3: Nacogdoches Power constructs a 100 MW biomass-fired electric generating facility at the existing Deerhaven Site and sells 100 MW of capacity, renewable energy and environmental attributes from the Project to GRU under a twenty-year power purchase agreement.

Nacogdoches Power proposes to sell the output from the Project to GRU on a firm capacity and energy basis, rather than on an as-delivered energy basis. This power purchase agreement structure is preferred by lenders because it aligns dispatch incentives between the Project and its offtakers. In addition, a twenty-year PPA would allow Nacogdoches Power to reduce the cost of constructing and financing the Project by maximizing the tenor of project debt.

## Evaluation of PPA Contract Structure versus GRU Ownership and Operation

Nacogdoches Power compared the advantages and disadvantages of a power purchase agreement contract structure versus GRU ownership and operation of the facility and concluded that the PPA structure would provide the most value to GRU. Listed below are some of the key advantages of a PPA structure:

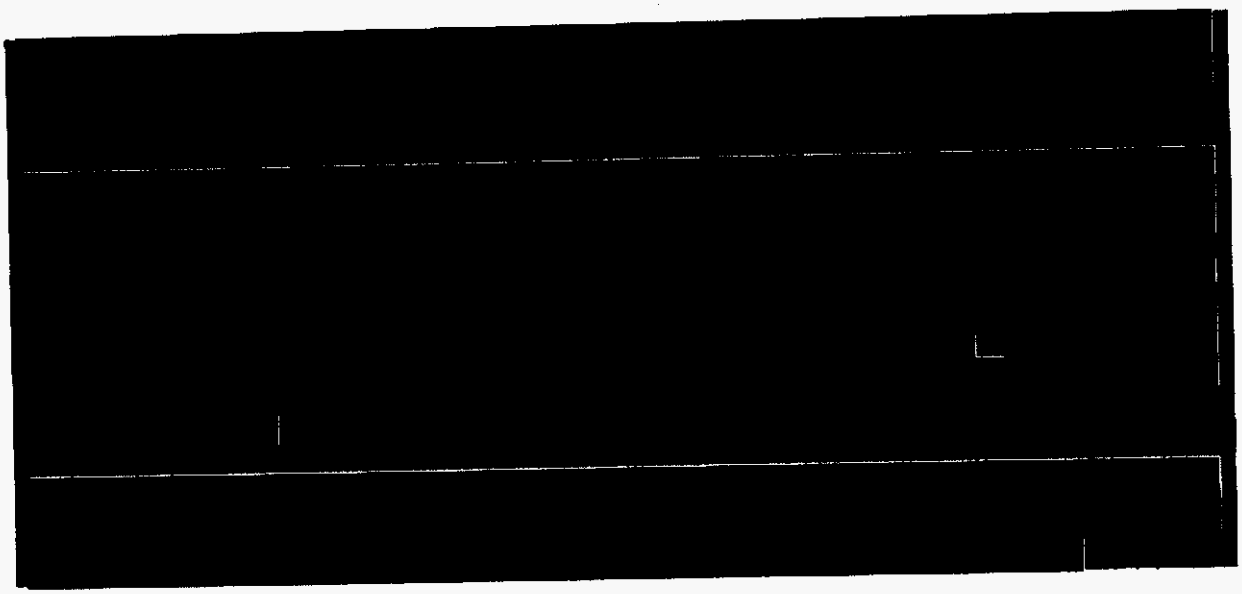
- Operational Experience – Nacogdoches Power has entered into a letter of intent with North American Energy Services, Inc. to operate and maintain the Project. NAES has proven experience operating wood-fired generating facilities: NAES has operated 9 biomass-fired electric generating facilities totaling 246.9 MW of capacity. NAES has worked with Nacogdoches Power to develop an accurate operating budget for the Project and to transfer key wood-procurement knowledge. Steam boiler facilities operated by NAES have an average availability rating nearly 4% higher than the industry average availability rating.
- Fuel Procurement – due to the fractured nature of timberland ownership, biomass fuel procurement is difficult and time-consuming. Nacogdoches Power has executed long-term contracts for the supply of biomass fuel for its Texas Project and has developed expertise in the procurement of biomass fuel. Moreover, the proposed Fuel Adjuster will provide Nacogdoches Power with an incentive to minimize the delivered cost of biomass fuel. NAES has also assisted Nacogdoches Power in the development of its fuel procurement strategy.
- Common Ownership – Nacogdoches Power is developing the Florida Clean Energy Center as one project in a portfolio of similar biomass-fired electric generating facilities. Nacogdoches Power will use fleet management techniques, such as a spare parts pool, to improve Project reliability and performance.
- Tax Incentives – the federal production tax credit ("PTC") provides a significant benefit to new biomass facilities owned by taxable entities. The Project will lose the benefits of the PTC if owned and operated by GRU.
- Profit Motive – Nacogdoches Power will make a profit by maximizing the performance of the Project. Energy Management, Inc., a member of the Nacogdoches Power team, has earned a reputation for maximizing the performance and availability of its generating facilities.

Furthermore, Nacogdoches Power was recently awarded a similar 50 MW power purchase agreement by another Florida utility and has begun the formal development of the Project. Nacogdoches Power intends to develop, own and operate a portfolio of biomass-fired electric generating facilities and therefore is not proposing to construct the Project on an EPC basis.

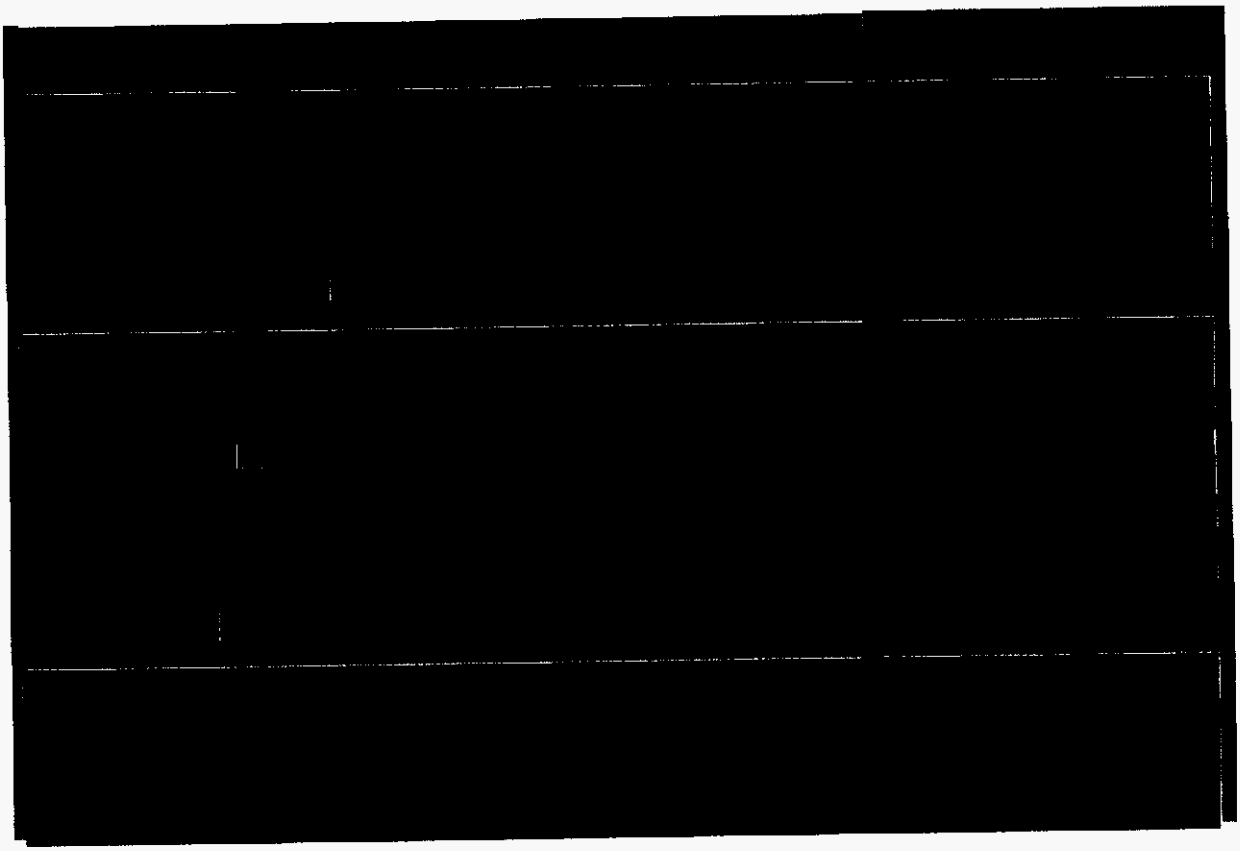
**Description of Project Financing**

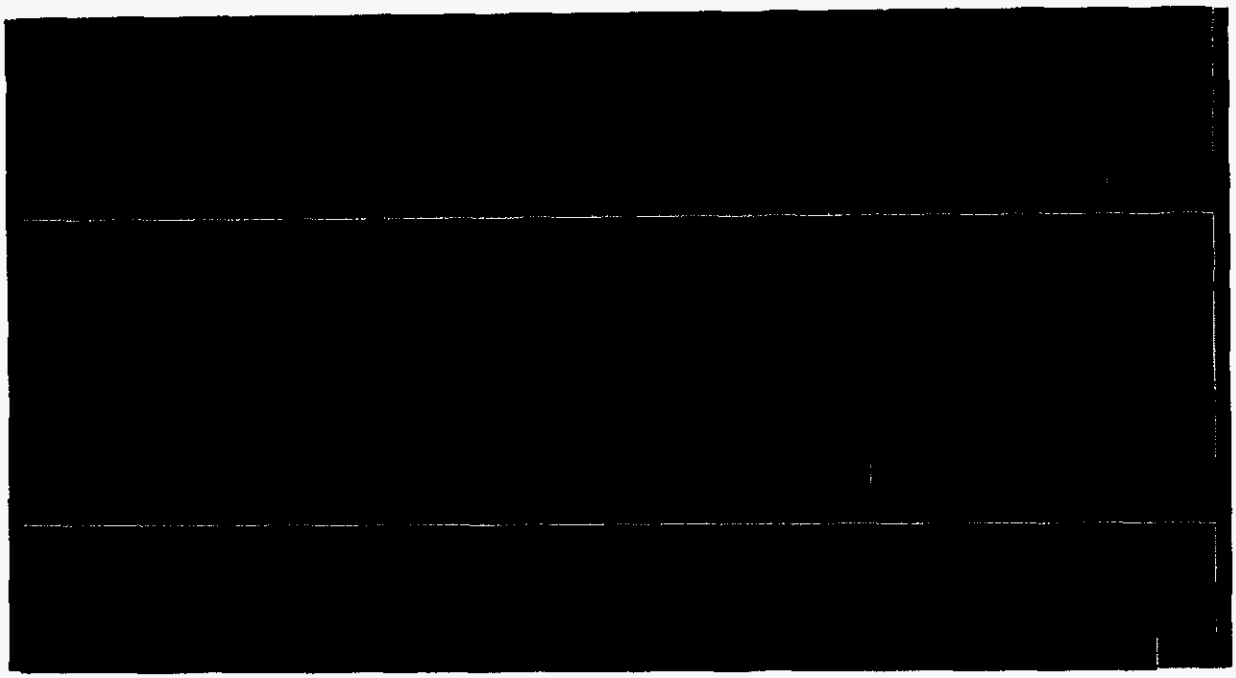
*Development Phase*

[redacted]



*Construction Phase*





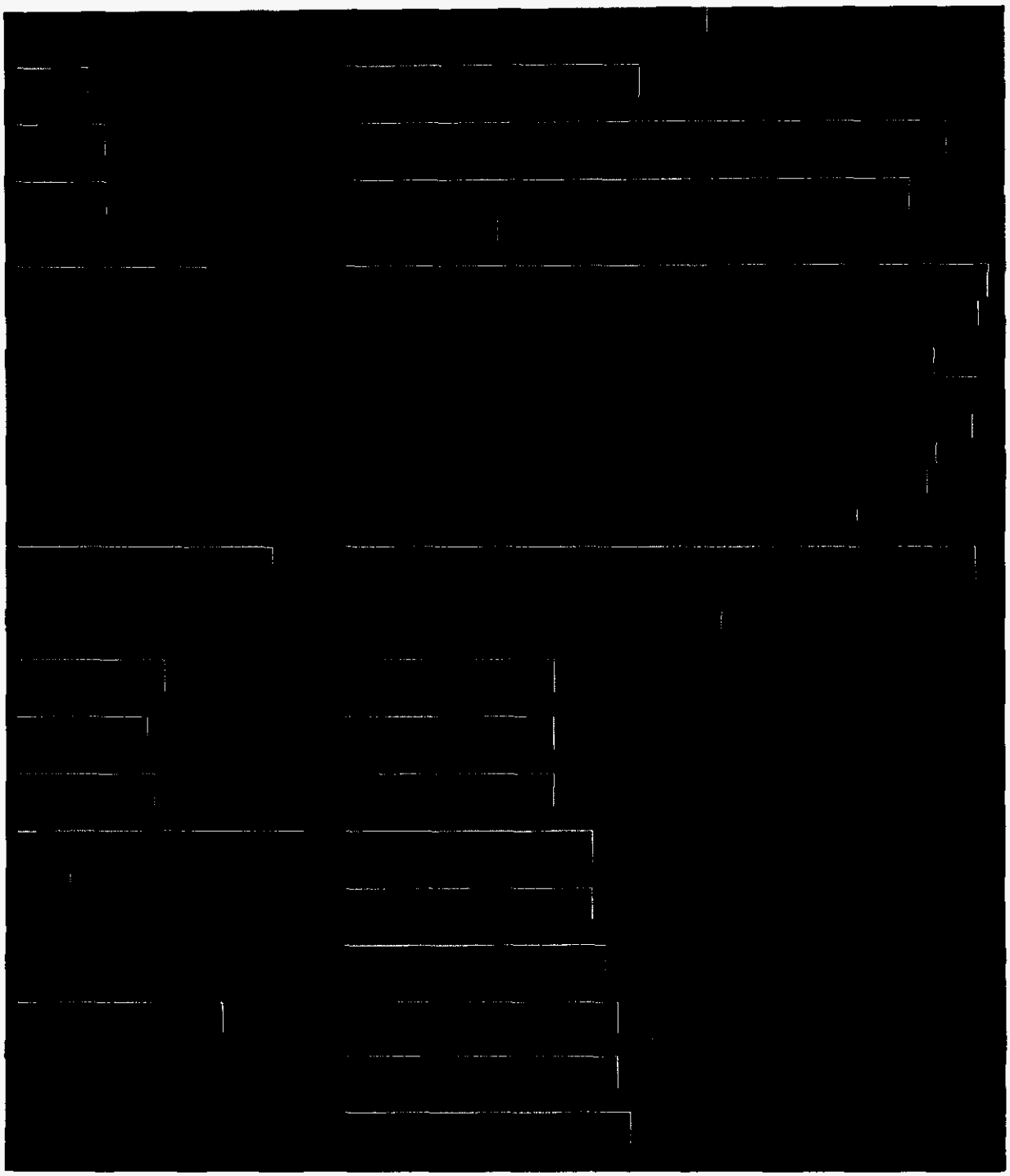
Please see Section 6 for more information regarding the structure of the Project.

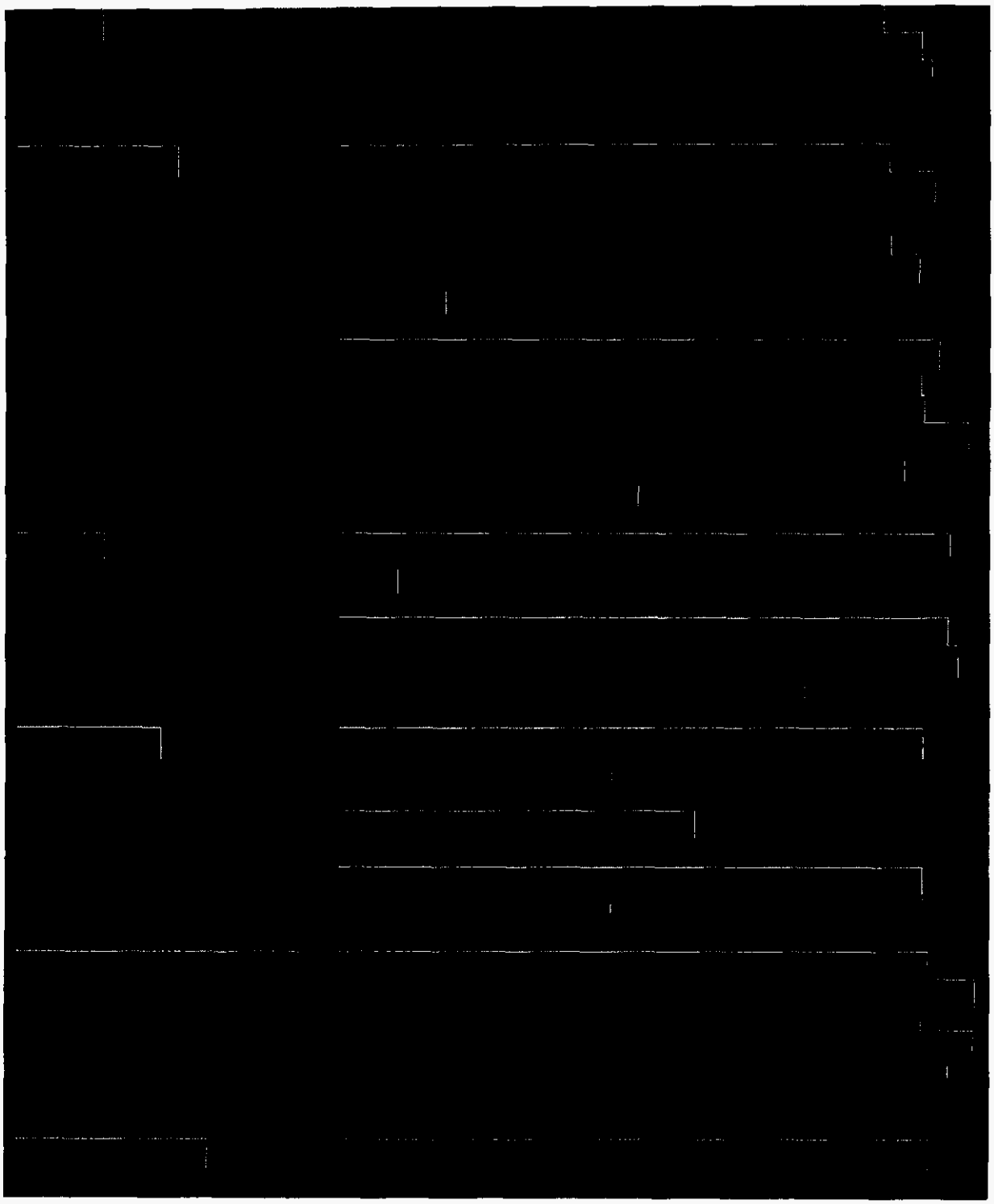
**Option for GRU Purchase After Ten Years**

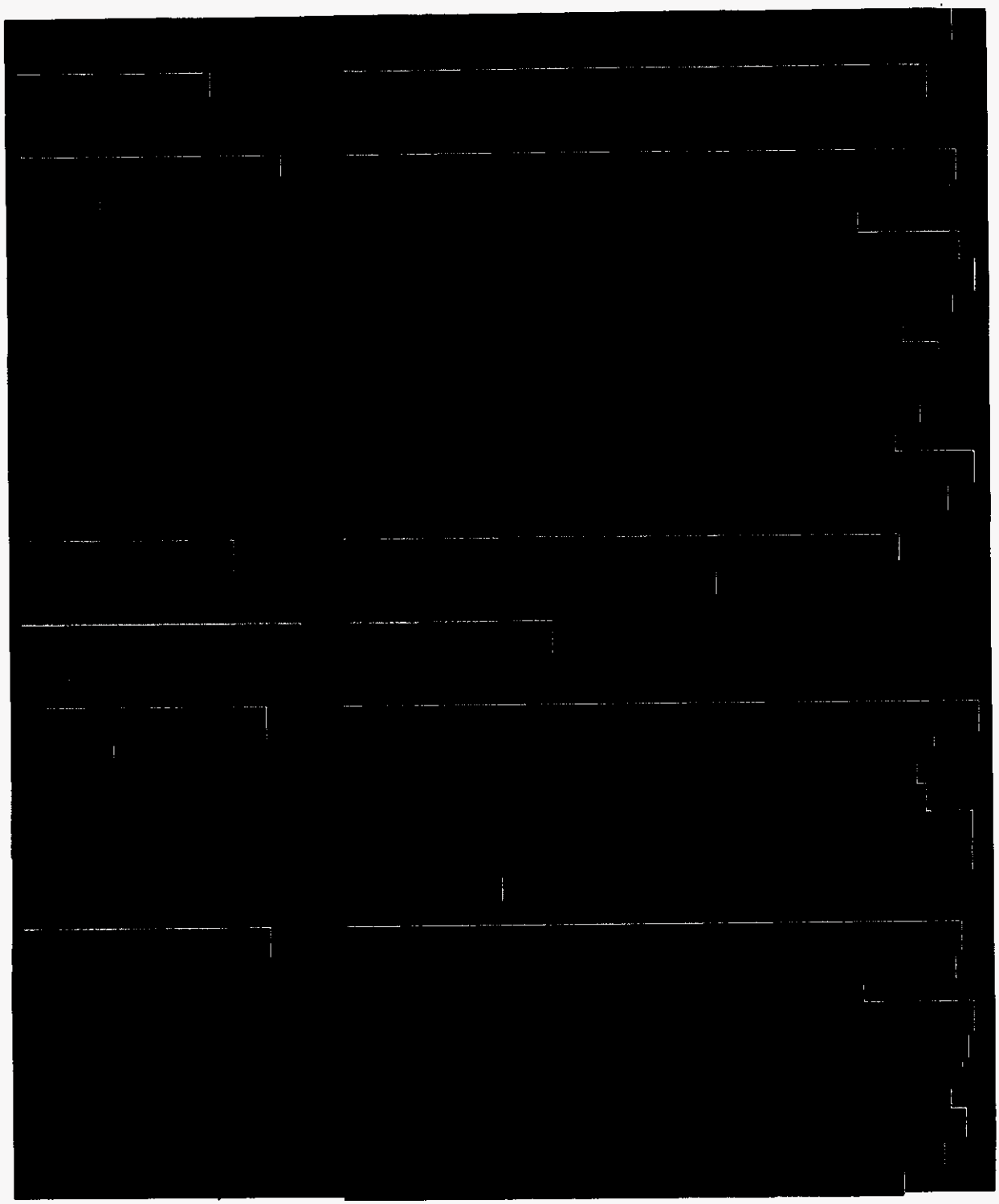
Nacogdoches Power prefers to own and operate the Project and to sell capacity, renewable energy and environmental attributes to GRU on a long-term basis. However, Nacogdoches Power is willing to negotiate purchase options with GRU that will complement Nacogdoches Power's business strategy of developing, owning and operating a portfolio of biomass-fired electric generating facilities.

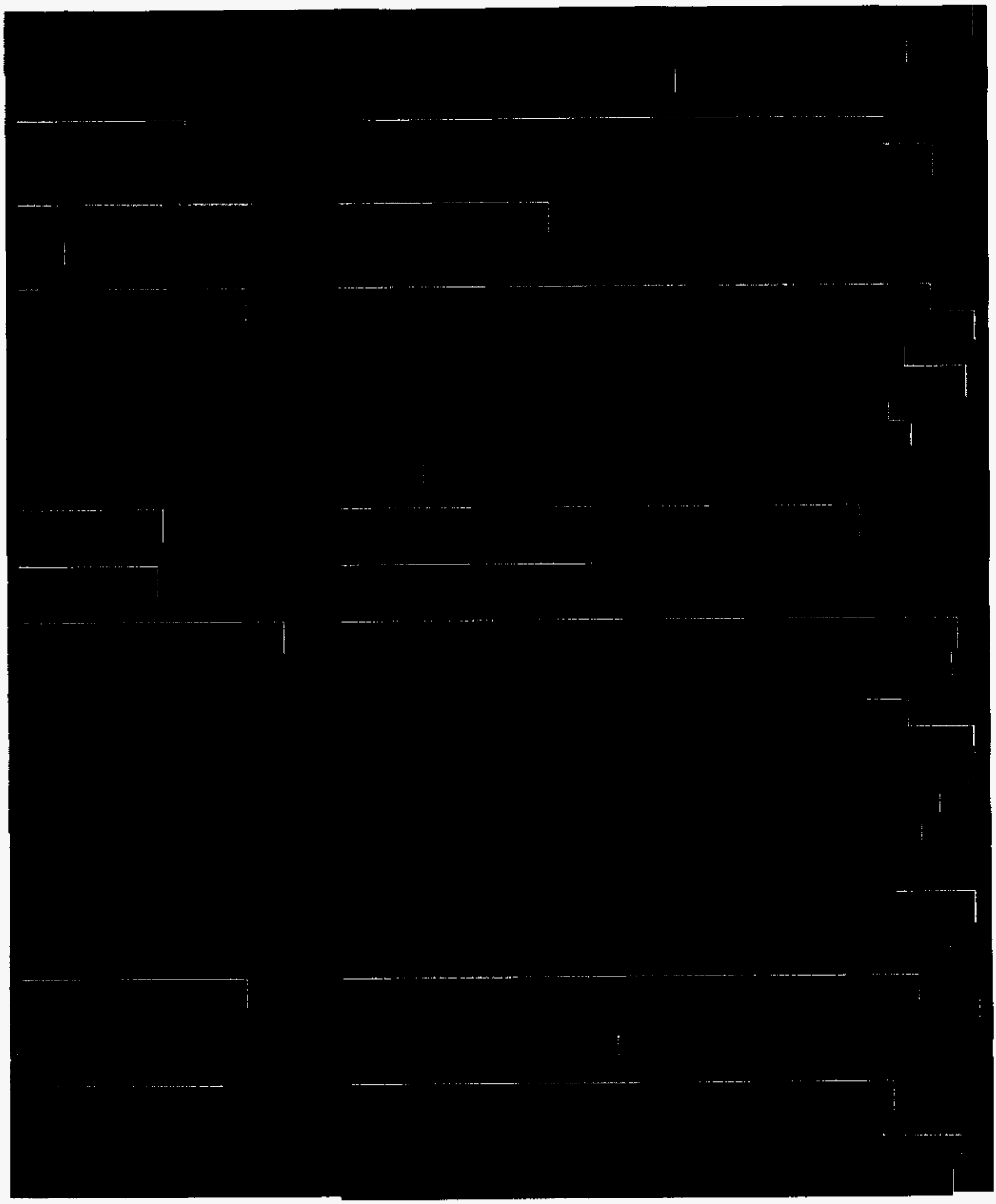
**PPA Terms**

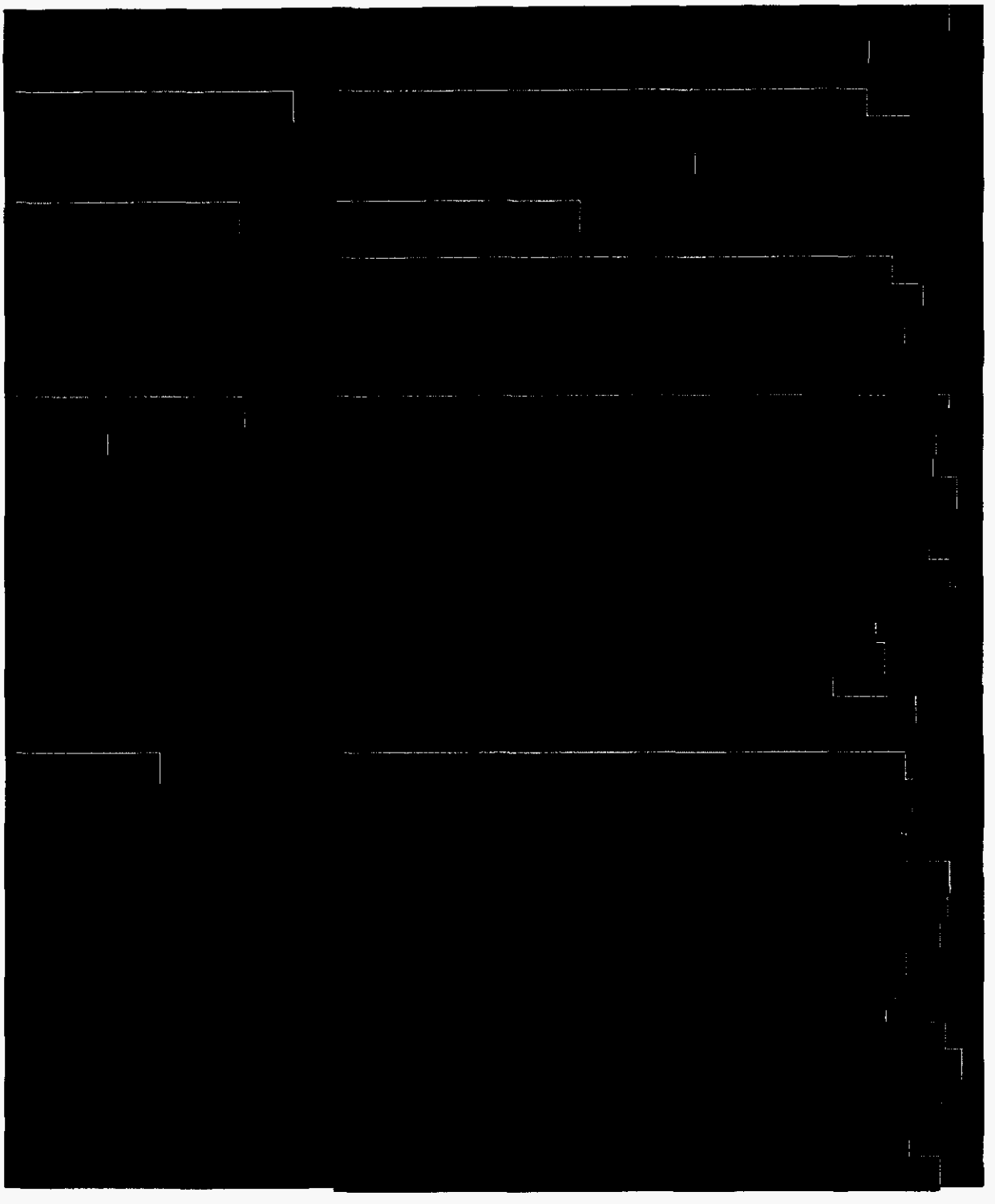
Nacogdoches Power proposes power purchase agreement terms below. However, Nacogdoches Power is willing to adjust such terms and will work together with GRU to fashion a power purchase agreement that provides the most value to GRU. Nacogdoches Power recognizes that publicly owned electric utilities approach electric power supply with perspectives that are focused on the long-term economic, environmental and social health of their communities. Nacogdoches Power will work with GRU as a partner, not an adversary, in order to provide a Project that the City of Gainesville will embrace.

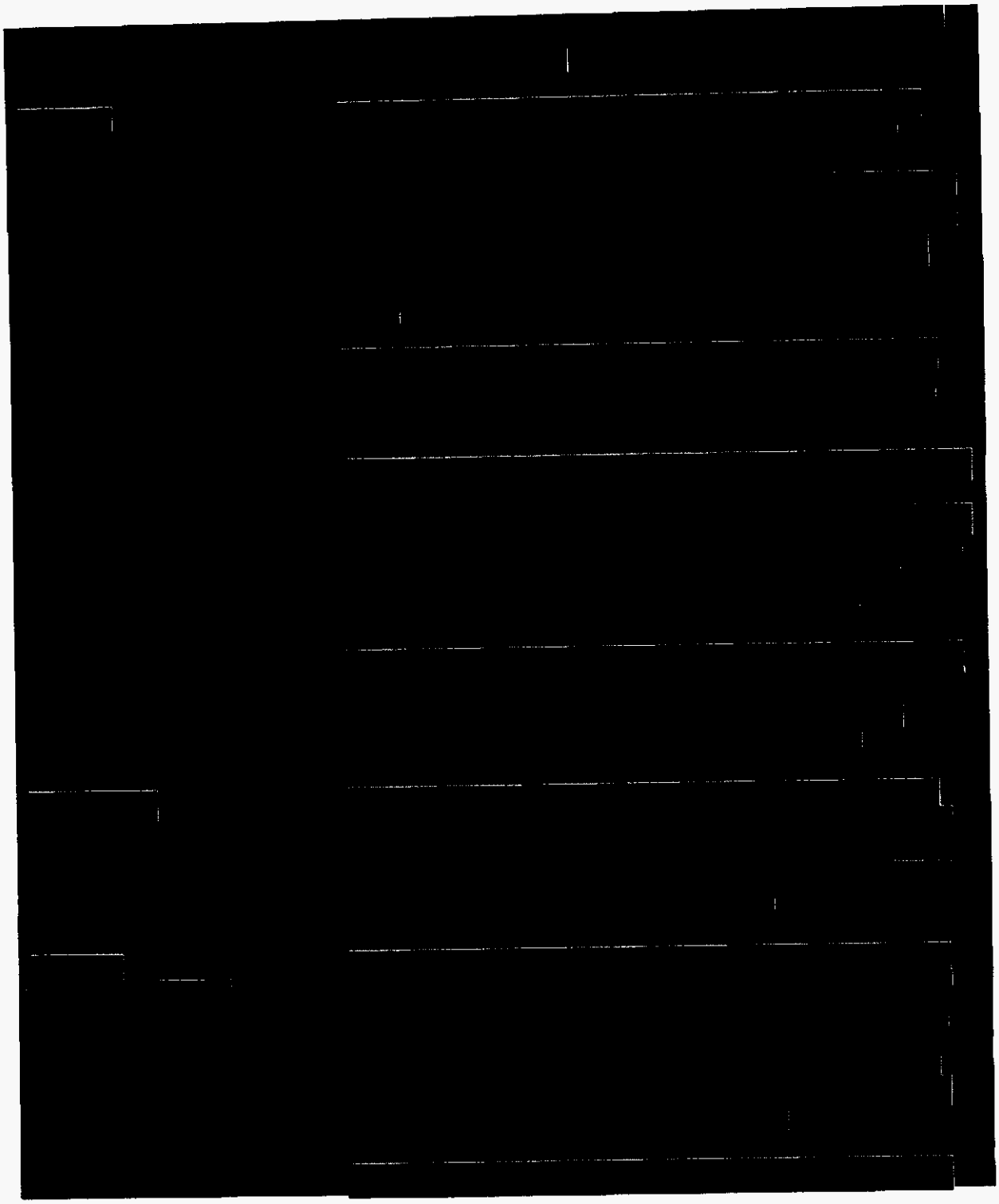


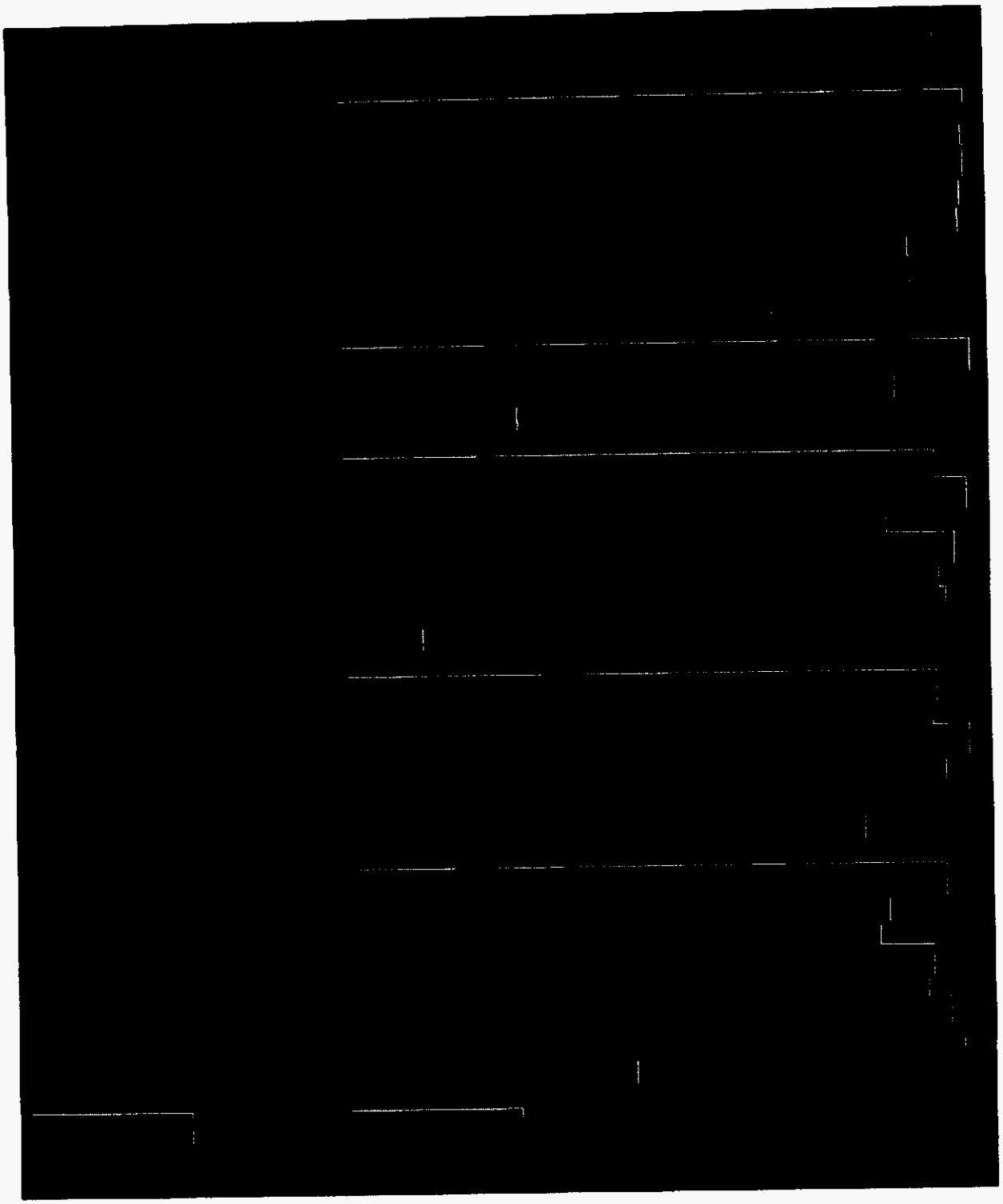


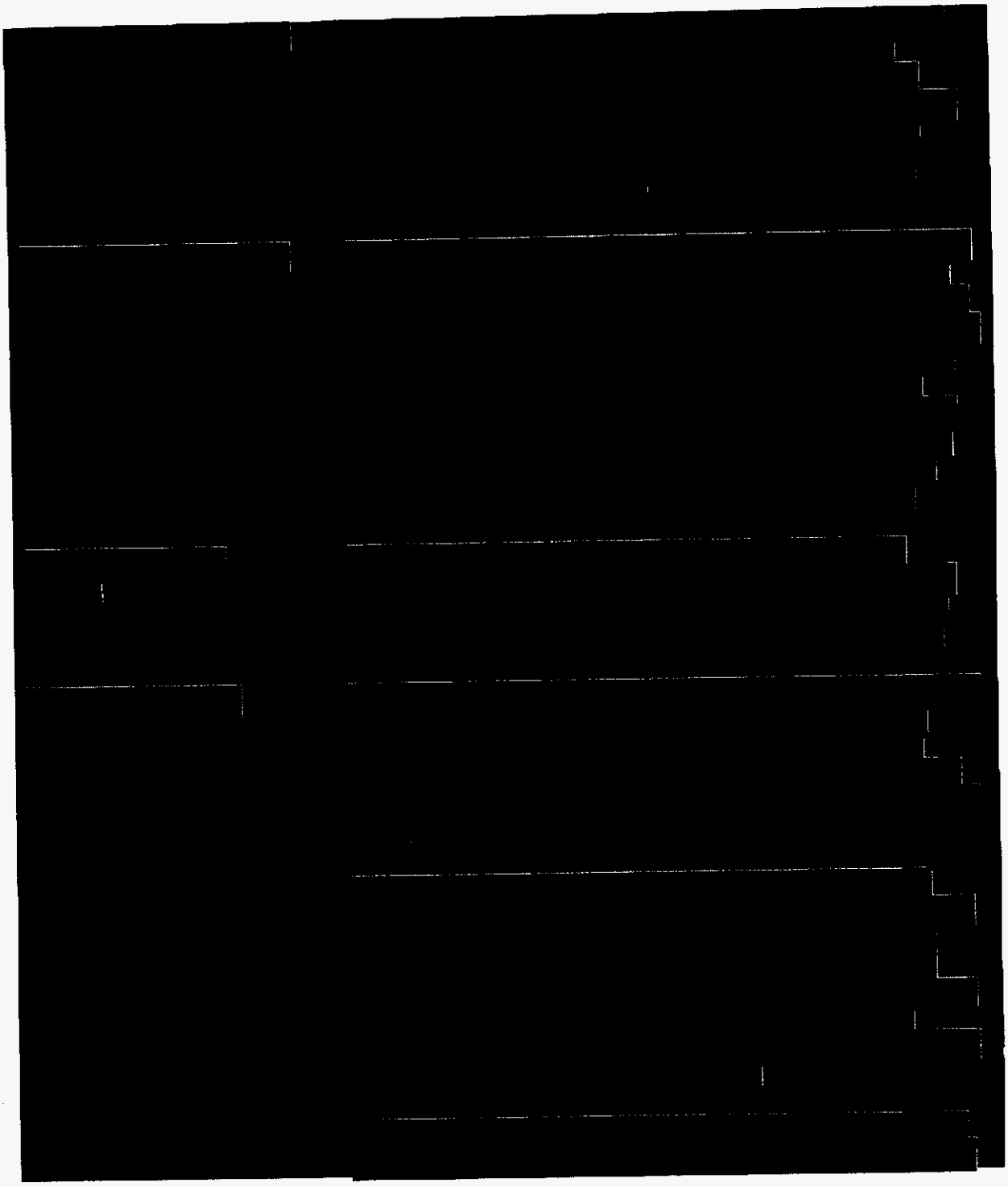












**[redacted] PPA Agreement**

Nacogdoches Power will provide a sample power purchase agreement if selected to negotiate a binding PPA.

## SECTION 3 - TECHNICAL INFORMATION

### Project Description

The Florida Clean Energy Center Project will be a new 100 MW (total net) biomass-fired electric generating facility, consisting of a biomass fuel handling system, a biomass-fired boiler, a condensing steam turbine generator with evaporative cooling towers and auxiliary support equipment. The Project will also utilize a Zero Liquid Discharge system to eliminate wastewater discharges. The Florida Clean Energy Center will be designed in accordance with standards normally used in the utility industry so that the Project will provide full service over the 35-year design life of the Project. A list of such standards is attached as Appendix 2. A list of major equipment manufacturers and suppliers is attached as Appendix 3.

The Project will utilize a bubbling fluidized bed boiler to produce superheated steam. The boiler will be equipped with a baghouse to control particulate matter. An aqueous ammonia injection Selective Non-Catalytic Reduction ("SNCR") system will be provided for $NO_x$ control. Superheated steam from the boiler will be admitted to a single steam turbine with four extractions for feedwater heating. The steam turbine will generate electricity before exhausting axially into the condenser with cooling water provided from the wet evaporative cooling tower.

The primary fuels for the Project will be forest residue, mill residue, thinnings and urban wood waste. Supplementary fuels could include agricultural residues, woody storm debris, whole tree chips and pulpwood chips. Nacogdoches Power will not utilize municipal solid waste, waste tires, or refuse-derived fuel. Nacogdoches Power has explored the use of wastewater biosolids and believes the use of such biosolids will not meet the economic or environmental goals for the Project. Nacogdoches Power will seek to purchase as much fuel as possible under long-term contracts and will employ a dedicated staff to manage fuel purchases.

The biomass fuel handling system will consist of three truck tippers, two sets of screens and hogs, an automatic stacker/reclaimer system and a manual stacker/reclaimer system. Biomass fuel will be transported to the Project Site by truck. Fuel will be transported into and out of on-site storage via a series of conveyors. The Project will have two 100% capacity conveyors leading from the storage piles to the boiler metering bins. From the metering bins, fuel will be distributed across the combustion zone of the boiler through a pneumatic feed system.

Electric power will be produced in the steam turbine generator at the nominal generator voltage. The Project will increase the voltage at an on-site substation and transmit the power through aerial transmission lines to the interconnection point. When the steam turbine generator is off-line, station service power will be obtained by back feeding.

The proposed Project design will replicate the Texas Project in order to maximize cost savings and lessons learned during process design and engineering.

**Choice of Combustion Technology**

The choice of combustion technology is a key issue for a biomass-fired generating facility. Nacogdoches Power has chosen fluidized bed boiler technology as this combustion technology is the only proven technology to generate electricity from biomass fuel in a reliable and cost effective manner while minimizing emissions. Older technologies, such as stoker-firing and traveling-grate, can only meet modern emissions standards for biomass-fired units through the use of "back end" emissions control systems that require the supplemental firing of fossil fuel. Newer technologies, such as gasification, are unproven and will likely be more costly and less reliable.

There are two fluidized bed technologies suitable for a biomass-fired generation unit. Each technology offers certain advantages and disadvantages. Fluidized bed boilers use a suspended sand bed to control a low temperature combustion zone and ensure fuel mixing. Bubbling fluidized bed boilers maintain an approximately 6' sand bed while circulating fluidized bed ("CFB") boilers circulate the sand bed through the entire height of the furnace. Both fluidized bed technologies have greater fuel flexibility and result in lower emissions than older combustion technologies.

Bubbling fluidized bed boilers are well-suited to burn high moisture content fuels, such as biomass. Typical BFB fuels include wood wastes and bark, paper mill sludges, recycled paper facility sludges, peat, refuse-derived and tire-derived fuel. On the other hand, CFB boilers are more adept at combusting lower moisture content fuels such as coal and petroleum coke. Furthermore, BFBs are generally simpler to operate due to the fact that the bed temperature can be controlled through combustion air staging. Circulating fluidized bed boilers require additional equipment such as heat exchangers, cyclones and recirculating equipment.

Bubbling fluidized bed boiler technology is the most appropriate combustion technology for a biomass-generating facility designed primarily to consume biomass fuel. Nacogdoches Power selected bubbling fluidized bed boiler technology for the Texas Project based upon its intended fuel. Nacogdoches Power will also utilize bubbling fluidized bed boiler technology for the Florida Clean Energy Center because of the similar projected fuels.

**Bubbling Fluidized Bed Boiler**

Nacogdoches Power has entered into a letter of intent with Metso Paper USA, Inc., formerly Aker Kvaerner Power, Inc. ("Metso"), to design and supply a bubbling fluidized bed boiler for the Project. Nacogdoches Power selected Metso to design and supply the boiler for its Texas Project after a competitive bid process. Metso will design and supply the BFB boiler under a firm-price, firm-schedule contract. In order to reduce potential interface issues, Metso will design and supply the remainder of the boiler island, including the SNCR system, baghouse, stack, and support steel. Metso has agreed to stand behind its product through a strong

commercial contract, including an accelerated schedule, strong liquidated damage provisions, an in-place warranty and a limited Force Majeure provision. For example, Metso will provide a full emissions guarantee. Metso will also provide Nacogdoches Power with a parent guarantee of its obligations under the contract. Nacogdoches Power used a similar contract structure for its Texas Project.

Metso is the leading manufacturer of biomass-fired boilers, having supplied more than 200 worldwide. Since its introduction in the 1970s, Metso's fluidized bed boiler technology has offered an economical, flexible, cost-effective and environmentally acceptable solution for burning low heating value, high moisture bio-fuels. Over the last fifteen years, Metso has supplied nearly all of the bubbling fluidized bed boilers sold to the pulp and paper industry in Scandinavia and North America.

Currently, there are Metso bark and/or wood-fired bubbling fluidized bed boilers operating at:

- Celulosa Arauco y Constitucion S.A., Chile (460,300 lb/hr, 1233 psig, 905 °F)
- Veracel Celulose S.A., Brazil (198,000 lb/hr, 1378 psig, 914 °F)
- Tembec Saint Gaudens S.A., France (135,000 lb/hr, 885 psig, 842 °F)
- Kymin Voima Oy, Finland (849,200 lb/hr,1653 psig, 1006 °F)

The most recent Metso bubbling fluidized bed boiler orders, which are under execution or commissioning, include:

- E.ON UK plc, England (381,000 lb/hr, 1978 psig, 999 °F)
- Kappa Kraftliner, Sweden (397,000 lb/hr, 1740 psig, 968 °F)
- CMPC Celulosa S.A., Chile (333,300 lb/hr, 885 psig, 842 °F)
- UPMCouronne, France (254,000 lb/hr, 710 psig, 860 °F)
- UPM Shotten, England (254,000 lb/hr, 710 psig, 860 °F)
- Rauman Voima, Finland (318,600, 1711psig, 995 °F)

Metso's patented bubbling fluidized bed boiler design features the innovative HYBEX™ floor. The HYBEX™ floor, which was designed for fuels containing stones or other coarse materials, features an extended free removal area where coarse material can be evacuated from the bed. More than thirty percent of the total floor area is open for tramp material removal compared with approximately one percent in a conventional floor design. Metso's fleet of HYBEX™ floor bubbling fluidized bed boilers has achieved high levels of availability.

Prior to selecting Metso for the Texas Project, Nacogdoches Power reviewed the technical and commercial merit of its proposal with prospective contractors and lenders. All parties agreed that the Metso bubbling fluidized bed boiler was mature technology suitable for project financing and that the bubbling fluidized bed technology was appropriate for the Texas Project. Moreover, the Metso boiler proposed for the Texas Project is nearly identical in size and design to the existing unit at Kymin Voima Oy, Finland.

**Char Re-injection System**

The Metso BFB boiler will not have a char re-injection system because such systems are not necessary for fluidized bed biomass-fired boilers. The amount of volatile matter in biomass fuels is higher than in coal and usually varies between 70 to 87% (dry basis) with fixed carbon in the 10 to 18% range. As a result of the high amount of volatiles, the major part of the fuel will be vaporized before homogeneous gas phase combustion reactions take place; the remaining char then will undergo heterogeneous combustion reactions. The fuel will be fed above the fluidized sand bed and will spread uniformly and immediately across the cross-section of the bed. Coarse char and fine char particles will be combusted upon contact with bed media. The balance will be burned in the secondary zone of the furnace.

**Steam Turbine Generator**

Nacogdoches Power will likely enter into a firm-price contract with Siemens Industrial Turbomachinery, Inc. ("Siemens") to design and supply a steam turbine generator for the Project. Nacogdoches Power selected Siemens to design and supply the steam turbine generator for its Texas Project after a competitive bid process due to the performance and reliability of its industrial steam turbines. The steam turbine for the Texas Project is based on the highly successful MP series of geared axial VAX turbines and is produced in Finspong, Sweden. Energy Management, Inc. has previously purchased and operated three VAX steam turbines with great success. Other qualified vendors include Alstom, the General Electric Company and Fuji Electric Corp. of America.

Prior to selecting Siemens for the Texas Project, Nacogdoches Power reviewed the technical and commercial merit of its proposal with prospective contractors and lenders. All parties agreed that the Siemens steam turbine was mature technology suitable for project financing and that the Siemens steam turbine was appropriate for the Texas Project. For the Texas Project, Siemens has agreed to stand behind its product through a strong commercial contract, including an accelerated schedule, strong liquidated damage provisions, an in-place warranty and a limited Force Majeure provision. Nacogdoches Power would seek similar provisions in its contract for this Project.

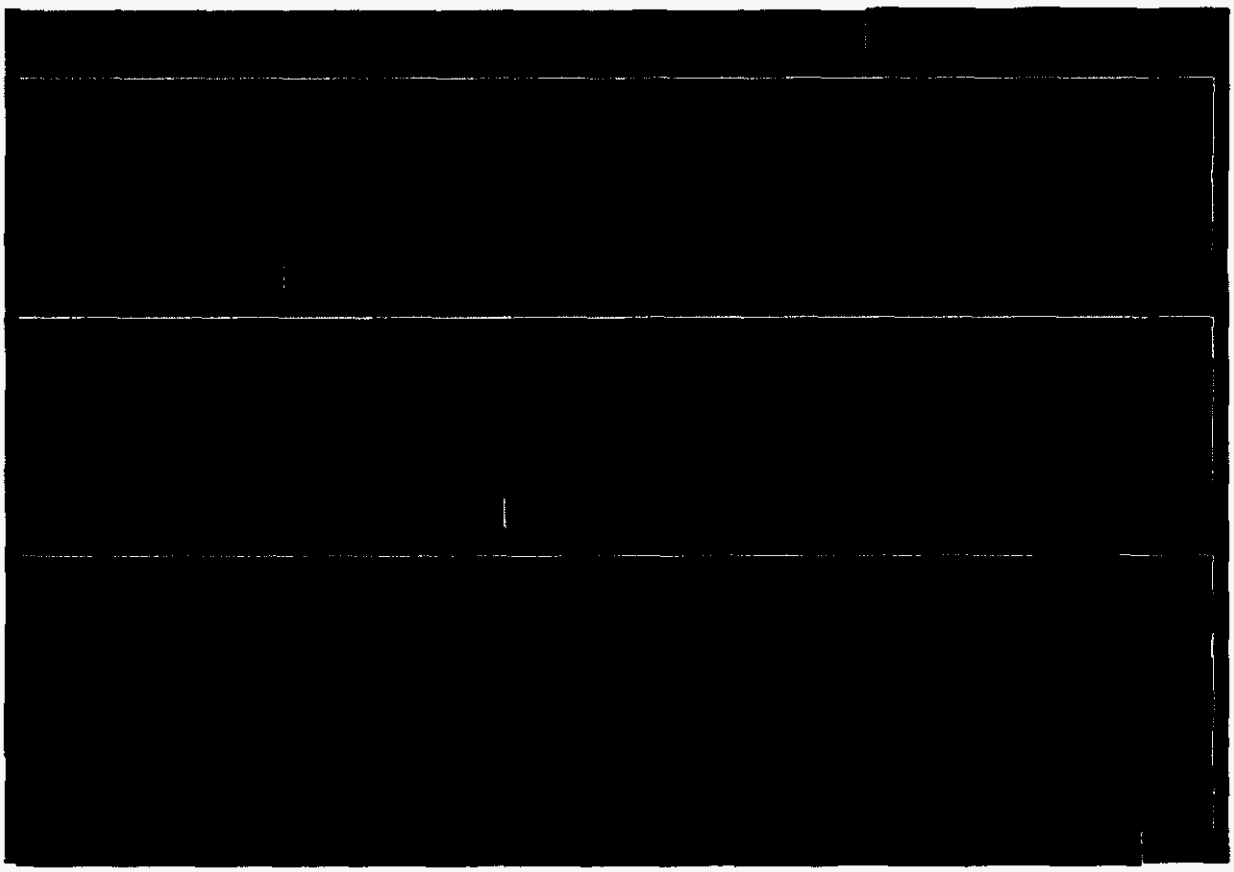
Nacogdoches Power has based its proposal on the use of a non-reheat steam turbine. Nacogdoches Power investigated the use of a reheat steam turbine for this Project, but determined that such a turbine would provide minimal performance benefits at significant added capital cost. In addition, Nacogdoches Power has based its proposal on an outdoor steam turbine installation.

**Fuel Handling System**

Nacogdoches Power has entered into a letter of intent with Wolf Material Handling Systems, Inc. ("Wolf") to design and supply the wood fuel handling system for the Project. Founded in 1978, Wolf specializes in bulk material handling systems for the pulp and paper, power generation and

mining industries. Nacogdoches Power has been working with Wolf to select the fuel handling system for the Texas Project. Together, Nacogdoches Power and Wolf have optimized the design of the wood fuel handling system for reliable, yet cost effective, operation. Nacogdoches Power believes that its experience in the design, engineering and oversight of the Texas Project will result in significant cost savings for the Florida Clean Energy Center.

Along with the choice of boiler technology, the fuel handling system plays a critical role in the success of any biomass-fired generating facility. Nacogdoches Power will incorporate redundancy and proven technologies into the design of the Project fuel handling system in order to ensure high plant availability. The Project biomass fuel handling system will consist of three drive-through full truck tippers, two sets of screens and hogs, an automatic stacker/reclaimer system and a manual stacker/reclaimer system. The Project will be designed to maintain a minimum of 20 days of on-site storage. In this manner, the Project will apply lessons learned from previous biomass-fired electric generating facilities. The biomass fuel will be transported to the Project Site by truck.



**Balance of Plant and Zero Liquid Discharge**

The remaining balance of plant will consist of cooling towers, feedwater heaters, pumps, condenser, electric switchyard, water treatment system and a zero liquid discharge system. Appendix 3 includes a list of proposed suppliers for the balance of equipment.

The Project will incorporate a zero liquid discharge system to treat blowdown wastewater from the cooling tower. The plant waste streams from equipment drains, reverse osmosis ("RO") water treatment system back-wash and boiler blowdown will be combined in the cooling tower basin with the blowdown waste stream going to the ZLD processing system. Oily waste from equipment drains will be processed in an oil water separator to remove oils and grease. Recovered distillate water from the ZLD system will be used as make-up to the RO boiler make-up system.

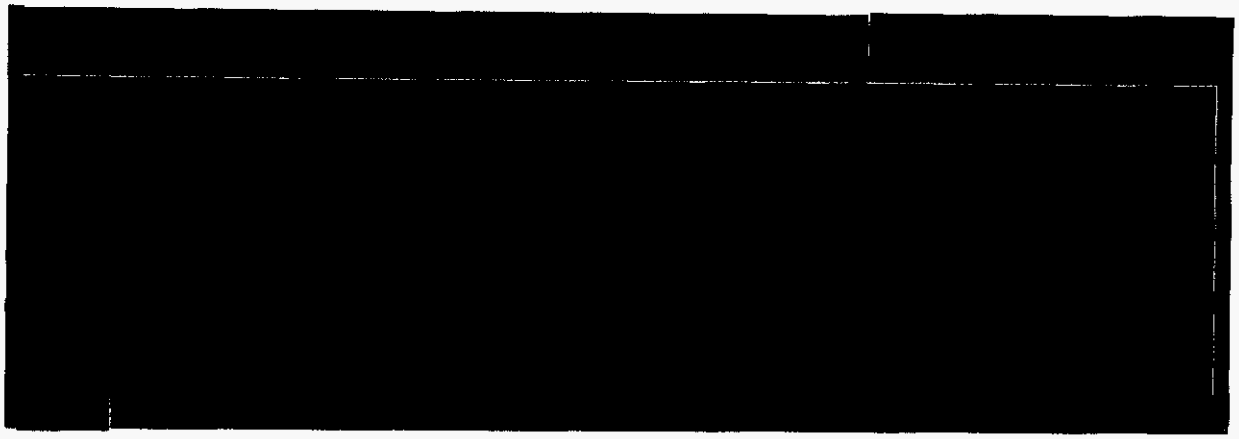
Nacogdoches Power has assumed that plant make-up water will be available from the existing groundwater well system and will have the following characteristics: hardness between 200 and 244 mg/l, pH of 7.9, chloride concentration of 18 to 20 mg/l, maximum silica concentration of 22 mg/l and total dissolved solids of 247 ppm. The silica concentration will be one of the critical criteria that determines the size and design of the ZLD system. Nacogdoches Power will perform a detailed analysis of the well water during the development of the Project to optimize the overall plant water treatment system. The composition of the water supply will greatly influence the choice of treatment equipment.

Nacogdoches Power will optimize conservation techniques to reduce discharge volumes prior to the ZLD system. Cooling blowdown will be the primary discharge. Treatment chemicals will be carefully selected to allow an increase in tower cycles of concentration. Nacogdoches Power has developed a base design concept using 15 cycles to establish flow rates. Nacogdoches Power's base design will utilize a side stream softener with two pass RO and a final brine concentrator crystallizer. The final ZLD system design will be selected after consideration of make-up water chemistry and life-cycle economic analysis. A water balance showing the conceptual design and water usage is included in Appendix 4.

EMI, a member of the Nacogdoches Power team, utilized a RCC brine concentrator with spray dryer for waste water treatment on its Tiverton Power Project. Nacogdoches Power has commenced detailed discussions with Aquatech and GE Water Systems to determine the optimal system.

**Fuel Supply and Requirements Including Any Backup Fuels**

*Start-up Fuel*



*Wastewater Biosolids*

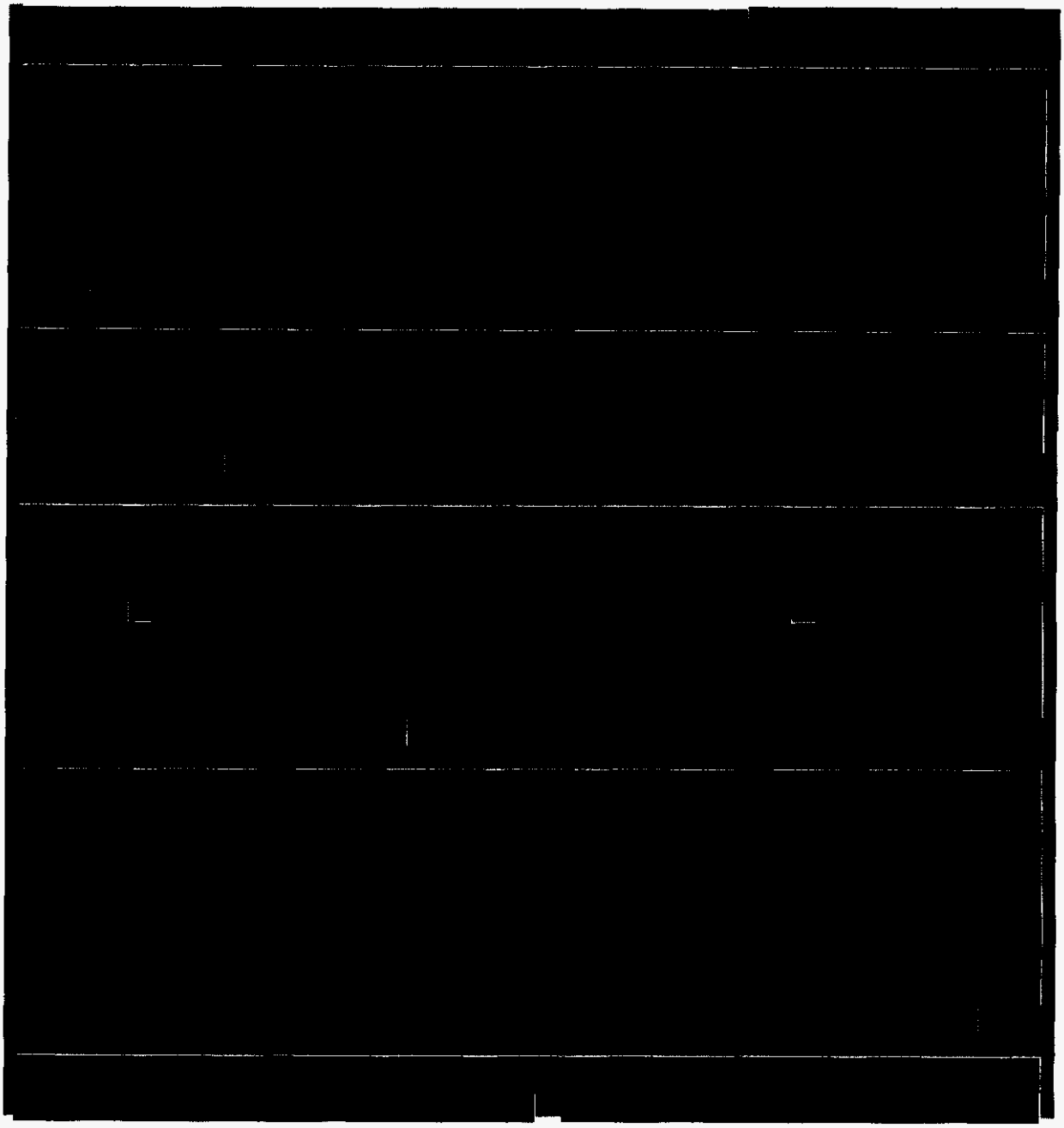
Nacogdoches Power has explored the use of wastewater biosolids and believes the use of such biosolids will not meet the economic or environmental goals for the Project. The Metso BFB will be technically capable of combusting wastewater biosolids; however, the combustion of wastewater biosolids can impact installation and maintenance costs as well as plant performance. In particular, the handling and conveying of biosolids material has been proven to be difficult. Biosolids have been found to contain chlorine, which, when mixed with biomass fuels, will result in high temperature superheater corrosion. Fuels that contain high levels of alkali metals and chlorine and low levels of sulfur result in accelerated superheater corrosion. A possible solution would be to reduce the superheater temperature to less than 950 F which would result in lower plant efficiency.

Furthermore, the heating value of the wastewater biosolids described by the GRU analysis in Addendum 2 is minimal. Even assuming the most optimistic case shown in the data provided by GRU (approximately 32,000 wet tons of undigested, dewatered biosolids at 8085 btu/lb dry), the biosolids would result in less than 300 kW of electricity production on an annual basis. The majority of the energy in the biosolids would be consumed drying the biosolids. Furthermore, the introduction of biosolids would reduce the efficiency of the boiler due to the introduction of such a high moisture content fuel.

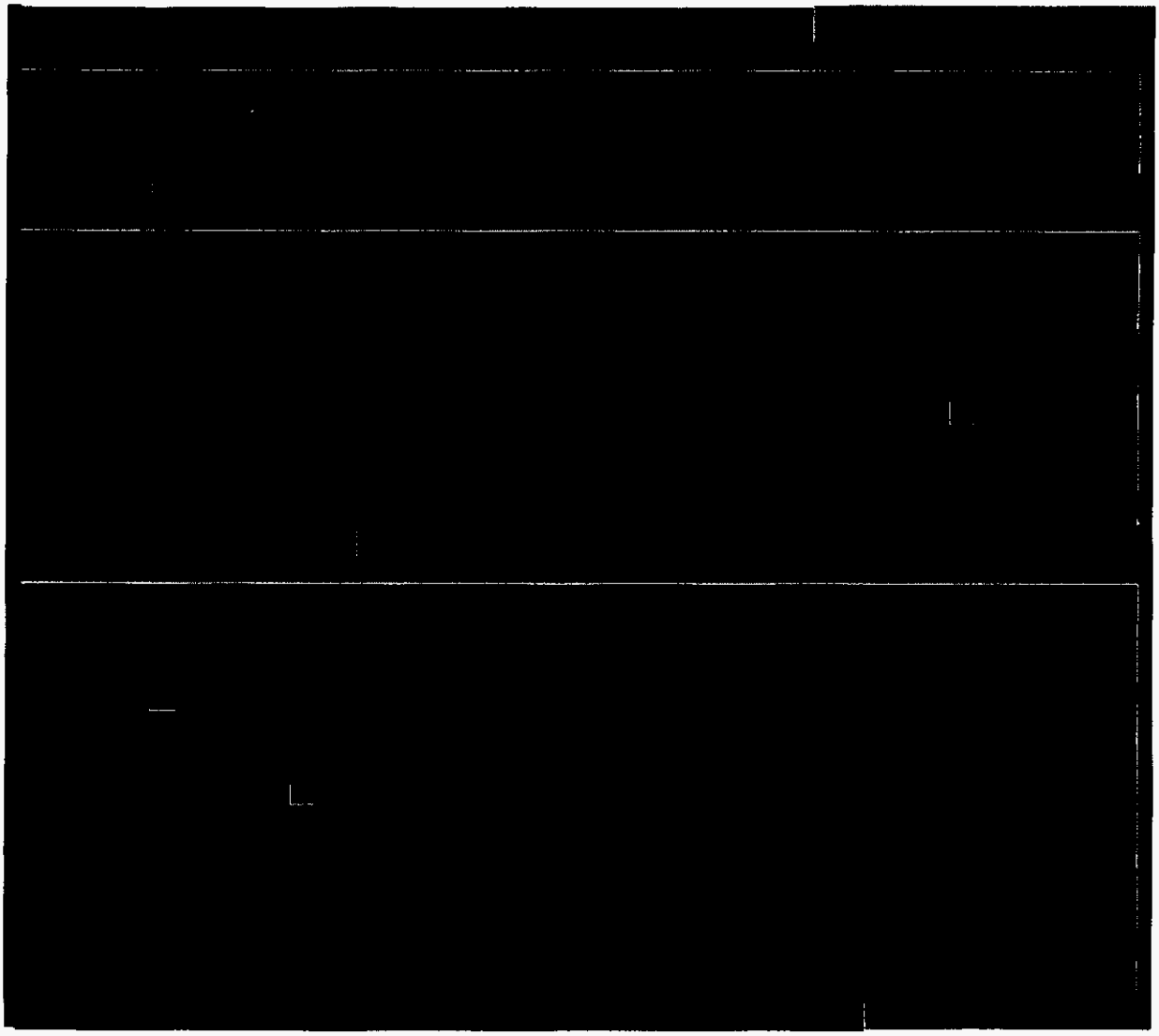
Combustion of wastewater biosolids is not preferred by the EPA or the Florida DEP. Biosolids have been shown to contain heavy metals, which can cause ash contamination and add significant cost to ash disposal. Nacogdoches Power would likely need to add a carbon bed system for metals and mercury control. Nacogdoches Power believes that combustion of wastewater biolsolids is likely to cause public opposition to the Project; however, Nacogdoches

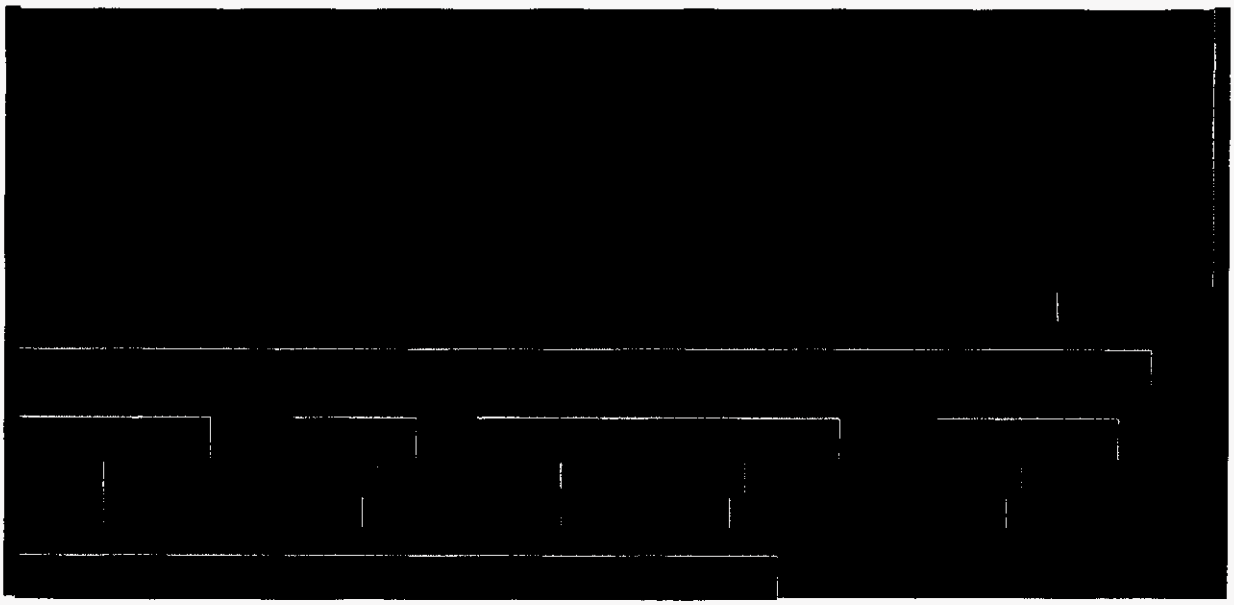
Power is willing to work with GRU on this issue should GRU consider the combustion of wastewater biosolids an essential goal for the facility.

*Fuel Procurement Strategy*

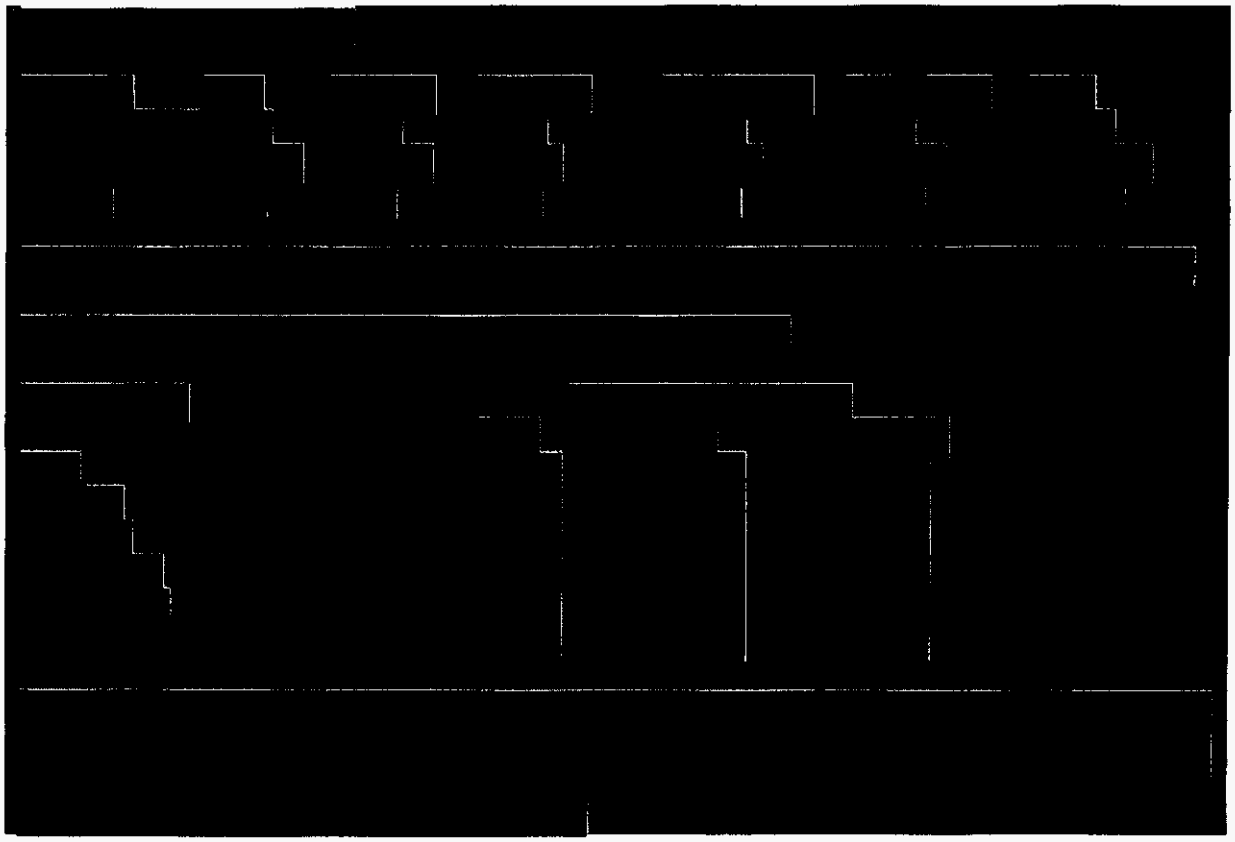


*Forest Residue*

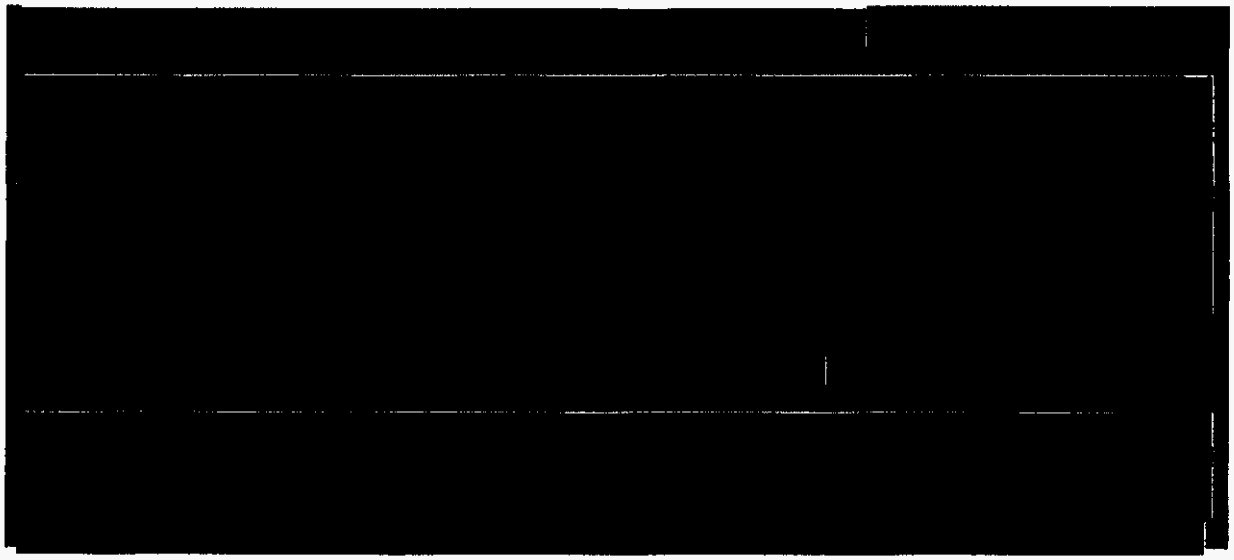


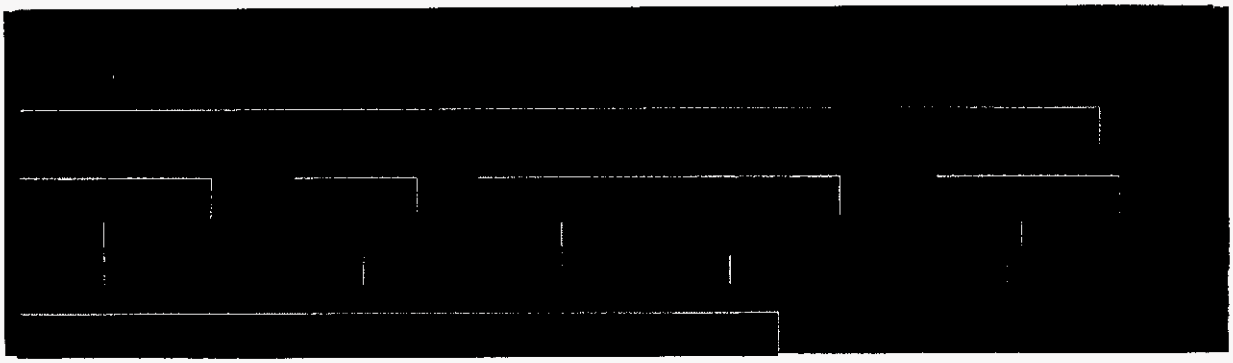


*Mill Residue*

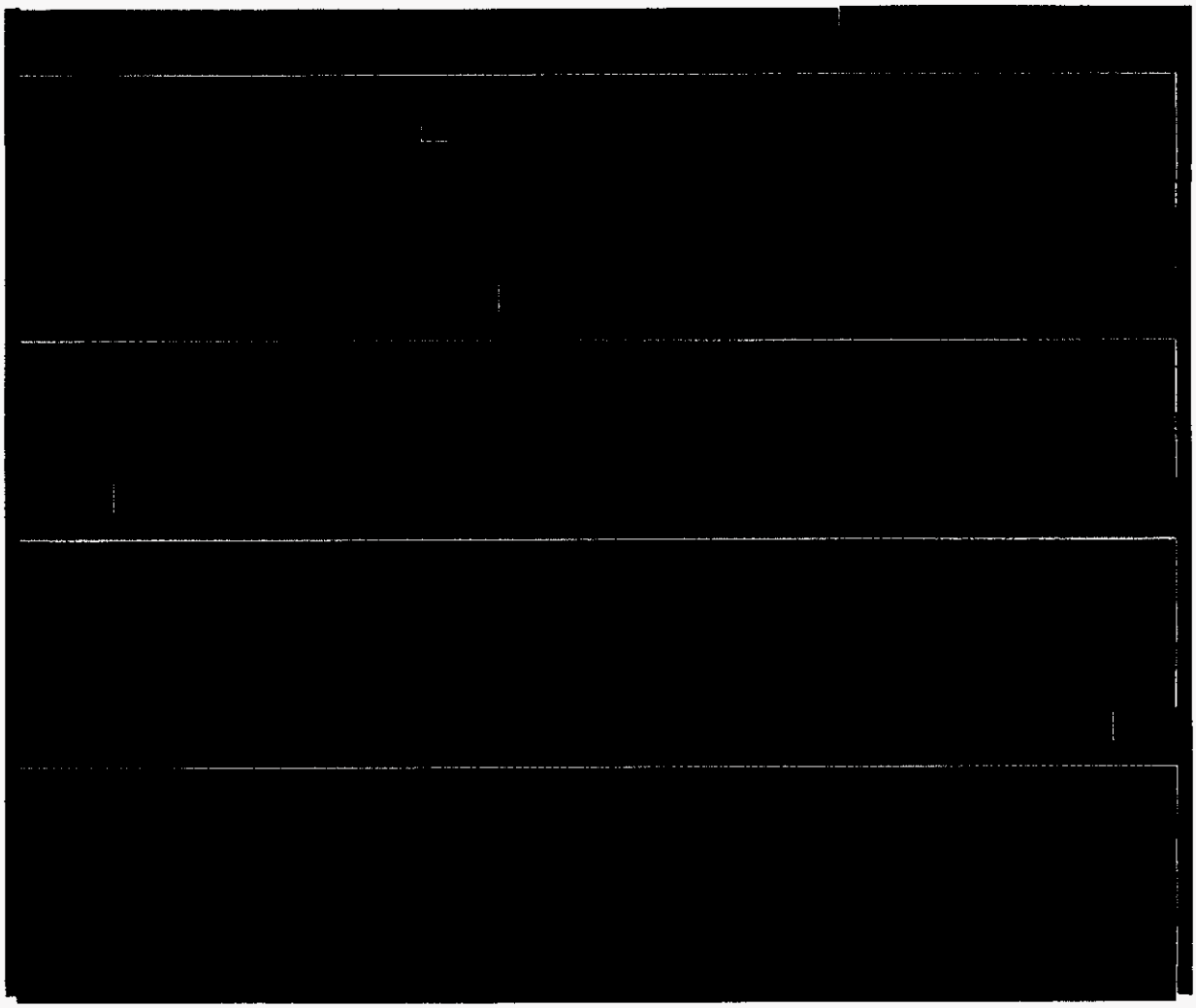


*Thinnings*





*Urban Wood Waste*



[redacted]

*Summary of Biomass Fuel Procurement Strategy*

[redacted]

**Net Capacity Rating**

The Project will be designed to maintain a peak net capacity rating of 100 MW under all ambient temperature conditions. Thus, the summer and winter peak ratings will be 100 MW.

**Indicative Net Heat Rates**

[redacted]

**Site Requirements and Layout**

Nacogdoches Power has redesigned the Florida Clean Energy Center to have minimal site impacts should GRU select Proposal Option 1 or Proposal Option 3. Nacogdoches Power has compressed the project layout to occupy fewer acres. The Florida Clean Energy Center will now occupy a total of 45 acres. Nacogdoches Power believes this represents the most efficient use of space at the Deerhaven Site as the Project will occupy less than 1/2 acre per MW of output.

If GRU selects Proposal Option 1 or Proposal Option 3, Nacogdoches Power recommends the utilization of the original Deerhaven Site parcel for the Project because this parcel is already zoned "PS" for Public Services and Operations. By researching existing aerial photogrammetric databases, Nacogdoches Power has identified two potential sites for the Project within the original Deerhaven Site parcel. Each site has unique characteristics and advantages, but, in general, our preferred "Site A", located in the southeast quadrant of the original Deerhaven Site parcel, appears to mitigate any potential impacts relating to existing operations and future upgrades to the GRU facility. By choosing potential sites within the original Deerhaven Site parcel, Nacogdoches Power's site selection strategy eliminates the risk associated with the annexed parcels not receiving the zoning change required to construct a biomass facility.

The original Deerhaven Site offers advantages for the construction of the Project, including:

- Existing power plant site and Site Certification – Nacogdoches Power has found that public acceptance of new generating facilities is greater when such facilities are constructed at existing power plant sites rather than new locations.
- Existing water withdrawal authorization – plant makeup water is becoming increasingly difficult to obtain due to constraints on water supplies. Based on the existing Site Certification for the Deerhaven Site, GRU is authorized for a ground water withdrawal rate of up to 6.5 million gallons per day ("MGD"). The existing facility draws a maximum of approximately 3.5 MGD. According to the RFP Addendum No. 2, GRU will allow the selected proposer to use a portion of the remaining ground water allocation, which will eliminate the need for the selected proposer to seek an increase in the overall allocation from the Suwannee Water Management District ("SRWMD"). Nacogdoches Power proposes to utilize or tie into the existing water supply source with its own isolation valves and pumps in a manner that would not interfere with GRU's ongoing operations at the Deerhaven Site. If GRU cannot accommodate such a request, Nacogdoches Power will develop its own well water program that would include a well or wells, pumping station and associated infrastructure dedicated for the Project and will request a re-allocation of the approved Deerhaven ground water use as part of the Site Certification process for the project.
- Proximity to transmission lines – the cost of constructing transmission lines or wheeling power through the bulk transmission system will be minimized though use of the Deerhaven Site.
- Proximity to wood supply sources – the Deerhaven Site is located at an advantageous setting to capture wood fuel resources.

Nacogdoches Power has prepared two conceptual designs of the Project within the original Deerhaven Site parcel. Site A represents Nacogdoches Power's preferred location and Site B represents Nacogdoches Power's alternate location. Please refer to the Conceptual Project Layout drawings attached as Appendix 1 for a representation of the Project configurations.

The conceptual design for Site A attempts to avoid all disruption to ongoing operations at the Deerhaven Site by locating the bulk of the Project to the south of the existing units. Two variations for a driveway entrance are shown in order to allow flexibility in the event the Project requires reorientation or if necessary to conform to Florida DOT driveway entrance regulations. Both driveway entrances will be situated directly opposite a US 441 median cut-over, which will allow vehicular traffic to turn directly into and out of the Project from either direction. Nacogdoches Power will initiate direct consultation with Florida DOT to define traffic impacts. It should be noted that the northerly entrance, defined as "alternate", will cross under the existing transmission and distribution lines running to and from the existing GRU units. This conceptual design will be further refined in conjunction with GRU during the development of the Project.

The conceptual design for Site B depicts the facility within the northwest quadrant of the original Deerhaven Site. This location will provide some additional buffer from populated areas, but primary access to the site will most likely be shared with GRU's existing construction access from US 441, which also crosses the active rail to the plant. Some modification to this existing entrance will be required to ensure traffic flow for both facilities is unimpeded. It should be noted that a second driveway off of NW 128 Lane could be established as access for administration and operational personnel to further reduce traffic emanating from US 441.

The Florida Clean Energy Center will occupy approximately 45 acres. This total includes acreage for the Project layout, access road, storm water detention basins, potential wetlands mitigation areas, and setbacks from property lines to conform to local zoning ordinances. The footprint of the Project can be further broken down as follows:

- Fuel delivery, preparation and storage will occupy 19.3 acres
- The power block, including: boiler, STG, cooling tower, water treatment and ZLD system, will occupy 9.1 acres
- Solid waste will be hauled off site, so there is no need for a large solid waste storage area.
- Storm water attenuation may require 2.5 to 3.5 acres.
- Wetlands mitigation may vary from 1 to 5 acres depending on impacts and ratios.
- Balance of plant including access road, administration building and parking will occupy 2.2 acres.
- The remaining acreage of approximately 6 acres represents set backs from property lines as well as to act as a visual buffer.

Nacogdoches Power will continue to evaluate ways to reduce the project footprint as much as possible if selected by GRU.

As shown on the Conceptual Project Layout drawings, access roadways and impervious areas are represented in blue outline, structures and fuel handling infrastructure in yellow outline, and storm water attenuation / wetlands mitigation areas are shown in red. The Project Site will be fenced and will utilize remote cameras to facilitate security. The fence is not shown on the layout drawings at this time. Rail access will not be required. Communications systems within the site will be by radio.

The tallest Project structure will be the boiler chimney, which will have a maximum height of 300 feet. This stack height is equal to, or less than, the heights of the existing stacks on the Deerhaven Site.

The SNCR will use 19.5% aqueous ammonia. The SNCR will use approximately 600 lb/hour of 19.5% aqueous ammonia MCR while firing the design 50% moisture biomass fuel. The aqueous ammonia storage tanks will be designed for truck unloading and will be sized for approximately 5 days of storage.

The Project will not utilize or supply auxiliary steam. The steam cycle is designed to maximize efficiency by pre-heating ambient air to 155° F and boiler feedwater to 420° F when the unit is operating. There are no systems that will require on-site interface or integration with the existing Deerhaven facility.

In the event that GRU does not allow utilization of the original Deerhaven Site parcel, Nacogdoches Power will develop the Project on portions of the annexed parcels acceptable to GRU provided that the parcels are rezoned for public service and operations purposes.

Nacogdoches Power has found an attractive alternative site for the project in northern Florida. Nacogdoches Power is currently negotiating terms and conditions for an option to lease the Alternative Site. The Alternative Site will provide Nacogdoches Power with needed features, including: available land zoned for industrial use, transportation access for fuel delivery, access to the bulk transmission system, available water for plant makeup and proximity to fuel resources.

**Projected Permitting and Construction Schedule and In-Service Date**

Nacogdoches Power has prepared a detailed project schedule for the development, permitting, engineering, construction and startup of the Project. Nacogdoches Power, ECT and David Dee worked together to refine the permitting and development schedule for the Project Nacogdoches Power used its experience developing the Texas Project to estimate the duration of other schedule activities. Please see the detailed project schedule attached as Appendix 9.

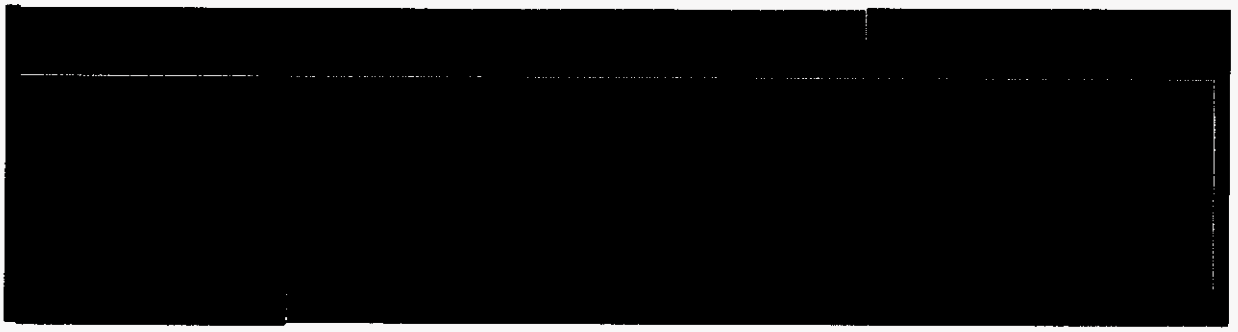
The overall schedule duration is estimated to be 55 months. The development phase is estimated to last 19 months and the construction phase is estimated to last 36 months. The critical path for the overall schedule runs through permitting activities and the manufacturing and erection of the boiler.

The Site Certification process will dictate the length and pace of the development phase. Although the length of the Site Certification process is largely set by statute, Nacogdoches Power has taken steps to help reduce the length of this process. Nacogdoches Power has already performed a sizeable portion of the preliminary design and engineering work necessary to

develop a Site Certification application. In addition, Nacogdoches Power has developed a work plan with ECT and David Dee to maximize the utilization of information prepared for its Texas Project. Nacogdoches Power anticipates that it will be able to proceed more quickly through the permitting process due to its head start.

The construction schedule is primarily driven by the manufacturing and erection of the boiler. Metso has already performed preliminary engineering for the boiler and WorleyParsons has already reviewed the preliminary boiler design and P&IDs. Nacogdoches Power may be able to reduce the duration of the construction phase by performing limited detailed engineering prior to financial closing. Nacogdoches Power will explore this option if selected by GRU.

**Dispatchability of the Project, Including Facility Limitations that May Constrain Operation or Dispatch**



**Permits and Approvals**

The Project will require the following permits and approvals.

*Site Certification (Power Plant Siting Act)*

The Project will utilize steam to produce more than 75 MW of power and, thus, will be subject to the Florida Electrical Power Plant Siting Act. *See* FLA. STAT. ch. 403.501, et seq. (2007). The Site Certification process is designed to provide a streamlined process for the development of critical energy infrastructure and allows for participation by local governments and the public. The Florida Department of Environmental Protection coordinates the Site Certification process. Site Certification may ultimately require the approval of the Governor and Cabinet, sitting as the Siting Board

Nacogdoches Power has hired David S. Dee, of Young van Assenderp, P.A., to provide permitting and other legal support for the Florida Clean Energy Center Project. Mr. Dee has considerable experience with the Florida Electrical Power Plant Siting Act; he has handled the permitting of 13 major construction projects involving electrical generating facilities, including nine facilities on greenfield sites. Nacogdoches Power has hired Environmental Consulting &

Technology, Inc., of Gainesville, Florida, to manage the permitting for the Florida Clean Energy Center Project. ECT's services to the power industry include site selection studies and overall permitting for new power plants; specialty permitting projects involving air quality modeling, wetlands, water supply, wastewater discharges, and solid waste disposal; compliance auditing; and remediation programs. Nacogdoches Power, ECT and David Dee have worked together to develop an accurate permitting and development schedule for the Project. Moreover, ECT and David Dee have evaluated potential project configurations and options and advised Nacogdoches Power on the most appropriate choices for Florida and the City of Gainesville.

ECT and David Dee will work with Nacogdoches Power to prepare the application for Site Certification and will lead the permitting process for Nacogdoches Power. If GRU selects Proposal Option 1 or Proposal Option 3, Nacogdoches Power will file an application for a new Site Certification for the portion of the Deerhaven Site leased by Nacogdoches Power. If GRU selects Proposal Option 2, Nacogdoches Power will submit an application for a new Site Certification for the Alternative Site.

The Site Certification process is governed by Ch. 403, Part II, F.S. The formal review process for a new Site Certification is designed to take approximately 12.5 months to complete, but the schedule can be revised in light of the specific facts involved with a particular project.

In determining whether a Site Certification should be approved, the Siting Board considers whether the proposed facility will:

(a) Provide reasonable assurance that operational safeguards are technically sufficient for the public welfare and protection.

(b) Comply with applicable nonprocedural requirements of agencies.

(c) Be consistent with applicable local government comprehensive plans and land development regulations.

(d) Meet the electrical energy needs of the state in an orderly and timely fashion.

(e) Effect a reasonable balance between the need for the facility as established pursuant to s. 403.519 and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility.

(f) Minimize, through the use of reasonable and available methods, the adverse effects on human health, the environment, and the ecology of the land and its wildlife and the ecology of state waters and their aquatic life.

(g) Serve and protect the broad interests of the public.

Nacogdoches Power is confident that the Florida Clean Energy Center will meet this broad public interest test. The Project will also be consistent with greenhouse gas and renewable energy policies espoused by Florida Governor Charlie Crist, the Florida Legislature and the Florida Department of Environmental Protection. Recent Executive Orders signed by Governor Crist require the state government to develop a governmental carbon scorecard and work to reduce governmental emissions, direct the adoption of maximum emission levels of greenhouse gases for electric utilities and request that the Public Service Commission adopt a 20 percent Renewable Portfolio Standard by 2020. The Project will help make a significant contribution to the development of new renewable resources in Florida. The Project will use state of the art technology to produce renewable electricity with minimal impacts on the environment.

*Determination of Need (Power Plant Siting Act)*

An applicant must obtain a Determination of Need from the Florida Public Service Commission before it can complete the Site Certification process. *See* FLA. STAT. ch. 403.507 and 403.519 (2007). In making its determination of need, the PSC considers factors such as the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, whether the proposed plant is the most cost-effective alternative available, and whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available.

Nacogdoches Power is confident that the PSC will make a Determination of Need in favor of the Project. The Project will be consistent with greenhouse gas and renewable energy policies espoused by the Governor, Florida Legislature, DEP and PSC. There are limited opportunities for the development of utility-scale renewable energy projects in Florida. Furthermore, the Project will increase the fuel diversity and reliability of the electricity supply in Florida.

*Air Permit (Construction Permit, Prevention of Significant Deterioration Review and Title V Operating Permit)*

Because the Project will have the potential to emit at least 250 tons per year of a single air contaminant, it will be considered a major stationary source with respect to the Prevention of Significant Deterioration ("PSD") rules. *See* Rule 62-12.400 F.A.C., 40 CFR § 52.21(b)(1)(B). As such, the Project must undergo a PSD review by the Florida Department of Environmental Protection ("DEP") by means of its EPA-approved PSD program. In addition, the Project must complete a Best Available Control Technology review. *See* 40 CFR § 52.21(b).

Because the Project will also be a major source with respect to Title V of the Clean Air Act, it must obtain a Title V operating permit from the DEP. *See* FLA. STAT. ch. 403.0872 (2007), Chapter 62-213, F.A.C. Nacogdoches Power must submit a Title V air operation permit application to the DEP within 180 days following commencement of operation. The Title V operating permit will incorporate the applicable provisions of the Construction Permit.

As previously described, the Florida Clean Energy Center will utilize Best Available Control Technology to limit $NO_x$ emissions to less than .10 lb/mmbtu. Therefore, Nacogdoches Power believes the Project is likely to receive an air permit. Nacogdoches Power received the final air permit for its Texas Project from the Texas Commission on Environmental Quality ("TCEQ") on March 5, 2007. It is important to note that the TCEQ accepted Nacogdoches Power's proposed emissions limits and choice of boiler technology for the Texas Project. Nacogdoches Power anticipates that the air permit for its Texas Project will set the BACT standard for similar biomass-fired generating facilities.

*Acid Rain Permit (Title IV Acid Rain Permit) and Clean Air Interstate Rule (CAIR)*

The Project will be subject to the Title IV Acid Rain program. An application for an acid rain part must be submitted at least two years before the planned start date of operation, but may be submitted in conjunction with the Title V operating permit application. *See* FAC § 62-214. Based on the use of wood fuel, Nacogdoches Power anticipates, however, that the annual amount of $SO_2$ emissions will be extremely low and that the Project will require a minimal amount of $SO_2$.

The Project will also be subject to CAIR and will need to obtain $NO_x$ and $SO_2$ CAIR allowances equal to its actual emissions.

*FAA (Notice of Proposed Construction and Alteration)*

If an object or construction cranes are more than 200 feet in height above ground level or if the object is above certain horizontal slope parameters near an airport, the Federal Aviation Administration ("FAA") requires the person proposing to construct the object to submit a Notice of Proposed Construction or Alteration (FAA Form 7460-1) to the FAA Regional Office. The applicable forms must be submitted at least 30 days before construction begins. The Project stack will be more than 200 feet in height and will require the notice.

*Industrial Wastewater Discharge Permit (National Pollutant Discharge Elimination System "NPDES")*

Pursuant to instruction from GRU for use of the Deerhaven Site, Nacogdoches Power intends for the Project to be a Zero Liquid Discharge ("Zero Discharge") facility. Therefore, the Project will not require a wastewater discharge permit under the federal National Pollutant Discharge Elimination System ("NPDES") for wastewater discharges to waters of the United States. The Florida DEP administers the NPDES program through delegated authority under the Clean Water Act. *See* FAC § 62-620.

*Beneficial Reuse; Non-Hazardous Waste Disposal*

The Florida Clean Energy Center will generate ash as a by-product of the combustion process. Regulatory treatment of the ash depends on whether the ash can be beneficially reused. Based on data from its Texas Project, Nacogdoches Power believes that it will be possible to beneficially reuse the ash as a soil amendment. Nacogdoches Power conducted extensive testing of woody biomass materials in Texas to design the Texas Project and predict the likely chemical composition of the ash. Nacogdoches Power has attached representative wood fuel chemical analyses as Appendix 6. Nacogdoches Power intends to obtain and analyze the chemical composition of wood fuel samples in Florida to confirm this analysis since the chemical composition of wood can depend on soil characteristics. In this manner, the Project will be consistent with other biomass power projects in the United States. Ash from wood-fired power plants is typically spread on agricultural fields as a soil enhancer. If the ash cannot be used as a soil amendment, Nacogdoches Power will dispose of the ash as a non-hazardous solid waste in a permitted, offsite landfill.

The zero liquid discharge system will produce salts, which will be a solid waste that will be disposed of in a permitted, offsite landfill. Nacogdoches Power estimates that the ZLD may produce approximately 14 tons per year of salt sludge; however, the actual quantities and composition of the ZLD wastes are not available at this time and require a water analysis and detail design of the ZLD. Nacogdoches Power intends to dispose of the salt sludge in a lined class 1 landfill.

**Environmental Characteristics and Emission Rates**

As described above, Nacogdoches Power has hired David S. Dee, of Young van Assenderp, P.A., to provide permitting and other legal support for the Florida Clean Energy Center Project. Mr. Dee has considerable experience with the Florida Electrical Power Plant Siting Act; he has handled the permitting of 13 major construction projects involving electrical generating facilities, including nine facilities on greenfield sites. Nacogdoches Power has hired Environmental Consulting & Technology, Inc., of Gainesville, Florida, to manage the permitting for the Florida Clean Energy Center Project. ECT's services to the power industry include site selection studies and overall permitting for new power plants; specialty permitting projects involving air quality modeling, wetlands, water supply, wastewater discharges, and solid waste disposal; compliance auditing; and remediation programs. Nacogdoches Power, ECT and David Dee have worked together to develop an accurate permitting and development schedule for the Project. Moreover, ECT and David Dee have evaluated potential project configurations and options and advised Nacogdoches Power on the most appropriate choices for Florida and the City of Gainesville.

Nacogdoches Power will be liable and accountable for meeting the environmental requirements for the Project. Nacogdoches Power has permitted a facility with identical emissions limits to those proposed for the Florida Clean Energy Center. Nacogdoches Power has received all environmental permits required for construction of the Texas Project and recently set the

standard for Best Available Control Technology in Texas at .10 lb/mmbtu of $NO_x$ for biomass-fired generating facilities. In addition, Metso has proven that its equipment can meet the proposed emissions. Metso will provide a full emissions guarantee for the Project. Finally, Nacogdoches Power has proposed power purchase agreement terms that will ensure the environmental performance of the Project. Please see Section 2 for more details.

The Project will utilize a bubbling fluidized bed boiler to produce superheated steam. Modern BFB boilers utilize sophisticated, yet simple, technology to generate steam while minimizing emissions. Surface contact between fluidized sand bed particles and fuel particles ensures the complete combustion of fuel within the target temperature range. Fluidization also allows such boilers to combust a wide range of fuel types and fuel moisture contents with few opportunities for reliability problems. The boiler will be equipped with a baghouse to control particulate matter. An aqueous ammonia injection Selective Non-Catalytic Reduction system will be provided for $NO_x$ control.

The Project will avoid and reduce air pollutant emissions. On a lb/MWh basis, the air pollutant emissions for the Project will be significantly lower than such emissions for a number of currently operating electric generating facilities in Florida. As a result, the Project will avoid and reduce air pollutants each time the Project operates and displaces existing units with higher pollutant emissions limits.

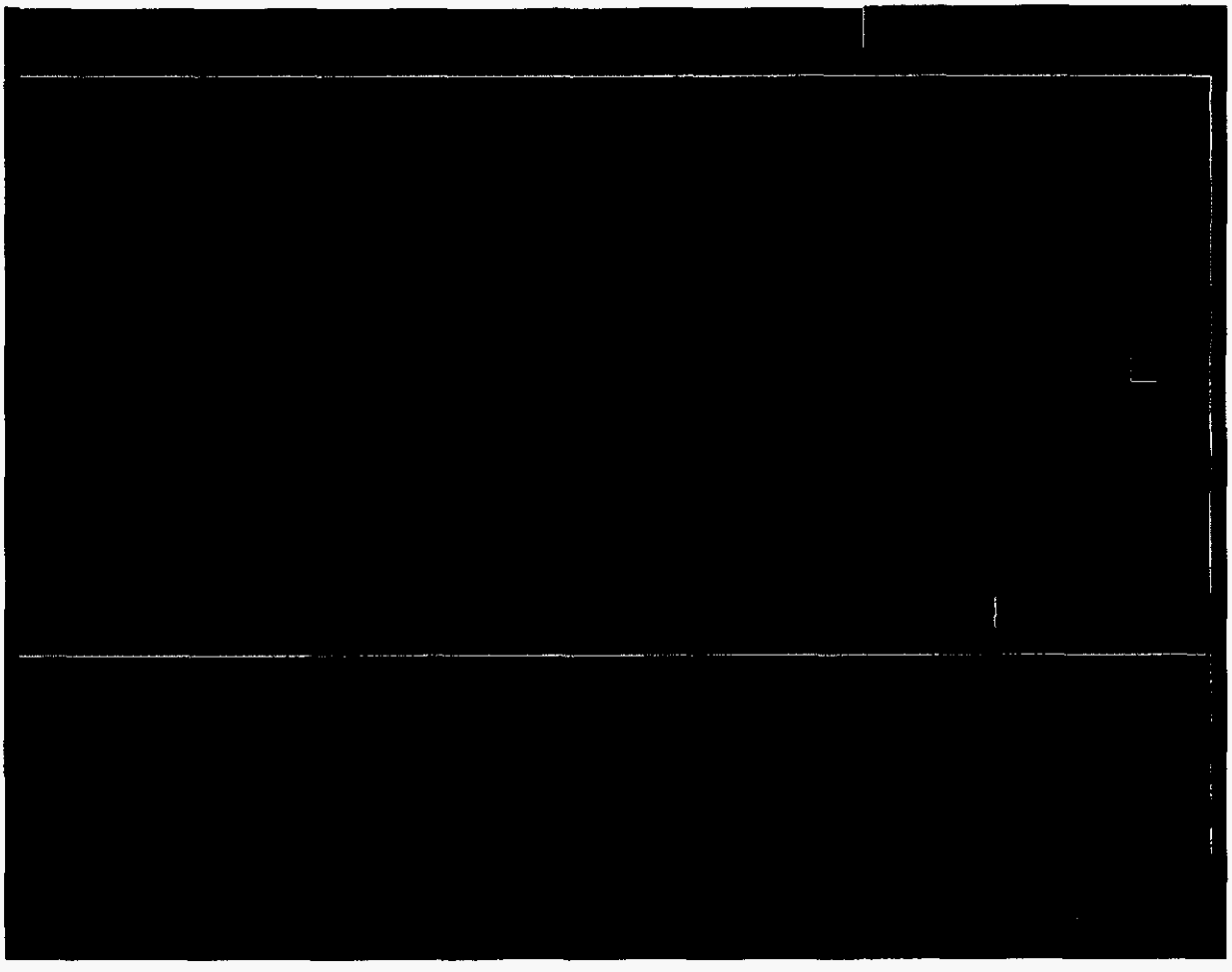
Nacogdoches Power has not yet performed detailed dispatch modeling to determine the likely specific air pollution reductions that would occur as a result of the Project; however, a comparison between the existing pollution emission limits for units 1 and 2 of the Seminole Generating Station, a 1300 MW coal-fired electric generating station built in 1984 ("Seminole Station") and the proposed emission rates for the Project is useful to highlight the air pollution benefits of the Project. The Project will emit 70% less $NO_x$ and 93% less $SO_2$ when compared to the average per mmbtu emission limits of the Seminole Station.

The Project may result in a net reduction of greenhouse gas emissions because biomass is a renewable and sustainable fuel source. Nacogdoches Power evaluated published sources of biomass greenhouse gas emission analyses, including a January 2004 report by the National Renewable Energy Laboratory entitled *Biomass Power and Conventional Fossil Systems with and without CO2 Sequestration – Comparing the Energy Balance, Greenhouse Gas Emissions and Economics* and the October 2007 University of Florida study *Biomass Resource Assessment Part I: Availability and Cost Analysis of Woody Biomass for Gainesville Regional Utilities*, to characterize the greenhouse gas emissions from the Florida Clean Energy Center. Nacogdoches Power also performed its own greenhouse gas emissions analysis and found that its estimate generally agreed with the published analyses.

The National Renewable Energy Laboratory compared the greenhouse gas emission potential of direct-fired biomass facilities (similar to the Project) to other types of generation, such as coal-fired and natural gas combined-cycle units. The report estimated that direct-fired biomass

facilities consuming residue materials would result in a 148% reduction in global warming potential on a lifecycle basis when compared to equivalent generating capacity from coal-fired units like Seminole Station. The Project will utilize residue from logging operations, mill residue, thinnings and urban wood waste. Often, forest residue is left to decompose after the harvesting of merchantable timber. By utilizing forest residue as fuel, the Project will provide significant environmental benefits by avoiding the emission of methane, a potent greenhouse gas, resulting from decomposition.

The NREL study estimated that the harvesting, processing and transport of biomass fuels would result in 13 kg/MWh of $CO_2$ emissions. The University of Florida study summarized two recent studies of the greenhouse gas emissions from the harvesting, processing and transport of biomass fuels. One study concluded that the harvesting, processing and transport of biomass fuels resulted in 4-6 kg/MWh of $CO_2$ emissions while the other study found that the harvesting, processing and transport of biomass fuels resulted in 38-44 kg/MWh of $CO_2$ emissions.



[redacted]

The following table lists the expected air pollution emissions for the Project:

[redacted]

Note: Hg and Pb per EPA 5th Edition AP-42 Emission factors for trace elements from wood residue combustion.

No materials stored on the Project Site will be subject to Process Safety Management or Department of Homeland Security regulations.

**Storm Debris Management**

The Project also has the potential to help alleviate environmental problems caused by natural disasters such as hurricanes, floods and tornados. Large volumes of various types of storm debris, including trees, brush, vegetative matter and clean lumber, need to be disposed of or burned following such disasters. Disposal of such materials incurs costs and utilizes valuable landfill capacity. Disposal of such materials incurs costs and utilizes valuable landfill capacity. Open burning of such material, while generally permitted by state regulatory authorities, can cause significant air quality impacts. Biomass-fired generating facilities have the capacity to consume these debris as fuel, reducing disposal costs and air quality impacts while transforming the storm debris into a valuable product—electricity.

Nacogdoches Power expects that the Project could be used to reduce the cost and environmental impact of dealing with storm debris.

**Ash and Other By-products**

The Florida Clean Energy Center will generate ash as a by-product of the combustion process. Regulatory treatment of the ash depends on whether the ash can be beneficially reused. Based on data from its Texas Project, Nacogdoches Power believes that it will be possible to beneficially reuse the ash as a soil amendment. Nacogdoches Power conducted extensive testing of woody biomass materials in Texas to design the Texas Project and predict the likely chemical composition of the ash. Nacogdoches Power has attached representative wood fuel chemical analyses as Appendix 6. Nacogdoches Power intends to obtain and analyze the chemical composition of wood fuel samples in Florida to confirm this analysis since the chemical composition of wood can depend on soil characteristics. In this manner, the Project will be consistent with other biomass power projects in the United States. Ash from wood-fired power plants is typically spread on agricultural fields as a soil enhancer. If the ash cannot be used as a soil amendment, Nacogdoches Power will dispose of the ash as a non-hazardous solid waste in a permitted, offsite landfill.

Due to the Metso bubbling fluidized bed design, bed ash will be minimal and will predominantly consist of rocks, metals and non-combustible coarse material. Metso's patented bubbling fluidized bed boiler design features the innovative HYBEX™ floor. The HYBEX™ floor, which was designed for fuels containing stones or other coarse materials, features an extended free removal area where coarse material can be evacuated from the bed. More than thirty percent of the total floor area is open for tramp material removal compared with approximately one percent in a conventional floor design. These coarse particles from the bed will be removed through discharge hoppers and chutes under the HYBEX™ floor. From the discharge hoppers, the bottom ash system will consist of dry water cooled conveyors.

Bed ash will be screened; heavy material will drop into a dumpster and lighter material, including any sand, will be re-injected into the boiler. The majority of the ash will leave the

furnace with the flue gas and will be collected in the fly ash system. Total bed ash will be very minimal and may be in the order of 8 tons or less per day depending on the amount of impurities in the fuel.

The fly ash system will be a dry vacuum-type pneumatic conveying system. It will receive ash from the discharge side of a screw conveyor collecting fly ash from the economizer hoppers as well as the pre-heater hopper, and the outlets of the twelve (12) bag house hoppers (2 rows of six hoppers). The fly ash system will convey the collected ash to a fly ash storage silo. The ash storage silo will be a 20-foot diameter, 13,000 cubic feet storage capacity (4-day storage capacity), elevated fly ash storage silo with conical bottom with dual outlets.

Fly ash quantities will vary with the wood ash, which can range from .5% for some pines to 2.0 - 3.0% for some oaks and hickory. To be conservative, Nacogdoches Power has assumed 2.0% ash, which will result in approximately 21,000 tons of ash on an annual basis, .025 tons/MWh, 2.5 tons/hour and 60 tons/day. Based upon its trace chemical analyses and the experience of other biomass projects, Nacogdoches Power estimates that the Project would average 1% ash and result in a daily ash flow of 30 tons.

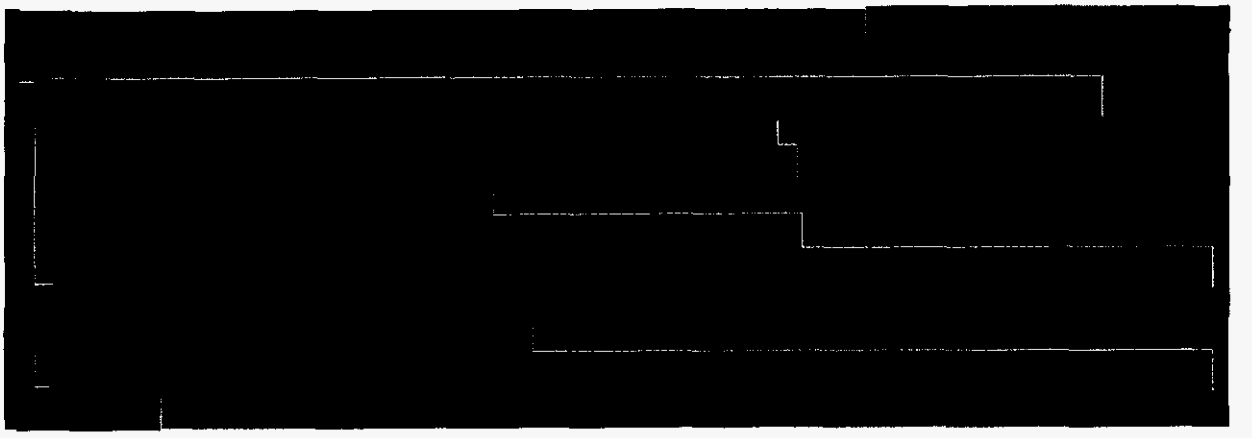
All the biomass fuel will be combustible, so there will be no processing waste. Over-sized material will be hogged to the correct size. Waste oil and grease from the machinery will be collected using practices consistent with similar power plant operations and will be properly disposed.

The zero liquid discharge system will produce salts, which will be a solid waste that will be disposed of in a permitted, offsite landfill. Nacogdoches Power estimates that the ZLD may produce approximately 14 tons per year of salt sludge; however, the actual quantities and composition of the ZLD wastes are not available at this time and require a water analysis and detail design of the ZLD. Nacogdoches Power intends to dispose of the salt sludge in a lined class 1 landfill.

The Project will produce no other solid waste. No hazardous material is anticipated. Nacogdoches Power has estimated disposal costs and included such values in its budget; final disposal costs will be determined during the detailed development phase.

**Water Use and Wastewater Discharges**

The Project will utilize up to 1.4 million gallons per day ("MGD") of water for make-up. The Project will utilize a Zero Liquid Discharge system to produce zero wastewater discharges as shown on the water balance attached as Appendix 4. The water balance highlights planned daily usage and represents the design case with the plant at full load at 80°F ambient DB 78°F WB with all the equipment in the wood yard operating. The average usage will be less and will depend on ambient conditions and the average auxiliary electric load. The average case will be determined at a later time.



It is feasible to utilize reclaimed water from a municipal wastewater system and it has been done at a number of power plant sites across the country. Nacogdoches Power will further evaluate the use of reclaimed water for the Project. If such an approach is required by GRU or the water management district, Nacogdoches Power assumes that the city will provide the pipeline and deliver the reclaimed water to the Deerhaven Site. Several other issues that will affect the Project capital and operating cost will need to be better understood. These issues revolve around the water analysis and, particularly, heavy metals, which will impact the salt sludge disposal. The cycles of concentration may be altered and the ZLD sizing may change.

Use of reclaimed water would require the construction of a large storage tank (volume greater than two million gallons) in order to equalize reclaimed water flows throughout the day and to provide backup if there was a problem at the sewage treatment plant. In order to assure reliable operation of the Project with reclaimed water, additional water treatment equipment would be necessary. Such additional equipment might include the following types of equipment: chlorination, settling, carbon filters, chemical feed systems and ultrafiltration. Beyond increasing chemical usage and sludge disposal, the additional equipment would require added manpower to operate and necessitate further ongoing maintenance. The water treatment system would need to be designed to handle upset conditions from the sewage treatment plant. Nacogdoches Power expects that the reclaimed water quality will vary over time due to the inconsistent pattern of industries discharging into the sewage collection system. These items would impact the design and operation of the upfront treatment system

**Electrical Interconnection Requirements**

If GRU selects Proposal Option 1 or Proposal Option 3, the Project will interconnect with the GRU transmission system at the existing switchyard at the Deerhaven Site. Nacogdoches Power will install overhead transmission lines and new breaker positions to realize the interconnection at 138 kV. The configuration and major components of the Project electrical system and interconnection are illustrated in Key One Line Diagram SK001032-E1 attached as Appendix 7.

The steam turbine will power a single synchronous generator rated 137 MVA, 0.85 power factor, based on Class B temperature rise, but with Class F insulation. The generator will be designed, manufactured and tested in accordance with ANSI/IEEE Standard C50.13. A brushless excitation system will be provided with an automatic voltage regulator and a power system stabilizer. Detailed generator data and curves are contained in Appendix 8.

The 13.8 kV output voltage of the generator will be stepped up to 138 kV in a single three-phase Generator Step-up Transformer ("GSU"). The GSU capacity ratings will be 93/124/155 MVA ONAN/ONAF/ONAF. High voltage windings will be wye connected and solidly grounded; a high voltage no-load tap changer will be provided. The generator output will be directly connected to the GSU without intervening circuit breaker by means of isolated phase bus. A 15/20 MVA ONAN/ONAF, 138:4.16 kV Station Service Transformer ("SST") in the same location as the GSU will supply power to station auxiliary loads, both when the Project is operating and when it is off line. In the latter case, power would be backfed from the GRU system. The high voltage windings of the SST will be delta connected unless otherwise specified by GRU; a high voltage no-load tap changer will be included.

The high voltage terminals of the GSU and SST will be bused together via 138 kV SF6 circuit breakers. The generator will be synchronized across the GSU's 138 kV circuit breaker. These circuit breakers will be part of an open bus switchyard designed and constructed in accordance with the National Electrical Safety Code ("NESC") and with applicable ANSI, IEEE and NEMA standards. Design BIL will be 650 kV, and fault duty will be specified as 40 kA rms sym per "GRU Facility Connection Requirements." Nacogdoches Power proposes to locate the revenue metering current and voltage transformers in this switchyard with the meters themselves located in the Project control room. By utilizing extended range CT's (e.g. by Areva-Ritz) with high accuracy maintained at low current levels, the same meters may be used for both exported energy and backfed consumption. Nacogdoches Power is amenable to alternative locations and schemes for revenue metering as required by GRU. The switchyard ground grid will be designed in accordance with IEEE Standard 80 and will be integrated with the overall Project ground grid.
A single circuit 138 kV overhead transmission line will be provided between the Project switchyard and the point of interconnection in the Deerhaven Substation. A motor operated disconnect switch will be installed in the line's outgoing connection at the Project switchyard. Either interconnection Option 1 or Option 2 can be accommodated at the Deerhaven terminus of this line. The overhead line will include a static wire with fiberoptic cable (OPGW) for telecommunications between the Facility and GRU including, but not limited to, SCADA and protective relaying.

A fully integrated relay scheme will be provided for the protection of the generator, auxiliary power distribution equipment, GSU, SST, plant switchyard equipment and the interconnecting 138 kV line. All protective relays will be utility grade and will, in general, be microprocessor based with sequence-of-events recording, oscillography capture and communications capabilities. They will be GPS time synchronized to facilitate troubleshooting. Sufficient

redundancy will be provided such that failure of a single element of the protection system will not result in failure to clear all faults promptly. Protective relaying of the utility interconnection will be in accordance with GRU, FRCC and NERC requirements including, but not limited to, requirements for backup or dual primary protection as appropriate and breaker failure protection.

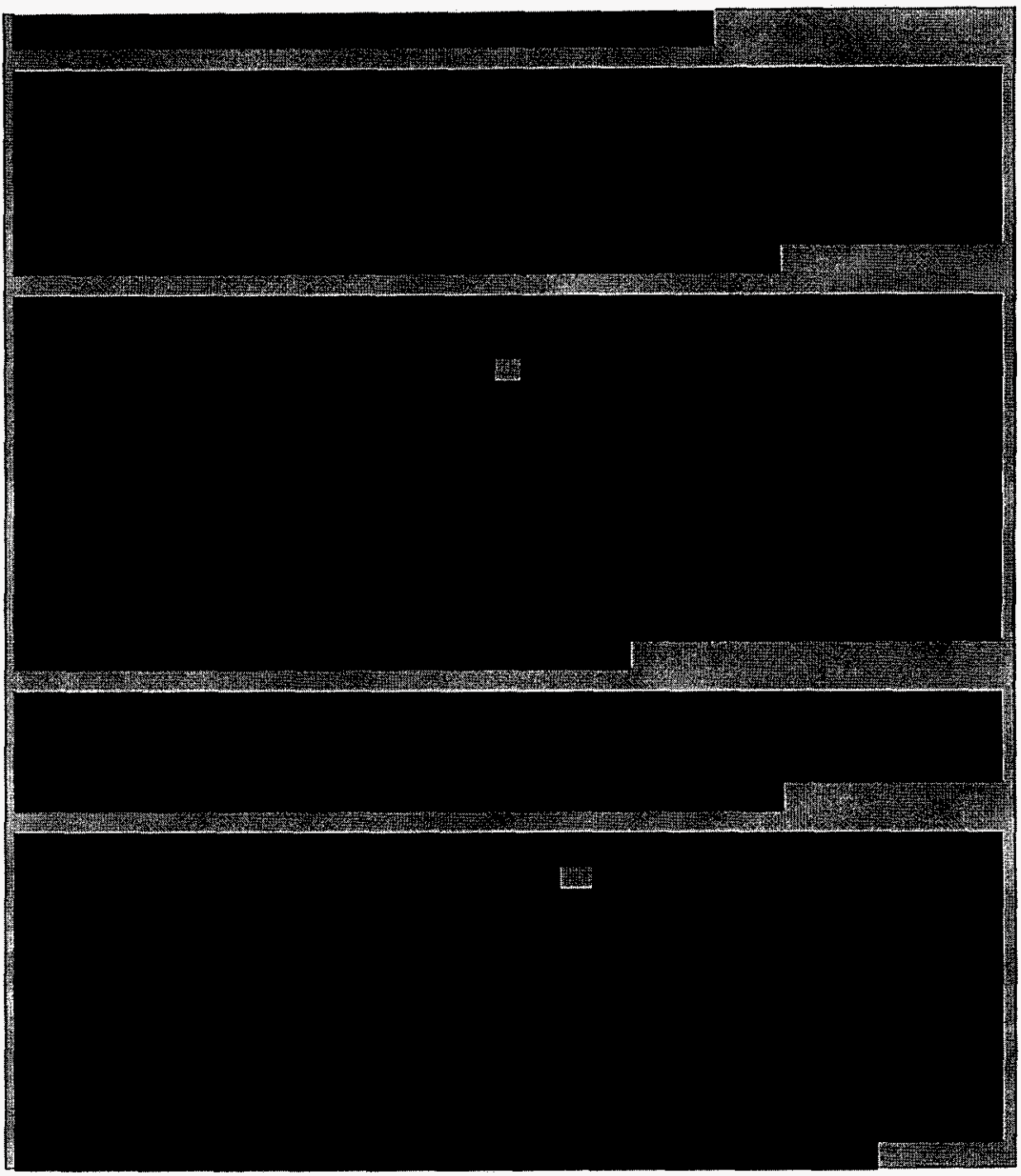
As stated above, power to station auxiliary loads will be supplied by the 138:4.16 kV Station Service Transformer. The SST's secondary terminals will be connected via non-segregated phase bus to 5 kV metalclad switchgear. The switchgear will be integrated with a lineup of medium voltage motor starters serving large motors and sub-feeding the 480 V power distribution system. A separate 4160 V motor control center, supplied from the 5 kV switchgear, will be located in the woodyard to serve loads there. Medium voltage transformers ("MVT") will supply power from the 4160 V to the 480 V power distribution system. Three MVT's are envisioned, one each for main plant, cooling tower and woodyard, each supplying a lineup of 480 V switchgear. The 480 V switchgear will subfeed motor control centers and also directly supply motors between 100 Hp and 250 Hp. To the extent practicable, where multiple 480 V motors and other devices serve the same auxiliary system, A and B motors (devices) will be fed from separate 480 V motor control centers. Preliminary ratings for the auxiliary power distribution equipment are indicated on the Key One Line Diagram attached as Appendix 7.

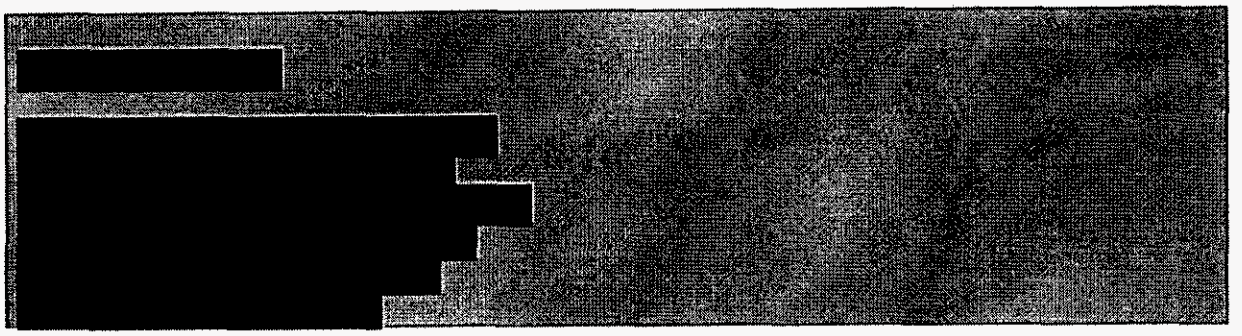
For maximum continuity of service, the 4160 V and 480 V auxiliary power systems will be high resistance grounded. Components of the power distribution system will be factory installed in pre-engineered walk-in enclosures complete with DCS remote I/O cabinets. This approach will achieve considerable cost and schedule savings due to decreased control cable, field labor and field commissioning time.

All instrumentation, control and monitoring circuits required for startup, operation, normal and emergency shutdown and off-line housekeeping of the Project will be energized via battery connected DC systems or via uninterruptible power supplies. Redundant battery chargers will be provided. Voltage for switchgear controls and protective relaying circuits will be 125 VDC.
Design and installation of electrical systems and equipment will be in accordance with the National Electrical Code and with applicable standards of the following organizations:

- American National Standards Institute (ANSI)
- Association of Edison Illuminating Companies (AEIC)
- Institute of Electrical and Electronics Engineers (IEEE)
- Insulated Cable Engineers Association (ICEA)
- Illuminating Engineering Society of North America (IES)
- Lightning Protection Institute (LPI)
- National Association of Corrosion Engineers (NACE)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Associations (NFPA)
- Underwriters Laboratories (UL)
- Components that are UL listed and labeled will be provided where available.

**Reliability of the Proposed Technology**





**Performance Guarantees, Warranties and Risk Mitigation**

Please see Section 2 for a detailed discussion of commercial issues regarding risk mitigation.

**Backup Systems and Fuels**

The Project will utilize propane or natural gas as a start-up fuel. Because bubbling fluidized bed boilers can accept a wide range of fuels and moisture contents, no supplementary fuel will be necessary for flame stabilization.

**Estimated Truck Traffic Associated with Fuel Supply and Traffic Management Plan**

Biomass fuel will be delivered to the Project by truck. Approximately 130 trucks will deliver fuel on any given day. Traffic volumes will likely be the highest from 5am – 4pm Monday through Friday. Nacogdoches Power intends to work with GRU to optimize the operation of the Project to minimize traffic impacts. Nacogdoches Power currently proposes to accept deliveries from 4 am – 8 pm Monday through Saturday. Nacogdoches Power has proposed that trucks access the Deerhaven Site from US 441. Furthermore, Nacogdoches Power has proposed driveway entrances situated directly opposite US 441 median cut-overs, which will allow vehicular traffic to turn directly into and out of the Project from either direction.

Nacogdoches Power investigated the delivery of fuel to the Project by rail in order to reduce traffic impacts; however, Nacogdoches Power found that the associated costs, including the additional handling costs, were uneconomic. Moreover, Nacogdoches Power found that the volume of rail deliveries needed to materially reduce the traffic impact would likely obstruct the rail delivery of coal to the Deerhaven Site. For example, 10 railcars per day will be required to support 20 MW of generating capacity. Nevertheless, Nacogdoches Power is willing to explore the delivery of fuel to the Project Site by rail in conjunction with GRU.

Nacogdoches Power will initiate direct consultation with Florida DOT and will perform a detailed traffic study if selected by GRU. Nacogdoches Power will evaluate the level of service classification of US 441 under the Florida Department of Transportation's "State Highway System Level of Service Classification System." Based on a very preliminary examination,

Nacogdoches Power believes that the increased traffic associated with the Project will not cause the level of service of US 441 to change. Nacogdoches Power will also work with GRU to reduce traffic impacts from the Project and to ensure that truck traffic will not impact existing operations at the Deerhaven Site. Nacogdoches Power has developed the following preliminary traffic management plan:

*Construction Phase*

As part of the Site Certification application process, Nacogdoches Power will conduct a traffic management study. At the initial stages of construction, vehicular activity will consist of tree and stump clearing & hauling, earth moving and soils preparation. The types of vehicles associated with this work are specialty forest machinery, excavators and dozers, which will arrive and remain on site until site preparations are completed. During the initial stages of construction, the only vehicles that will ingress and egress on a normal daylight work day will be dump trucks and personal vehicles of construction personnel and site management personnel. Nacogdoches Power estimates that this activity will take approximately four months.

The next phase of vehicular construction activity will involve gravel trucks, concrete mixing trucks and flatbed trucks delivering reinforcing bar for concrete pours. In addition, personal vehicles belonging to the labor force will arrive and depart during standard daylight hours. The bulk of the labor force traffic will be arrive around 7:00 AM and depart around 4:00 PM, Mondays through Fridays, with the potential for a limited work force on Saturdays depending on project schedule and weather conditions. Nacogdoches Power estimates that this activity will take approximately six to eight months.

The final phase of vehicular construction activity will consist of material deliveries such as steel, piping, electrical, equipment and associated infrastructure. The labor force will be at its peak during this phase. Nacogdoches Power estimates that this activity will last approximately twenty-four to twenty-eight months.

*Operational Phase*

The operation and maintenance of the Project will have minimal impact on the local and regional road network. Nacogdoches Power anticipates that approximately 40 employees will work full-time at the Project and that the bulk of those employees will work during typical daylight hours Monday through Friday.

The delivery of biomass fuel to the Project will produce the most significant traffic impact caused by the Project. Approximately 130 tractor trailer trucks will ingress and egress during daylight hours, 5 to 6 days per week. In addition to the primary fuel deliveries, other byproduct truck traffic such as ash and sludge removal and deliveries of sand and chemicals will occur. Approximately 3 ash trucks will haul material off site each day. Sludge from the Zero Liquid Discharge system will also have to be hauled offsite on a less frequent, periodic basis.

Until a detailed traffic management plan can be developed, Nacogdoches Power has assumed that all construction, fuel and byproduct traffic will access the Project Site via US 441. Operational personnel and typical administrative traffic could utilize alternate access depending on final site selection.

**Description of How Fuel Procurement Practices are Consistent with GRU's Commitment to Sustainable Resource Forest Management**

Nacogdoches Power will work with GRU to ensure that fuel procurement practices are consistent with GRU's commitment to sustainable resource forest management. Nacogdoches Power has already hired Natural Resource Planning Services, Inc., of Gainesville, Florida to provide fuel procurement and ash disposal consulting services for the Florida Clean Energy Center. NRPS manages over 300,000 acres of timberland in Florida for a variety of clients including TIMO's, investors, family trusts, individuals, and government agencies. Jack Vogel, one of the principals of NRPS, is the current president of the Florida Forestry Association. At the request of Nacogdoches Power, NRPS conducted a detailed biomass fuel resource study for the Project. The Biomass Fuel Study evaluated all potential sources of biomass fuel, analyzed potential competition for each biomass fuel and determined that sufficient biomass fuel resources will be available to operate the Project at a reasonable cost and on a sustainable basis.

Nacogdoches Power proposes the following program as an initial step to ensure that fuel procurement practices are consistent with GRU's commitment to sustainable resource forest management:

1. Nacogdoches Power intends to hire two full time professional foresters to manage the fuel procurement for the Project.
2. Nacogdoches Power will work with NRPS and the Florida Forestry Association to develop sustainability standards for the Project ("Project Sustainability Standards"). Broadly, the sustainability standards will:
    a. Promote forest health.
    b. Provide for long-term forest productivity by integrating reforestation with harvesting.
    c. Seek to protect forest resources from threats such as wildfire, pests and diseases.
    d. Safeguard critical water, soil and habitat resources.
    e. Apply an ecosystem perspective to preserve biological diversity.
3. As specific measures, the sustainability standards may:
    a. Require reforestation within a certain timeframe.
    b. Ban the harvesting of stumps.
    c. Ban the harvesting of material from legally-designated conservation areas.
    d. Limit the conversion of natural forest to plantation forest.
    e. Limit the amount of leafy material.
    f. Encourage the destruction of non-native invasive species.

4. NRPS, or another independent entity, will conduct regular inspections and annual audits of the Project's compliance with the Project Sustainability Standards and the certification standards promulgated by GRU. Such inspections and audits will include visits to harvesting sites.
5. Biomass fuel supply contracts for the Project will require suppliers to comply with the Project Sustainability Standards and the Florida Department of Agriculture and Consumer Services, Division of Forestry, Best Management Practices for Silviculture.
6. Suppliers will be required to attend an annual sustainability and best practices seminar organized by Project procurement staff.
7. Nacogdoches Power will institute a strict documentation policy to ensure that suppliers comply with the supply contract terms.
    a. Each supply contract must be signed by a professional forester.
    b. Each delivered load of biomass fuel must be labeled by a unique identification number corresponding to the supplier ID, contract ID, tract ID, crew, transport, date and time and be accompanied by a manifest signed by the harvesting foreman and driver listing such information. If possible, Nacogdoches Power will seek to use electronic media to increase the accuracy of the information.
    c. Project operators will record the delivery identification information.
    d. Project operators will sample at least 10% of all delivered loads.
    e. A copy of the title to each harvested tract must be kept on file by each supplier and be available for inspection for a period of three years following harvest.
    f. Project procurement staff will conduct semi-annual inspections of all suppliers to verify compliance with the Project record-keeping procedures and harvesting practices.
8. Non-complying deliveries will be rejected.
9. Suppliers caught engaging in fraudulent practices will be penalized.
10. If a supplier is caught engaging in fraudulent practices more than three times, the supplier will be ineligible to supply biomass fuel to the Project for a period of a year.

Nacogdoches Power has included contractual terms in the supply contracts for its Texas Project that require all suppliers to comply with State Forestry Best Management Practices and that allow for the sampling of every load delivered. Furthermore, the State of Texas created a biomass incentive grant program to encourage the use of forest residue as fuel. Nacogdoches Power is a participant in a working group helping to design a management system to ensure compliance with grant program standards.

Finally, Nacogdoches Power believes that the Project will provide important opportunities for research on forest ecosystem health and forestry practices. Nacogdoches Power will commit to provide at least $25,000 in annual grants to support such research. Nacogdoches Power will also work with the University of Florida School of Forest Resources and Conservation to make Project data available for researchers.

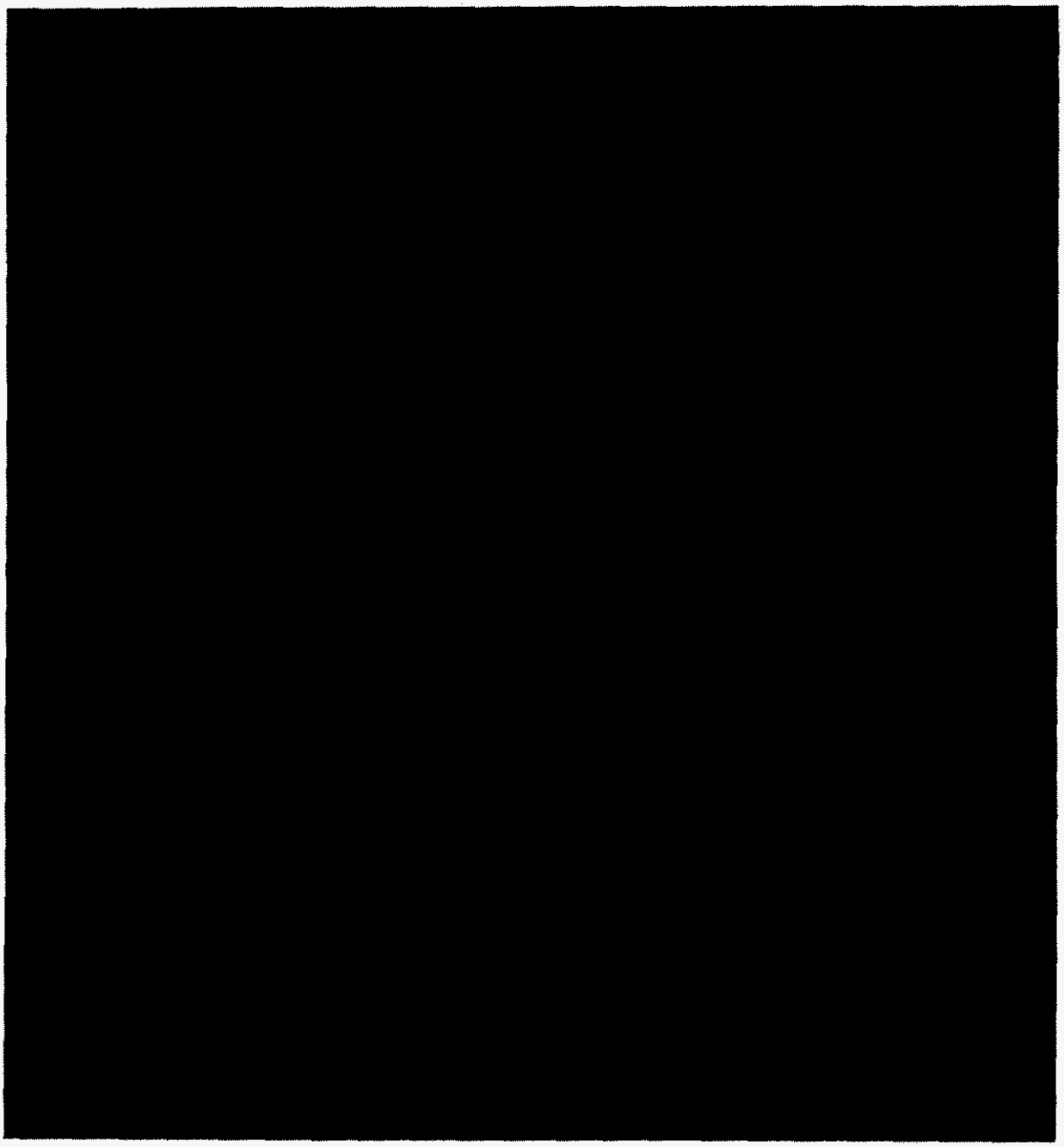
**Community Support Plan**

Nacogdoches Power will develop and implement a public relations program in Gainesville similar to the program that it successfully employed in Nacogdoches County, Texas. Nacogdoches Power utilized individual meetings and group presentations to enlist the support of three powerful groups: community leaders, business leaders and key stakeholders.

Nacogdoches Power has been able to secure strong local and county support for the Texas Project because the Texas Project will provide substantial economic stimulus to Nacogdoches and neighboring counties. The bulk of the operating organization will be hired from the local area. There will also be significant economic benefits to the local and regional forestry industry that will be called upon to supply the biomass fuel for the plant. One estimate of the employment benefit of a wood-fired power plant has been prepared by the National Renewable Energy Laboratory of the Department of Energy in its publication, "The Value of the Benefits of U.S. Biomass Power" in which it concluded that 4.9 jobs per MW of installed capacity will be created. The Project therefore is estimated to result in 490 new jobs.

## SECTION 4 - ECONOMIC INFORMATION

### Pricing



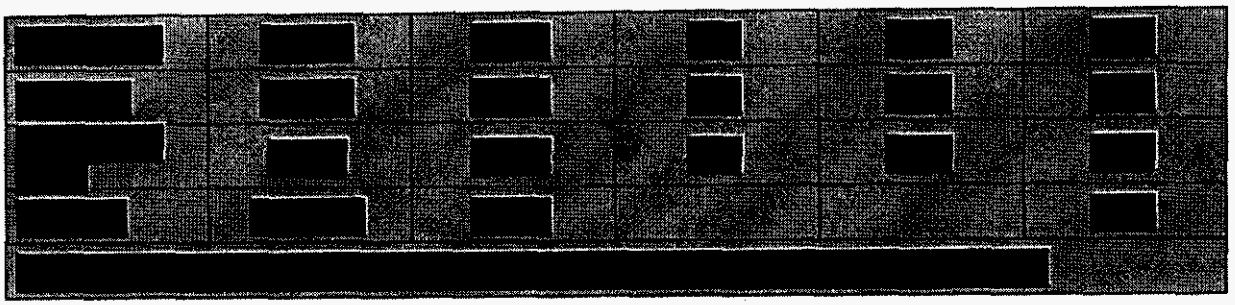
[redacted]

**Fuel Adjuster**

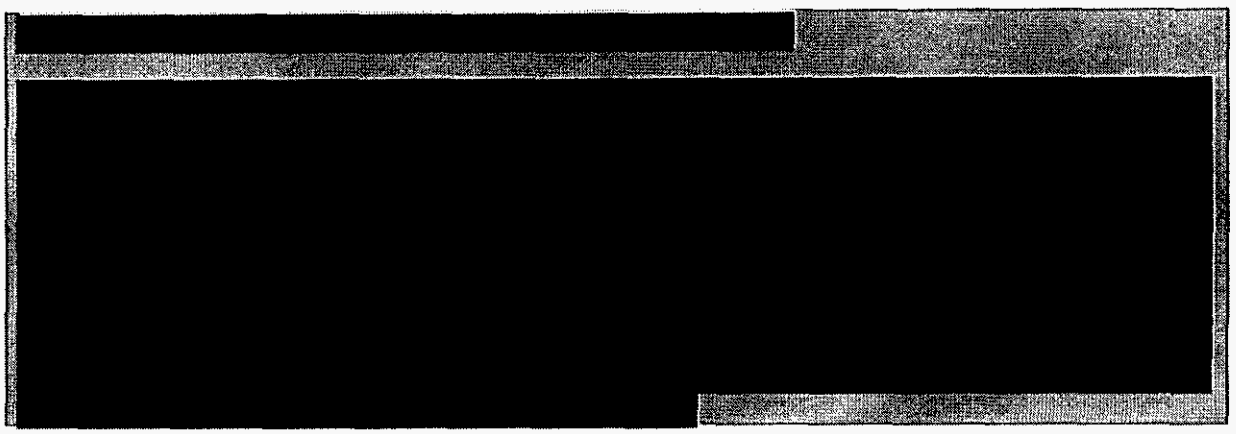
[redacted]

**Fuel Cost Assumptions**

[redacted]



**Environmental Attributes are Included in Proposal Price**



**REC and Environmental Allowance Management**

If desired by GRU, Nacogdoches Power would provide REC and environmental attribute management services to GRU on a fixed fee plus incentive fee basis. BayCorp and EMI are highly experienced at managing environmental attributes, having bought and sold such attributes in the liquid ISO New England power market.

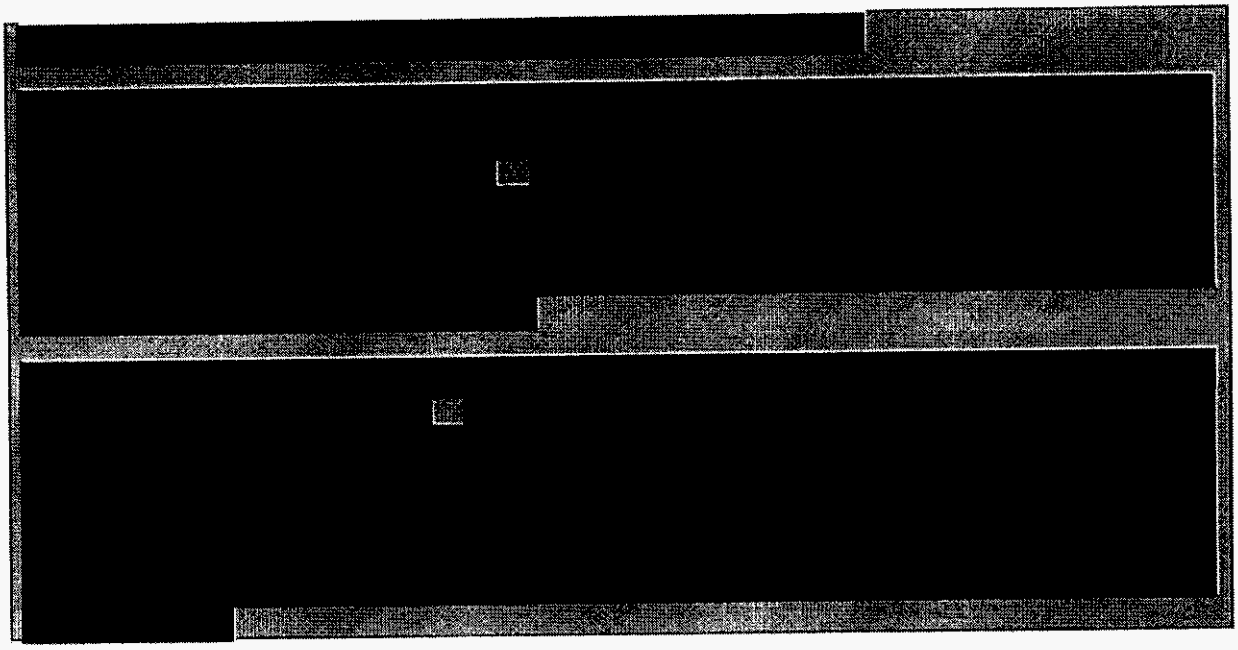
**Treatment of Tax Credits and Other Financial Incentives**

Nacogdoches Power has based its proposal upon receipt of all applicable federal and state tax credits that apply to the Project. The primary tax credit that would apply to the Project is the federal production tax credit provided in Section 45 of the Internal Revenue Code of 1986 (the "PTC"). The PTC allocates tax credits worth 1.5 cents per kWh (subject to inflation) to the owner of a qualifying facility for every kWh of electricity produced and sold to an unrelated person for the ten-year period beginning on the date that the facility is placed in service. For open-loop biomass facilities like the proposed Project, the PTC is decreased by one half.

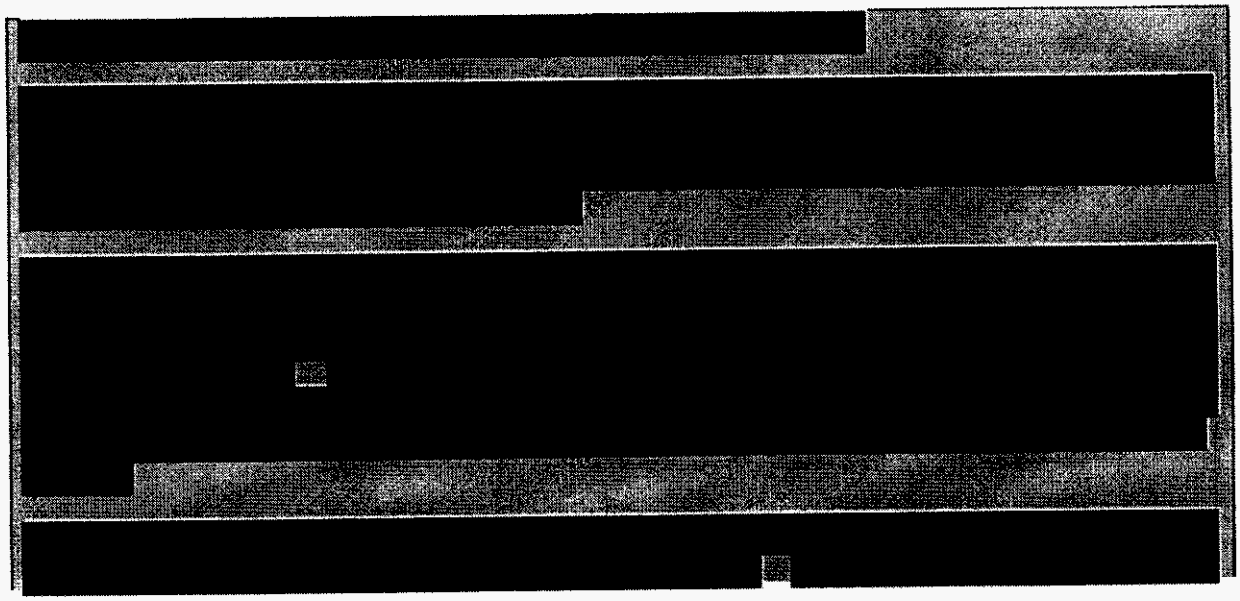
The production tax credit is set to expire on December 31, 2008. Nacogdoches Power expects the PTC to be renewed in a structure substantially similar to its present form. If the production

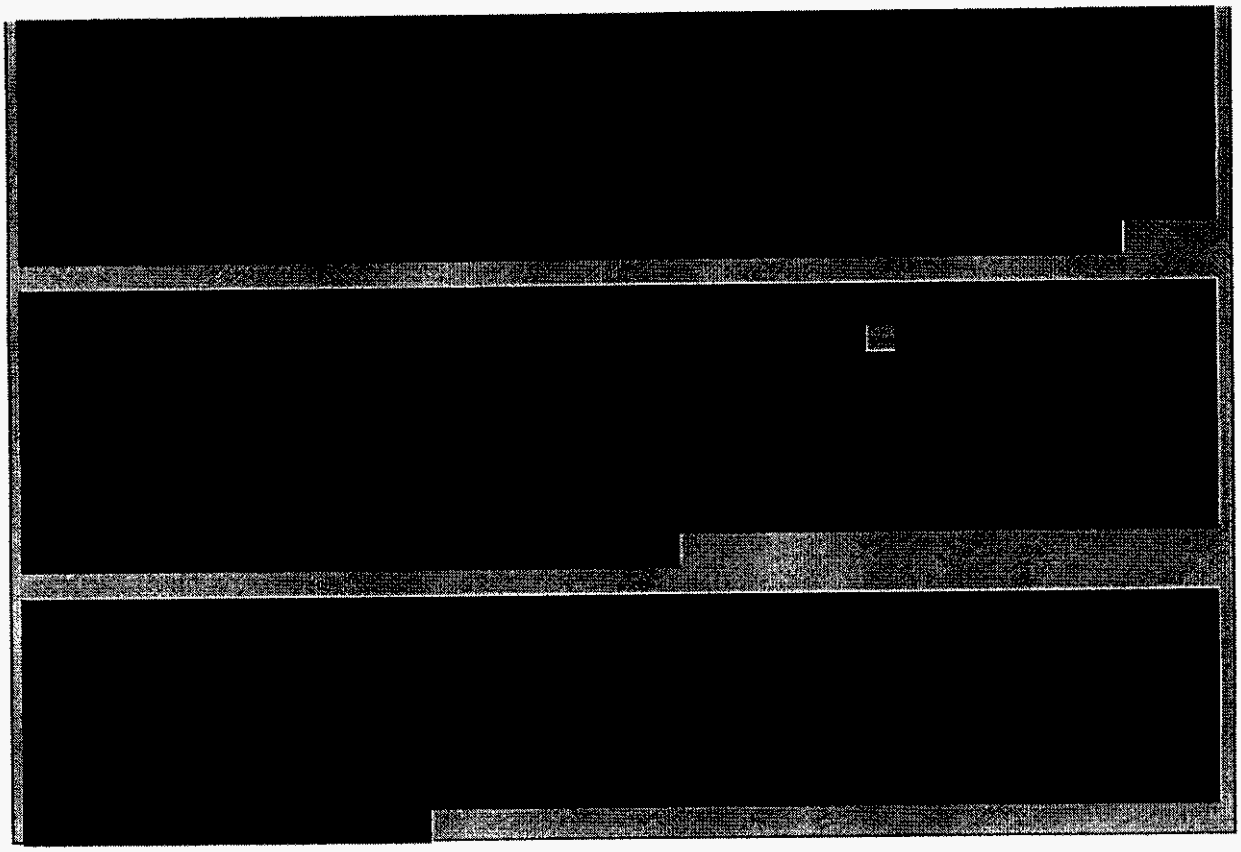
tax credit is not renewed, Nacogdoches Power would need to adjust the pricing in its proposal to accommodate the loss of such tax credits.

**Property Taxes and Value**



**Local Economic Impact**





## SECTION 5 – PRODUCTION COST INFORMATION

Not used per GRU instructions.

## SECTION 6 – RESPONDENT QUALIFICATIONS

### Nacogdoches Power, LLC

Nacogdoches Power, LLC is a Delaware limited liability company formed to develop, own and operate electric generating facilities. Nacogdoches Power is owned by BayCorp Holdings, Ltd. through its BayCorp Nacogdoches, LLC subsidiary, and by EMI Nacogdoches, LLC. BayCorp is a subsidiary of the Tavistock Group, a global private investment company that was founded 30 years ago by investor Joe Lewis and which has grown to encompass a broad portfolio of interests in over 170 companies in 15 countries. EMI Nacogdoches is owned by individuals affiliated with Energy Management, Inc., a Massachusetts corporation.

Nacogdoches Power was formed in 2005. Currently, Nacogdoches Power is developing the Texas Project and additional biomass-fired electric generating facilities in the Southeast. As a joint venture, the company has no permanent employees and draws on the staff of BayCorp and EMI when needed.

Please see the corporate resumes attached as Appendix 10 for more information about BayCorp and EMI.

### Florida Clean Energy Center Project Team Diagrams

Please see Appendix 11 for charts that show the organization of the Project Team during the different project phases.

### Description of Florida Clean Energy Center Project Team Members

*CBX Energy Engineering, Inc.*
CBX Energy Engineering, Inc., of Waterville, Maine, will perform electrical engineering for the Florida Clean Energy Center. CBX has performed the electrical engineering for each of the EMI power projects. Christopher M. Bryan, P.E., principal engineer, has more than twenty-five years of experience as a consulting engineer to the power industry. He specializes in the design, analysis, project management, and engineering review of power generating stations, substations, transmission interconnections, and electrical distribution systems.

*David S. Dee*
David S. Dee of Young van Assenderp, P.A. of Tallahassee, Florida, will provide permitting and other legal support for the Project. David S. Dee is a partner in the law firm of Young van Assenderp, P. A., and he has more than 28 years of experience working in the areas of environmental, land use, administrative, and governmental law. Mr. Dee routinely handles cases involving environmental permits, agency enforcement proceedings, agency rulemaking, and litigation. He has worked extensively with local, regional, state, and federal environmental agencies. Mr. Dee has considerable experience with the Florida Electrical Power Plant Siting

Act and many of the other environmental regulations applicable to electrical generating facilities. He has handled the permitting of 13 major construction projects involving electrical generating facilities, including nine new facilities on greenfield sites.

*Environmental Consulting & Technology, Inc.*
Environmental Consulting & Technology, Inc., of Gainesville, Florida, will manage the permitting for the Florida Clean Energy Center Project. ECT is an employee owned consulting firm specializing in the resolution of complex environmental issues through cost-effective project planning, management, and applied engineering and scientific expertise. Headquartered in Gainesville, ECT has eight offices in Florida with a staff of more than 200 multidisciplinary environmental professionals. ECT's past clients include investor-owned and municipal utilities, rural cooperatives, and independent power producers. ECT's services to the power industry include site selection studies and overall permitting for new power plants; specialty permitting projects involving air quality modeling, wetlands, water supply, wastewater discharges, and solid waste disposal; compliance auditing; and remediation programs. Based on its extensive experience, ECT has a full understanding of the regulatory requirements and issues that must be fulfilled for new power plant projects in Florida.

*Metso Paper USA, Inc.*
Metso Paper USA, Inc. of Charlotte, North Carolina, formerly Aker Kvaerner Power, Inc., will design and supply the bubbling fluidized bed boiler for the Project. Metso is the leading manufacturer of biomass-fired boilers, having supplied more than 200 worldwide. Since its introduction in the 1970s, Metso's fluidized bed boiler technology has offered an economical, flexible, cost-effective and environmentally acceptable solution for burning low heating value, high moisture bio-fuels. Over the last fifteen years, Metso has supplied nearly all of the bubbling fluidized bed boilers sold to the pulp and paper industry in Scandinavia and North America. Metso's patented bubbling fluidized bed boiler design features the innovative HYBEX™ floor. The HYBEX™ floor, which was designed for fuels containing stones or other coarse materials, features an extended free removal area where coarse material can be evacuated from the bed. More than thirty percent of the total floor area is open for tramp material removal compared with approximately one percent in a conventional floor design. Metso's fleet of HYBEX™ floor bubbling fluidized bed boilers has achieved high levels of availability.

Nacogdoches Power has entered into a letter of intent with Metso to design and supply a bubbling fluidized bed boiler for the Project. Nacogdoches Power selected Metso to design and supply the boiler for its Texas Project after a competitive bid process. Metso will design and supply the BFB boiler under a firm-price, firm-schedule contract. In order to reduce potential interface issues, Metso will design and supply the remainder of the boiler island, including the SNCR system, baghouse, stack, and support steel.

*Natural Resource Planning Services, Inc.*
Natural Resource Planning Services, Inc., of Gainesville, Florida, will provide biomass fuel procurement and ash disposal consulting services for the Florida Clean Energy Center. NRPS

has been in the consulting forestry management business for over 30 years, and the two founders and principals are still in active in the day-to-day management and work of the company. NRPS manages over 300,000 acres of timberland in Florida for a variety of clients including TIMO's, investors, family trusts, individuals, and government agencies. As a result, NRPS has a deep and broad knowledge of the timber industry from the woods all the way to the processing facilities. Jack Vogel, one of the principals of NRPS, is the current president of the Florida Forestry Association.

At the request of Nacogdoches Power, NRPS conducted a detailed biomass fuel resource study for the Project. The Biomass Fuel Study evaluated all potential sources of biomass fuel, analyzed potential competition for each biomass fuel and determined that sufficient biomass fuel resources will be available to operate the Project at a reasonable cost and on a sustainable basis.

*North American Energy Services, Inc.*
North American Energy Services, Inc., of Issaquah, Washington, will operate and maintain the Project. Nacogdoches Power has entered into a letter of intent with North NAES. NAES is the premiere third-party O&M contractor in the United States. In addition, NAES has proven experience operating wood-fired generating facilities: NAES has operated 9 biomass-fired electric generating facilities totaling 246.9 MW of capacity. Steam boiler facilities operated by NAES have an average availability rating nearly 4% higher than the industry average availability rating. Several prospective lenders recommended that Nacogdoches Power contract with NAES for O&M services.

*Siemens Industrial Turbomachinery, Inc.*
Siemens Industrial Turbomachinery, Inc., of Houston, Texas ("Siemens"), will design and supply the steam turbine generators for the Projects. The SST-900 steam turbine for the Projects is based on the highly successful MP series of geared axial VAX turbines and is produced in Finspong, Sweden. EMI has previously purchased and operated three VAX steam turbines with great success.

*Wolf Material Handling Systems, Inc.*
Wolf Material Handling Systems, Inc. of Elk River, Minnesota, will design and supply the material handling systems for the Projects. Founded in 1978, Wolf specializes in bulk material handling systems for the pulp and paper, power generation and mining industries. Wolf is the leading supplier of biomass-fuel handling systems in the United States. Arlin Wolf, the founder of Wolf Material Handling Systems, has been called upon in a number of cases to repair and redesign biomass-fuel handling systems supplied by other vendors. Nacogdoches Power has entered into a letter of intent with Wolf to design and supply the wood fuel handling system for the Project.

*WorleyParsons Group, Inc.*
WorleyParsons Group, Inc. of Reading, Pennsylvania, will perform engineering, procurement and construction management services for the Projects. WorleyParsons has over 100 years of

power industry experience, tracing its roots in power sector to Charles T. Main and Gilbert/Commonwealth in the USA and John Thompson, SECVI and Burmot in Australia. WorleyParsons has supplied over 150,000 MW of generating capacity worldwide. EMI, a member of the Nacogdoches Power team, had previously worked with a predecessor of WorleyParsons on the construction of its Dartmouth Power and Dighton Power projects. WorleyParsons is working with Nacogdoches Power on the engineering, procurement and construction management of the Texas Project. WorleyParsons adapted the design of the Texas Project for the Florida Clean Energy Center.

**Current and Past Power Supply Ventures**

Nacogdoches Power, LLC
Sacul, Texas
100 Megawatts
Biomass-fired Independent Power Facility
Nacogdoches Power began development in 2005

*BayCorp Power Supply Venture References*

Great Bay Hydro Corp. (Wholly owned subsidiary of BayCorp)
Portsmouth, NH
4 Megawatt Hydroelectric Generation Plant
10 Megawatt Diesel Generation Plant
Acquired in 2004
Great Bay Hydro owns and operates plant
Power and renewable energy credits sold into the ISO-NE market

Great Bay Hydro Maine, LLC (Wholly owned subsidiary of BayCorp)
Portsmouth, NH
4.5 Megawatt Hydroelectric Generation Plant
Acquired in 2005
Great Bay Maine owned and operated plant
Sold in 2006
Power sold to Central Maine Power

Great Bay Power Marketing (Wholly owned subsidiary of BayCorp)
Portsmouth, NH
Trading and marketing of power and natural gas in ISO-NE and other markets
Created in 2002

Great Bay Power Corp. and Little Bay Power Corp. (Wholly owned subsidiaries of BayCorp)
Portsmouth, NH
175 Megawatts of the 1150 Megawatt Seabrook nuclear power plant
Acquired in 1992 and 1999
Great Bay sold power in the bilateral and spot ISO-NE markets
Great Bay sold 10 Megawatts under a long term contract with Unitil Power Corp
Sold interests in 2002

ISO New England Inc.
One Sullivan Road
Holyoke, Massachusetts 01040
Tel: (413) 540-4260
Unitil Power Corporation
6 Liberty Lane West
Hampton, NH 03842
Contact: Mr. David Foote
Tel: (603) 773-6430

Constellation NewEnergy
800 Boylston St.
Boston, MA 02199
Contact: Mr. Bruce McLeish
Tel: (617) 772-7501

Central Maine Power
83 Edison Drive
Augusta, Maine 04336
Contact: Mr. Eric Stinneford
Tel: (207) 623-3521

*EMI Power Supply Venture References*

Cape Wind Associates, LLC
Nantucket Sound, Massachusetts
468 Megawatts
Offshore Wind Power Facility
Financial advisory services provided by Lehman Brothers, Inc.
EMI began development in 2000

Rumford Power Associates Limited Partnership
Rumford, Maine
265 Megawatts
Gas-Fired Merchant Power Facility
U.S. $139,000,000 Project Finance
Underwritten by MeesPierson, Landesbank Hessen-Thuringen Girozentrale, CoBank, Hypovereinsbank
Financial advisory services provided by Fieldstone Private Capital Group
EMI began development in 1996
Construction loan closing 1998
Commercial operation 1999
Interest sold 2000
Contact: Mr. Robert C. Welch, Town Manager
Tel: (207) 364-4576

Tiverton Power Associates Limited Partnership
Tiverton, Rhode Island
265 Megawatts
Gas-Fired Merchant Power Facility
U.S. $145,500,000 Project Finance
Underwritten by Landesbank Hessen-Thuringen Girozentrale, CoBank, Hypovereinsbank
Financial advisory services provided by Fieldstone Private Capital Group
EMI began development in 1996
Construction loan closing 1998
Commercial operation 1999
Interest sold 2000
Contact: Mr. William Enos, State Senator
Tel: (401) 222 6896

Dighton Power Associates Limited Partnership
Dighton, Massachusetts
169 Megawatts
Gas-Fired Merchant Power Facility
U.S. $104,000,000 Project Finance
Underwritten by TD Securities
Provided by The Toronto-Dominion Bank, Teachers Insurance and Annuity Association of America, Bayerische Verinsbank, AG, Kredietbank, N.V., The Sakura Bank, Limited
EMI began development in 1994
Construction loan closing 1997
Commercial operation 1998
Interest sold 2000
Contact: Mr. Robert G. Perry, Selectman
Tel: (508) 669-6431

Dartmouth Power Associates Limited Partnership
Dartmouth, Massachusetts
67.6 Megawatts
Gas-Fired Independent Power Facility
U.S. $73,877,000 Project Finance
Provided by Westpac Banking Corporation, Trust Company of the West
EMI began development in 1987
Construction loan closing 1990
Commercial operation 1992
Interest sold 1999
Contact: Mr. Leonard M. Gonsalves, Selectman
Tel: (508) 910-1813

Pawtucket Power Associates Limited Partnership
Pawtucket, Rhode Island
61.3 Megawatts
Gas-Fired Cogeneration Facility
U.S. $68,700,000 Project Finance
Underwritten by The Bank of New York
Provided by The Bank of New York, NCNB National Bank of North Carolina, Mitsui Trust Bank (USA), Trust Company of the West, Bank of New England NA
EMI began development in 1987
Construction loan closing 1989
Commercial operation 1990
Interest sold 1999

Pepperell Power Associates Limited Partnership
Pepperell, Massachusetts
40 Megawatts
Combined-Cycle Cogeneration Facility
U.S. $43,500,000 Project Finance
Provided by Pru-Capital, Inc.
EMI began development in 1986
Construction loan closing 1988
Commercial operation 1989
Interest sold 1994

Alexandria Power Associates Limited Partnership
Alexandria, New Hampshire
15 Megawatts
Wood-Fired Independent Power Facility
U.S. $25,400,000 Project Finance
Provided by State Street Bank and Trust Company, BayBank Boston, N.A., Connecticut National Bank, The Royal Bank of Scotland plc
EMI began development in 1984
Construction loan closing 1986
Commercial operation 1987
Interest sold 1993

**Recent Annual Report for the Respondent and Any Other Parties Involved, or a Recent Copy of an Audited Income Statement and Balance Sheet**

Nacogdoches Power, BayCorp and EMI are private companies that do not generally release organizational or financial information. However, Nacogdoches Power, BayCorp and EMI Nacogdoches have provided financial statements for use in evaluating this proposal. Please see the financial statements attached as Appendix 12.

In addition, Nacogdoches Power has provided financial information for the other parties involved in the Project. Please see the financial information for Metso, NAES, Siemens, Wolf and WorleyParsons attached as Appendix 15.

**Bond Rating of Respondent or its Parent Company by Moody's, Fitch, Standard & Poor's, and/or Dunn & Bradstreet**

N/A.

**Financial Guarantees from Affiliates or Others, as Appropriate**

Please see Section 2 for a discussion of potential guarantees of performance.

# Attachment – GRU RFP Addenda

Appendix 1 – Representative Project Layouts
Preferred and Alternate Sites

# CONFIDENTIAL

Appendix 2 – Project Design Standards

# CONFIDENTIAL

Appendix 3 – Major Equipment Manufacturers and Suppliers

# CONFIDENTIAL

Appendix 4 – Conceptual Water Balance

# CONFIDENTIAL

Appendix 5 – Representative Biomass Fuel Supply Contract

# CONFIDENTIAL

Appendix 6 – Fuel Analyses

# CONFIDENTIAL

Appendix 7 – Key One Line Diagram

# CONFIDENTIAL

Appendix 8 – Electrical Information

# CONFIDENTIAL

Appendix 9 – Project Schedule

# CONFIDENTIAL

Appendix 10 – Project Ownership Information

# CONFIDENTIAL

Appendix 11 -- Project Team Diagrams

# CONFIDENTIAL

Appendix 12 – Letters of Intent with Project Partners

# CONFIDENTIAL

Appendix 13 – Project Financial Statements

# CONFIDENTIAL

Appendix 14 – Updated Société Générale Letter

# CONFIDENTIAL

Appendix 15 – Partner Financial Statements

# CONFIDENTIAL

**From:** Ari Mervis [mailto:amervis@emienergy.com]
**Sent:** Wednesday, April 16, 2008 6:29 PM
**To:** Sontag, Adolph J
**Subject:** RE: Proposal Clarification

A.J.,

Thanks for following up. Please find our response below.

Question: Will the non-fuel charges be fixed over the life of the PPA?

Response: Yes_X__ No____

thanks,
ari

Ari Mervis
Vice President, Finance
Energy Management, Inc.

Cape Wind * Nacogdoches Power * Pioneer Valley Energy Center

75 Arlington Street
Suite 704
Boston, MA 02116
617-904-3100 ext. 118
617-904-3109 (fax)
508-472-8061 (mobile)
amervis@emienergy.com

The information contained in this email message may be privileged and confidential information and is intended only for the use by the addressees named herein. If you are not the intended recipient of this email, you are hereby notified that any dissemination, distribution or copying of this email, and any attachments thereto, is strictly prohibited. If you have received this email in error, please immediately notify me by return email and permanently delete the original and any attachments thereto.

**From:** Sontag, Adolph J [mailto:SontagAJ@gru.com]
**Sent:** Wednesday, April 16, 2008 10:50 AM
**To:** Ari Mervis
**Subject:** Proposal Clarification

For clarification purposes, please reply to this e-mail with a response to the following question:

Question: Will the non-fuel charges be fixed over the life of the PPA?

Response: Yes___ No____

A.J. Sontag, C.P.M.
Senior Buyer
**Gainesville Regional Utilities**
P.O. Box 147117-A130
Gainesville, FL 32614
(V) (352) 393-1252
(F) (352) 334-2989
sontagaj@gru.com

**DOCUMENTS REQUESTED**

2. **Please provide names and all correspondence between GRU and other municipalities and interested parties who have shown interest in taking a share of the renewable energy from the GREC for the initial operation period. In your response, please provide the amount of energy the parties would share and costs.**

**Response to Request No. 2**

Please refer to the enclosed CD labeled "GRU Disk # 2 Non-Confidential Responses POD # 1 & POD # 2." The CD includes all documents in response to Production of Documents Request Nos. 1 and 2 that are not considered confidential, proprietary business information by GREC LLC.

A second CD has been prepared and it includes all documents in response to Production of Documents Request Nos. 1 and 2 which are considered confidential, proprietary business information by GREC LLC. Florida Public Service Commission Staff may examine the contents of this CD in the offices of Young van Assenderp, P.A. (located at 225 South Adams Street, Suite 200, Tallahassee, Florida 32302-1833) and any documents selected by Staff for retention will either be redacted or provided under confidentiality.

Parties that have demonstrated an interest in taking a share of the renewable energy from the GREC include Florida Municipal Power Agency, Lakeland Electric, Orlando Utilities Commission, and Reedy Creek Improvement District, each of whom have entered into a

confidentiality agreement with GREC LLC. Correspondence related to matters other than the potential off-take of power from GREC has not been included.

GRU initially offered a share of half of the GREC's production for a term of 10 years, and is willing to have more than one off-taker. The terms and conditions offered are to match GRU's costs paid to GREC LLC on a pro-rata basis per MWh and for the off-takers to take title of the power at the point of delivery into GRU's transmission system. The off-takers would incur the additional cost of wheeling over GRU's transmission system at GRU's cost of service as well as any other transmission costs required for delivery through either Progress Energy Florida or Florida Power & Light pursuant to their transmission tariffs.

Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando Florida 32802
Phone: 407.423.9100
Administrative Fax: 407.236.9616
Purchasing Fax: 407.384.4141
Website: www.ouc.com

# 135476 (18)

OUC The Reliable One®

December 13, 2006

Gainesville Regional Utilities
Power Supply RFI
c/o GRU Purchasing Department
Attn: Ralph Wisco, Senior Buyer

06 DEC 19 2:05

RE: GRU Power Supply RFI No. 2006-169

Orlando Utilities Commission ("OUC") is submitting this letter as an expression of interest in response to GRU Power Supply RFI No. 2006-169. In particular, OUC would be interested in engaging in discussions with GRU regarding any renewable energy project or any other generation project that may be an outcome of this process and such project is mutually beneficial.

Sincerely,

Claston Sunanon
Director of Fuels and Power Marketing
Orlando Utilities Commission
(407) 348-4005

c: Fred Haddad, SEC
Jan Aspuru, SEC

Received late and not considered. Ralph Wisco 12/18/06

*Providing innovative, friendly, dependable service*

**CITY OF GAINESVILLE/GAINESVILLE REGIONAL UTILITIES**

**ADDENDUM NO. 1**

**ENERGY SUPPLY DEVELOPMENT**
**REQUEST FOR LETTERS OF INTEREST**

**RFI NO. 2006-169**

DATE: October 6, 2006

NOTE: This addendum has been issued only to planholders of record for the bid. The original specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

The pre-submittal meeting and site review has been scheduled for Tuesday, October 24, 2006 at 1:30 PM at the Deerhaven Generating Station 10001 NW 13th Street, Gainesville, Florida 32653. We will start in the second floor conference room and answer questions before touring the site. It is anticipated that it will take about two hours. This is a non-mandatory meeting.

ACKNOWLEDGEMENT:

Each Bidder shall acknowledge receipt of his Addendum No. 1 by his signature below, and shall attach a copy of this Addendum to its proposal.

CERTIFICATION BY BIDDER

The undersigned acknowledges receipt of this Addendum No. 1 and the proposal submitted is in accordance with the information, instructions and stipulations set forth herein.

Bidder: QUC

By: _____

**CITY OF GAINESVILLE/GAINESVILLE REGIONAL UTILITIES**

**ADDENDUM NO. 2**

**ENERGY SUPPLY DEVELOPMENT**
**REQUEST FOR LETTERS OF INTEREST**

**RFI NO. 2006-169**

DATE: October 13, 2006

NOTE: This addendum has been issued only to planholders of record for the solicitation. The original specifications remain in full force and effect except as revised by the following changes which shall take precedence over anything to the contrary.

If your firm plans to attend the pre-submittal meeting and site review scheduled for Tuesday, October 24, 2006 at 1:30 PM at the Deerhaven Generating Station 10001 NW 13th Street, Gainesville, Florida 32653, please contact Ralph Wisco before October 20 to advise the number attending so we can plan to accommodate the number of attendees. He can be reached at 352-393-1251 or e-mail: wiscoro@gru.com

Below are several questions received to date and the answers.

Q.1. In Table 1, an incremental five year time frame is used. May we get the figures by year for2008 to 2022?

A.1. These figures are estimates. We would suggest using a linear extrapolation between points if additional data points are desired.

Q.2. Can we receive the following?

1. Coal analysis (proximate and ultimate with ash characteristics) of the coal that is used at the plant.
2. Turbine heat balance diagrams for the steam units at Deerhaven.
3. Boiler details and overall arrangement drawings for the steam units.
4. Type and data sheets for the gas turbine units.

A.2. This information is attached electronically as a PDF file to the e-mail used to distribute this addendum. In the case of coal analysis, two sheets from Sargent & Lundy are also included for the performance and design coal which will be used after the construction of an SCR, dry FGD and a FF.

ACKNOWLEDGEMENT:

Each Bidder shall acknowledge receipt of his Addendum No. 2 by his signature below, and shall attach a copy of this Addendum to its proposal.

## CERTIFICATION BY BIDDER

The undersigned acknowledges receipt of this Addendum No. 2 and the proposal submitted is in accordance with the information, instructions and stipulations set forth herein.

Bidder: DJC

By: _____

**CONFIDENTIALITY AGREEMENT**
**between**
**FLORIDA MUNICIPAL POWER AGENCY**
**and**
**GAINESVILLE RENEWABLE ENERGY CENTER, LLC**

This confidentiality agreement ("Agreement") dated as of Sept. 24, 2009 ("Effective Date") is between the Florida Municipal Power Agency, a wholesale power company owned by municipal electric utilities, whose purpose is to supply bulk power and related services to support community-owned electric utilities, and which has its offices at 8553 Commodity Circle, Orlando, Florida 32819-9002 ("FMPA"), and Gainesville Renewable Energy Center, LLC, a Delaware limited liability company with offices at 75 Arlington Street, 5th Floor, Boston, Massachusetts 02116 ("GREC"), each individually a "Party" and collectively the "Parties".

1. PURPOSE AND INFORMATION COVERED: The Parties intend to exchange information with respect to a proposed biomass fueled power generation project to be developed by GREC and located in Alachua County, Florida (the "Project") for the sole purpose of evaluating possible transactions regarding the development of the Project or the purchase and sale of energy from the Project. To accomplish this, it may be necessary for the Parties to exchange business and technical information; data; and know-how, including reports, contracts, pricing options, solutions, drawings, and other information related to the Project that is considered by the disclosing party as confidential or proprietary and (in the case of GREC) trade secrets. Such information which is disclosed hereunder shall be regarded as "Information" for purposes of this Agreement if it is (a) provided in writing (hard copy or electronic format) and marked as "confidential" or "trade secret" by the disclosing Party, or (b) if disclosed orally and indicated at the time of disclosure as being confidential or proprietary and the essence of such subject is summarized or described in writing (hard copy or electronic format) within thirty (30) days after such disclosure and designated as "confidential" or "trade secret."

2. TERM OF THE AGREEMENT: The receiving Party's obligation to maintain Information as confidential pursuant to the terms of this Agreement shall be from the Effective Date until the earlier of (a) the Parties' entering into a further superseding agreement regarding the subject matter contained herein or (b) three (3) years after the Effective Date.

3. USE AND NON-DISCLOSURE: The receiving Party, its officers, directors, members, employees, attorneys and consultants, and any third parties authorized through the prior written permission of the disclosing Party, may use Information only for the purposes described in Paragraph 1. The receiving Party may disclose Information to its attorneys and consultants without the permission of the disclosing Party. The receiving Party, its attorneys and consultants shall not disclose Information to any third party, including, but not limited to, its parent (if applicable), affiliates, subsidiaries, agents, or subcontractors, without the prior written permission of the disclosing Party during the term of this Agreement. In the event the disclosing Party approves in writing of such disclosure or transmittal to such third party, the receiving Party shall immediately obtain a written commitment from such third party making the terms of this Agreement applicable to such third party, then disclose and transmit such Information to such third party on a proprietary and confidential basis. The receiving Party further agrees to limit the availability of the Information to those officers, employees, attorneys, and consultants whom it deems to have a bona fide need to know in connection with the purposes described in Paragraph 1. The receiving Party shall maintain the Information so imparted secret and confidential.

4. RETURN OF INFORMATION: The Parties may not make copies of documents relating to the Information other than for the purposes indicated in Paragraph 1 above or as authorized by the disclosing Party in writing. Any such copies shall include the proprietary information notice of the disclosing Party. As directed by the disclosing Party, but only to the extent permitted by Florida Law (including, without limitation, the Florida Public Records Law, Chapter 119 Florida Statutes, as well as the related public records retention schedules), the receiving Party shall either return or certify destruction of all such documents, drawings, and other Information provided to it under this Agreement, and all copies thereof, within thirty (30) days after any request by the disclosing Party to do so.

5. INFORMATION NOT COVERED BY THE AGREEMENT: The duties of confidentiality of the receiving Party under this Agreement shall not apply to Information which the receiving Party can show is the same as information which:

(i) is or becomes generally available to the public without breach of this Agreement;
(ii) was in the possession of the receiving Party at the time it was initially furnished by the disclosing Party; or,
(iii) is later received from an independent third party who is, as far as can reasonably be determined, under no limitation or restriction regarding disclosure of the Information.

6. COMPELLED DISCLOSURE. Notwithstanding any other provision of this Agreement, FMPA may disclose Confidential Information if necessary, in the sole opinion of FMPA legal counsel, to comply with applicable law (including, without limitation, the Florida Public Records Law, Chapter 119, Florida Statutes), order, regulatory ruling, subpoena, or order of a governmental authority or tribunal with competent jurisdiction. In such event, FMPA shall provide GREC with prompt notice so that GREC may seek a protective order or other

appropriate remedy, at the sole expense of GREC, and FMPA shall disclose only that portion of the Confidential Information which it is advised by opinion of its counsel that it is legally required to disclose and shall exercise reasonable efforts to obtain reliable assurance that the confidentiality of the Confidential Information will be maintained. GREC must provide written acknowledgement of its intent to intervene and seek protective measures for any such Confidential Information within 10 business days after notice from FMPA, including the general statutory basis of the exception claimed to the disclosure under Chapter 119.07, Florida Statutes.

7. EQUITABLE RELIEF. Any violation of this Agreement will cause irreparable harm to a disclosing Party. Accordingly, the disclosing Party shall be entitled to injunctive relief enjoining and restraining any violation in addition to any other rights or remedies at equity or law. In no event shall the Parties be liable for indirect or consequential damages, whether based on a claim arising under contract, tort (including negligence), strict liability or any other legal theory.

8. GOVERNING LAW: This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, excluding its rules governing conflicts of law.

9. ENTIRE AGREEMENT: This Agreement contains the entire agreement and understanding between the Parties as to the subject matter herein. It merges and supersedes all prior discussions, writings, commitments and understandings between the Parties as to the subject matter herein.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date.

| Florida Municipal Power Agency | Gainesville Renewable Energy Center, LLC |
|---|---|
| Name: Nicholas P Gurrello | Name: Albert Mora |
| Title: General Manager + CEO | Title: Chief Financial Officer |

**CONFIDENTIALITY AGREEMENT**
**between**
**THE CITY OF LAKELAND, FLORIDA**
**and**
**GAINESVILLE RENEWABLE ENERGY CENTER, LLC**

This confidentiality agreement ("Agreement") dated as of June 26, 2009 ("Effective Date") is between the City of Lakeland, Florida, which through its Electric Department operates a municipal utility system providing electricity and other utility services, and which has its offices at 501 East Lemon Street, Lakeland, Florida 33801 ("LAKELAND"), and Gainesville Renewable Energy Center, LLC, a Delaware limited liability company with offices at 75 Arlington Street, 5th Floor, Boston, Massachusetts 02116 ("GREC"), each individually a "Party" and collectively the "Parties".

1. PURPOSE AND INFORMATION COVERED: The Parties intend to exchange information with respect to a proposed biomass fueled power generation project to be developed by GREC and located in Alachua County, Florida (the "Project") for the sole purpose of evaluating possible transactions regarding the development of the Project or the purchase and sale of energy from the Project. To accomplish this, it may be necessary for the Parties to exchange business and technical information; data; and know-how, including reports, contracts, pricing options, solutions, drawings, and other information related to the Project that is considered by the disclosing party as confidential or proprietary and (in the case of GREC) trade secrets. Such information which is disclosed hereunder shall be regarded as "Information" for purposes of this Agreement if it is (a) provided in writing (hard copy or electronic format) and marked as "confidential" or "trade secret" by the disclosing Party, or (b) if disclosed orally and indicated at the time of disclosure as being confidential or proprietary and the essence of such subject is summarized or described in writing (hard copy or electronic format) within thirty (30) days after such disclosure and designated as "confidential" or "trade secret."

2. TERM OF THE AGREEMENT: The receiving Party's obligation to maintain Information as confidential pursuant to the terms of this Agreement shall be from the Effective Date until the earlier of (a) the Parties' entering into a further superseding agreement regarding the subject matter contained herein or (b) three (3) years after the Effective Date.

3. USE AND NON-DISCLOSURE: The receiving Party, its officers, employees, attorneys and consultants, and any third parties authorized through the prior written permission of the disclosing Party, may use Information only for the purposes described in Paragraph 1. The receiving Party may disclose Information to its attorneys and consultants without the permission of the disclosing Party. The receiving Party, its attorneys and consultants shall not disclose Information to any third party, including, but not limited to, its parent (if applicable), affiliates, subsidiaries, agents, or subcontractors, without the prior written permission of the disclosing Party during the term of this Agreement. In the event the disclosing Party approves in writing of such disclosure or transmittal to such third party, the receiving Party shall immediately obtain a written commitment from such third party making the terms of this Agreement applicable to such

third party, then disclose and transmit such Information to such third party on a proprietary and confidential basis. The receiving Party further agrees to limit the availability of the Information to those officers, employees, attorneys, and consultants whom it deems to have a bona fide need to know in connection with the purposes described in Paragraph 1. Before receiving any Information covered by this Agreement, each attorney and consultant who receives Information shall have read this Agreement and executed a Non-Disclosure Acknowledgment in the form attached as Exhibit A hereto. The receiving Party shall maintain such Non-Disclosure Acknowledgments for as long as the receiving Party's non-disclosure obligations under this Agreement remain in effect, and in the event that a disclosing Party reasonably believes that its Information has been disclosed to any third party, the receiving Party shall furnish copies of the Non-Disclosure Acknowledgments to the Party whose Information is reasonably believed to have been disclosed. The receiving Party shall maintain the Information so imparted secret and confidential.

4. RETURN OF INFORMATION: The Parties may not make copies of documents relating to the Information other than for the purposes indicated in Paragraph 1 above or as authorized by the disclosing Party in writing. Any such copies shall include the proprietary information notice of the disclosing Party. As directed by the disclosing Party, the receiving Party shall either return or certify destruction of all such documents, drawings, and other Information provided to it under this Agreement, and all copies thereof, within thirty (30) days after any request by the disclosing Party to do so.

5. INFORMATION NOT COVERED BY THE AGREEMENT: The duties of confidentiality of the receiving Party under this Agreement shall not apply to Information which the receiving Party can show is the same as information which:

(i) is or becomes generally available to the public without breach of this Agreement;
(ii) is a public record pursuant to Chapter 119, Florida Statutes, provided that the receiving Party's duties of confidentiality with respect to information designated by the disclosing Party as confidential or as trade secrets shall remain in force until a final determination by a court of competent jurisdiction, if such jurisdiction is invoked by the disclosing Party, has been rendered holding that the subject information is a public record under Chapter 119;
(iii) ;
(iii) was in the possession of the receiving Party at the time it was initially furnished by the disclosing Party; or,
(iv) is later received from an independent third party who is, as far as can reasonably be determined, under no limitation or restriction regarding disclosure of the Information.

6. COMPELLED DISCLOSURE. If LAKELAND becomes legally compelled to disclose any of the Confidential Information, or is requested or required to do so under Section 119.07, Florida Statutes, LAKELAND shall provide GREC with prompt notice so that GREC may seek a protective order or other appropriate remedy, and LAKELAND shall disclose only that portion of the Confidential Information which it is advised by written opinion of its counsel that it is legally

required to disclose and shall exercise reasonable efforts to obtain reliable assurance that the confidentiality of the Confidential Information will be maintained. GREC must provide written acknowledgement of its intent to intervene and seek protective measures for any such Confidential Information within 10 business days after notice from LAKELAND, including the general statutory basis of the exception claimed to the disclosure under Chapter 119.07, Florida Statutes.

7. EQUITABLE RELIEF. Any violation of this Agreement will cause irreparable harm to a disclosing Party. Accordingly, the disclosing Party shall be entitled to injunctive relief enjoining and restraining any violation in addition to any other rights or remedies at equity or law. In no event shall the Parties be liable for indirect or consequential damages, whether based on a claim arising under contract, tort (including negligence), strict liability or any other legal theory.

8. GOVERNING LAW: This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, excluding its rules governing conflicts of law.

9. ENTIRE AGREEMENT: This Agreement contains the entire agreement and understanding between the Parties as to the subject matter herein. It merges and supersedes all prior discussions, writings, commitments and understandings between the Parties as to the subject matter herein.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date indicated above:

Lakeland Electric
The City of Lakeland, Florida

(Authorized Representative)

Name: Ralph L. Fletcher
Title: Mayor

Attest:

By:
Kelly S. Koos, City Clerk

Approved as to Form & Correctness:

By:
Timothy J. McCausland, City Attorney

Gainesville Renewable Energy Center, LLC

(Authorized Representative)

Name: Ari Mervis
Title: Vice President

Attest:

By:
Stuart Sohn, Controller

## EXHIBIT A

## NON-DISCLOSURE ACKNOWLEDGMENT

The undersigned hereby certifies that, prior to the disclosure to him or her of confidential Information, as that term is defined in the Confidentiality Agreement between the City of Lakeland and Gainesville Renewable Energy Center, LLC (the "Agreement"), the undersigned has read the Agreement and agrees to be bound by its terms.

| | |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**CONFIDENTIALITY AGREEMENT**
**between**
**ORLANDO UTILITIES COMMISSION**
**and**
**GAINESVILLE RENEWABLE ENERGY CENTER, LLC**

This confidentiality agreement ("Agreement") dated as of May 1, 2009 ("Effective Date") is between the Orlando Utilities Commission, a Florida statutory utility with offices at 100 West Andersen Street, Orlando, Florida 32801 ("OUC") and Gainesville Renewable Energy Center, LLC, a Delaware limited liability company with offices at 75 Arlington Street, 5th Floor, Boston, Massachusetts 02116 ("GREC"), each individually a "Party" and collectively the "Parties".

1. PURPOSE AND INFORMATION COVERED: The Parties intend to exchange information with respect to a proposed biomass fueled power generation project to be developed by GREC and located in Alachua County, Florida (the "Project") for the sole purpose of evaluating possible transactions regarding the development of the Project or the purchase and sale of energy from the Project. To accomplish this, it may be necessary for the Parties to exchange business and technical information; data; and know-how, including reports, contracts, pricing options, solutions, drawings, and other information related to the Project that is considered by the disclosing party as confidential or proprietary and (in the case of GREC) trade secrets. Such information which is disclosed hereunder shall be regarded as "Information" for purposes of this Agreement if it is (a) provided in writing (hard copy or electronic format) and marked as "confidential" or "trade secret" by the disclosing Party, or (b) if disclosed orally and indicated at the time of disclosure as being confidential or proprietary and the essence of such subject is summarized or described in writing (hard copy or electronic format) within thirty (30) days after such disclosure and designated as "confidential" or "trade secret."

2. TERM OF THE AGREEMENT: The receiving Party's obligation to maintain Information as confidential pursuant to the terms of this Agreement shall be from the Effective Date until the earlier of (a) the Parties' entering into a further superseding agreement regarding the subject matter contained herein or (b) three (3) years after the Effective Date.

3. USE AND NON-DISCLOSURE: The receiving Party, its officers, employees, attorneys and consultants, and any third parties authorized through the prior written permission of the disclosing Party, may use Information only for the purposes described in Paragraph 1. The receiving Party may disclose Information to its attorneys and consultants without the permission of the disclosing Party. The receiving Party, its attorneys and consultants shall not disclose Information to any third party, including, but not limited to, its parent (if applicable), affiliates, subsidiaries, agents, or subcontractors, without the prior written permission of the disclosing Party during the term of this Agreement. In the event the disclosing Party approves in writing of such disclosure or transmittal to such third party, the receiving Party shall immediately obtain a written commitment from such third party making the terms of this Agreement applicable to such third party, then disclose and transmit such Information to such third party on a proprietary and confidential basis. The receiving Party further agrees to limit the availability of the Information to those officers, employees, attorneys, and consultants whom it deems to have a bona fide need to know in connection with the purposes described in Paragraph 1. Before receiving any Information covered by this Agreement, each attorney and consultant who receives Information shall have read this Agreement and executed a Non-Disclosure Acknowledgment in the form attached as Exhibit A hereto. The receiving Party shall maintain such Non-Disclosure Acknowledgments for as long as the receiving Party's non-disclosure obligations under this Agreement remain in effect, and in the event that a disclosing Party reasonably believes that its Information has been disclosed to any third party, the receiving Party shall furnish copies of the Non-Disclosure Acknowledgments to the Party whose Information is reasonably believed to have been disclosed. The receiving Party shall maintain the Information so imparted secret and confidential.

4. RETURN OF INFORMATION: The Parties may not make copies of documents relating to the Information other than for the purposes indicated in Paragraph 1 above or as authorized by the disclosing Party in writing. Any such copies shall include the proprietary information notice of the disclosing Party. As directed by the disclosing Party, the receiving Party shall either return or certify destruction of all such documents, drawings, and other Information provided to it under this Agreement, and all copies thereof, within thirty (30) days after any request by the disclosing Party to do so.

5. INFORMATION NOT COVERED BY THE AGREEMENT: The duties of confidentiality of the receiving Party under this Agreement shall not apply to Information which the receiving Party can show is the same as information which:

(i) is or becomes generally available to the public without breach of this Agreement;
(ii) was in the possession of the receiving Party at the time it was initially furnished by the disclosing Party; or,
(iii) is later received from an independent third party who is, as far as can reasonably be determined, under no limitation or restriction regarding disclosure of the Information.



090451 Hearing Exhibit - 000327

6. COMPELLED DISCLOSURE. If OUC becomes legally compelled to disclose any of the Confidential Information, or is requested or required to do so under Section 119.07, Florida Statutes, OUC shall provide GREC with prompt notice so that GREC may seek a protective order or other appropriate remedy, and OUC shall disclose only that portion of the Confidential Information which it is advised by written opinion of its counsel that it is legally required to disclose and shall exercise reasonable efforts to obtain reliable assurance that the confidentiality of the Confidential Information will be maintained. GREC must provide written acknowledgement of its intent to intervene and seek protective measures for any such Confidential Information within 10 business days after notice from OUC, including the general statutory basis of the exception claimed to the disclosure under Chapter 119.07, Florida Statutes.

7. EQUITABLE RELIEF. Any violation of this Agreement will cause irreparable harm to a disclosing Party. Accordingly, the disclosing Party shall be entitled to injunctive relief enjoining and restraining any violation in addition to any other rights or remedies at equity or law. In no event shall the Parties be liable for indirect or consequential damages, whether based on a claim arising under contract, tort (including negligence), strict liability or any other legal theory.

8. GOVERNING LAW: This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, excluding its rules governing conflicts of law.

9. ENTIRE AGREEMENT: This Agreement contains the entire agreement and understanding between the Parties as to the subject matter herein. It merges and supersedes all prior discussions, writings, commitments and understandings between the Parties as to the subject matter herein.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date:

Orlando Utilities Commission

Name: Jan C. Aspuru
Title: Vice President Power Resources

Gainesville Renewable Energy Center, LLC

Name: Mr. Mercs
Title: Vice President

## EXHIBIT A

## NON-DISCLOSURE ACKNOWLEDGMENT

The undersigned hereby certifies that, prior to the disclosure to him or her of confidential Information, as that term is defined in the Confidentiality Agreement between Orlando Utilities Commission and Gainesville Renewable Energy Center, LLC (the "Agreement"), the undersigned has read the Agreement and agrees to be bound by its terms.

| | |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**CONFIDENTIALITY AGREEMENT**
**between**
**REEDY CREEK IMPROVEMENT DISTRICT,**
**and**
**GAINESVILLE RENEWABLE ENERGY CENTER, LLC**

This confidentiality agreement ("Agreement") dated as of June 26, 2009 ("Effective Date") is between the Reedy Creek Improvement District, a Florida special district created by Chapter 67-764 of the Laws of Florida, and having its offices at P.O. Box 10000, Lake Buena Vista, Florida 32830-1000, Florida 32801 ("Reedy Creek") and Gainesville Renewable Energy Center, LLC, a Delaware limited liability company with offices at 75 Arlington Street, 5th Floor, Boston, Massachusetts 02116 ("GREC"), each individually a "Party" and collectively the "Parties".

1. PURPOSE AND INFORMATION COVERED: The Parties intend to exchange information with respect to a proposed biomass fueled power generation project to be developed by GREC and located in Alachua County, Florida (the "Project") for the sole purpose of evaluating possible transactions regarding the development of the Project or the purchase and sale of energy from the Project. To accomplish this, it may be necessary for the Parties to exchange business and technical information; data; and know-how, including reports, contracts, pricing options, solutions, drawings, and other information related to the Project that is considered by the disclosing party as confidential or proprietary and (in the case of GREC) trade secrets. Such information which is disclosed hereunder shall be regarded as "Information" for purposes of this Agreement if it is (a) provided in writing (hard copy or electronic format) and marked as "confidential" or "trade secret" by the disclosing Party, or (b) if disclosed orally and indicated at the time of disclosure as being confidential or proprietary and the essence of such subject is summarized or described in writing (hard copy or electronic format) within thirty (30) days after such disclosure and designated as "confidential" or "trade secret."

2. TERM OF THE AGREEMENT: The receiving Party's obligation to maintain Information as confidential pursuant to the terms of this Agreement shall be from the Effective Date until the earlier of (a) the Parties' entering into a further superseding agreement regarding the subject matter contained herein or (b) three (3) years after the Effective Date.

3. USE AND NON-DISCLOSURE: The receiving Party, its officers, employees, attorneys, consultants and agents, and any third parties authorized through the prior written permission of the disclosing Party, may use Information only for the purposes described in Paragraph 1. The receiving Party may disclose Information to its attorneys, consultants and agents without the permission of the disclosing Party. The receiving Party, its attorneys, consultants and agents shall not disclose Information to any third party without the prior written permission of the disclosing Party during the term of this Agreement. In the event the disclosing Party approves in writing of such disclosure or transmittal to such third party, the receiving Party shall immediately obtain a written commitment from such third party making the terms of this Agreement applicable to such third party, then disclose and transmit such Information to such third party on a proprietary and confidential basis. The receiving Party further agrees to limit the availability of the Information to those officers, employees, attorneys, consultants and agents whom it deems to have a bona fide need to know in connection with the purposes described in Paragraph 1. Before receiving any Information covered by this Agreement, each attorney, consultant and agent (other than those attorneys, consultants or agents who are employed by Reedy Creek Energy Services, Inc. or Walt Disney Parks and Resorts U.S., Inc., or any affiliate thereof) who receives Information shall have read this Agreement and executed a Non-Disclosure Acknowledgment in the form attached as Exhibit A hereto. The receiving Party shall maintain such Non-Disclosure Acknowledgments for as long as the receiving Party's non-disclosure obligations under this Agreement remain in effect, and in the event that a disclosing Party reasonably believes that its Information has been disclosed to any third party, the receiving Party shall furnish copies of the Non-Disclosure Acknowledgments to the Party whose Information is reasonably believed to have been disclosed. The receiving Party shall maintain the Information so imparted secret and confidential.

4. RETURN OF INFORMATION: The Parties may not make copies of documents relating to the Information other than for the purposes indicated in Paragraph 1 above or as authorized by the disclosing Party in writing. Any such copies shall include the proprietary information notice of the disclosing Party if and to the extent that such notice was included in the original documents by the disclosing Party. As directed by the disclosing Party, the receiving Party shall either return or certify destruction of all such documents, drawings, and other Information provided to it under this Agreement, and all copies thereof, within thirty (30) days after any request by the disclosing Party to do so. Notwithstanding the foregoing, Reedy Creek shall be permitted to retain copies to the extent necessary to comply with Florida's Public Records Law (Chapter 119, Florida Statutes).

5. INFORMATION NOT COVERED BY THE AGREEMENT: The duties of confidentiality of the receiving Party under this Agreement shall not apply to Information which the receiving Party can show is the same as information which:

(i) is or becomes generally available to the public without breach of this Agreement;
(ii) was in the possession of the receiving Party at the time it was initially furnished by the disclosing Party; or,

(iii) is later received from an independent third party who is, as far as can reasonably be determined, under no limitation or restriction regarding disclosure of the Information.

6. COMPELLED DISCLOSURE. If Reedy Creek becomes legally compelled to disclose any of the Confidential Information, or is requested or required to do so under Section 119.07, Florida Statutes, Reedy Creek shall provide GREC with prompt notice so that GREC may seek a protective order or other appropriate remedy, and Reedy Creek shall disclose only that portion of the Confidential Information which it is advised by written opinion of its counsel that it is legally required to disclose and shall exercise reasonable efforts to obtain reliable assurance that the confidentiality of the Confidential Information will be maintained. GREC must provide written acknowledgement of its intent to intervene and seek protective measures for any such Confidential Information within 10 business days after notice from Reedy Creek, including the general statutory basis of the exception claimed to the disclosure under Chapter 119.07, Florida Statutes.

7. EQUITABLE RELIEF. Any violation of this Agreement will cause irreparable harm to a disclosing Party. Accordingly, the disclosing Party shall be entitled to injunctive relief enjoining and restraining any violation in addition to any other rights or remedies at equity or law. In no event shall the Parties be liable for indirect or consequential damages, whether based on a claim arising under contract, tort (including negligence), strict liability or any other legal theory.

8. GOVERNING LAW: This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, excluding its rules governing conflicts of law.

9. ENTIRE AGREEMENT: This Agreement contains the entire agreement and understanding between the Parties as to the subject matter herein. It merges and supersedes all prior discussions, writings, commitments and understandings between the Parties as to the subject matter herein.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date.

| Reedy Creek Improvement District | Gainesville Renewable Energy Center, LLC |
|---|---|
| | |
| Name: RAY MAXWELL | Name: Ari Mervis |
| Title: DISTRICT ADMINISTRATOR | Title: Vice President |

## EXHIBIT A

## NON-DISCLOSURE ACKNOWLEDGMENT

The undersigned hereby certifies that, prior to the disclosure to him or her of confidential Information, as that term is defined in the Confidentiality Agreement between Reedy Creek Improvement and Gainesville Renewable Energy Center, LLC (the "Agreement"), the undersigned has read the Agreement and agrees to be bound by its terms.

| | |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

3. **Regarding the economic parameters in the application, please provide complete copies of all source documents, reports, etc. that support the selection of 2.5 percent as the assumed escalation rate, 4.2 percent as the assumed long-term tax-exempt municipal bond interest rate, and 4.2 percent as the present worth discount rate.**

**Response to Request No. 3:**

Please refer to Attachment POD-3a, which includes a table of macroeconomic indicators from the US Energy Information Administration's Annual Energy Outlook 2009 (Updated Reference Case). The data included in this table for indices related to all economic goods are consistent with the assumption of a 2.5 percent long-term average escalation rate.

Please refer to Attachment POD-3b, which presents GRU's current and future cost of debt including the most recent $180,000,000 bond sale in September 2009. The table was prepared by GRU's financial advisor, PFM Inc. The assumed long-term tax-exempt municipal bond interest rate is consistent with the data included in Attachment POD-3b. The present worth discount rate has been assumed to be equal to the long-term tax-exempt municipal bond interest rate, which is consistent with other petitions for determination of need filed by municipal utilities that were ultimately approved by the Florida Public Service Commission.

4. **Please provide a complete copy of Gainesville Regional Utilities' (GRU's) most recent registration statement for the issuance of securities.**

**Response to Request No. 4:**

As a municipal entity, GRU is not required to obtain registration for the issuance of securities.

5. **Please provide complete copies of the most recent credit/bond rating reports for GRU done by Standard & Poor's Rating Service.**

**Response to Request No. 5:**

Please refer to Attachment POD-5, which presents a complete copy of GRU's most recent credit rating report (September 2009) from Standard & Poor's rating service. GRU's rating by Standard & Poor's is AA, which is considered excellent.

6. **Please provide complete copies of the most recent credit/bond rating reports for GRU done by Moody's Investor Service.**

**Response to Request No. 6:**

Please refer to Attachment POD-6, which presents a complete copy of GRU's most recent credit rating report (September 2009) from Moody's Investor Service. GRU's rating by Moody's Investor Service is Aa2, which is considered excellent.

7. **Please provide complete copies of the most recent credit/bond rating reports for GRU done by Fitch Ratings.**

**Response to Request No. 7:**

Fitch Ratings does not provide rating reports for GRU.

8. **Please provide complete copies of all source documents, reports, etc. that support the selection of 2.0 percent bond issuance fee, an assumed 0.50 percent annual property insurance cost and a debt service reserve fund equal to 100 percent of the average annual debt service requirement earning at an interest rate equal to the bond interest rate referenced in Section 4.0 Economic Parameters.**

**Response to Request No. 8:**

Please refer to Attachments POD-8a and POD-8b. Attachment POD-8a is the summary of all costs from GRU's most recent $180,000,000 bond sale in September 2009. The total issuance cost was 1.2 percent, which reflects the lack of need for bond insurance, the quality of GRU's credit, and the relative simplicity of the financial structure underlying the bond sale. An assumed 2 percent bond issuance fee is a reasonable assumption given the variability of this parameter from deal to deal.

Attachment POD-8b is taken from GRU's most recent insurance contract for boiler and machinery, demonstrating a 0.33 percent cost for GRU's diverse mix of generating units. It is reasonable to assume a 0.5 percent incremental cost for a new generation facility.

GRU's bond resolution used to have a debt service fund equal to 100 percent of the foreseen maximum debt service. This covenant was removed when GRU entered into a more dynamic liquidity management program based on a wide range of risk metric whose costs are not too dissimilar to a debt service reserve fund but with improved ability to manage assets in a productive manner. The assumption of a debt service reserve fund equal to 100 percent of the average annual debt service requirement is consistent with the liquidity and financial strength of a double A rated municipal utility.

RESPECTFULLY SUBMITTED this 16th day of October, 2009.

Young van Assenderp, P.A.

By: _____

Roy C. Young
Florida Bar No. 098428
Schef Wright
Florida Bar No. 966721
225 South Adams Street- Suite 200
P.O. Box 1833
Tallahassee, Florida 32302-1833
(850) 222-7206
(850) 561-6834 (fax)

Attorneys for GRU and GREC LLC

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing responses to Staff's First Set of Interrogatories (Nos. 1-8) was served upon the following by hand delivery on this 16th day of October, 2009:

Martha Carter Brown
Senior Attorney
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850
(850) 413-6187

_____
Attorney

**Attachment POD-3A**

SR/OIAF/2009-03

# An Updated Annual Energy Outlook 2009 Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook

## April 2009

**Energy Information Administration**
Office of Integrated Analysis and Forecasting
U.S. Department of Energy
Washington, DC 20585

This report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy. The information contained herein should be attributed to the Energy Information Administration and should not be construed as advocating or reflecting any policy position of the Department of Energy or any other organization.

## Table A20. Macroeconomic Indicators
(Billion 2000 Chain-Weighted Dollars, Unless Otherwise Noted)

| Indicators | 2007 | Projections | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2010 | | | 2020 | | | 2030 | | |
| | | No Stimulus | Updated AEO2009 Reference (April 2009) | Published AEO2009 Reference (March 2009) | No Stimulus | Updated AEO2009 Reference (April 2009) | Published AEO2009 Reference (March 2009) | No Stimulus | Updated AEO2009 Reference (April 2009) | Published AEO2009 Reference (March 2009) |
| **Real Gross Domestic Product** | 11524 | 11373 | 11599 | 11779 | 15315 | 15398 | 16624 | 20193 | 19875 | 20114 |
| **Components of Real Gross Domestic Product** | | | | | | | | | | |
| Real Consumption | 8253 | 8289 | 8395 | 8435 | 10813 | 10817 | 10876 | 14255 | 14069 | 13439 |
| Real Investment | 1810 | 1366 | 1478 | 1581 | 2578 | 2591 | 2565 | 3797 | 3590 | 3756 |
| Real Government Spending | 2012 | 2061 | 2117 | 2065 | 2225 | 2229 | 2194 | 2526 | 2473 | 2427 |
| Real Exports | 1426 | 1355 | 1367 | 1585 | 2790 | 2862 | 3061 | 4894 | 4865 | 5820 |
| Real Imports | 1972 | 1731 | 1794 | 1899 | 2936 | 2942 | 3007 | 4844 | 4719 | 4717 |
| **Energy Intensity (thousand Btu per 2000 dollar of GDP)** | | | | | | | | | | |
| Delivered Energy | 6.42 | 6.23 | 6.14 | 6.09 | 4.83 | 4.83 | 4.86 | 3.92 | 3.97 | 4.04 |
| Total Energy | 8.84 | 8.67 | 8.54 | 8.48 | 6.80 | 6.80 | 6.79 | 5.50 | 5.58 | 5.65 |
| **Price Indices** | | | | | | | | | | |
| GDP Chain-Type Price Index (2000=1.000) | 1.198 | 1.241 | 1.243 | 1.262 | 1.503 | 1.521 | 1.548 | 1.865 | 1.896 | 1.737 |
| Consumer Price Index (1982-4=1) | | | | | | | | | | |
| All-Urban | 2.07 | 2.14 | 2.14 | 2.20 | 2.75 | 2.79 | 2.83 | 3.50 | 3.58 | 3.31 |
| Energy Commodities and Services | 2.08 | 1.76 | 1.77 | 2.18 | 3.06 | 3.10 | 3.16 | 4.06 | 4.11 | 3.87 |
| Wholesale Price Index (1982=1.00) | | | | | | | | | | |
| All Commodities | 1.73 | 1.64 | 1.65 | 1.80 | 2.09 | 2.12 | 2.19 | 2.42 | 2.47 | 2.36 |
| Fuel and Power | 1.77 | 1.49 | 1.49 | 1.91 | 2.64 | 2.66 | 2.74 | 3.57 | 3.62 | 3.45 |
| Metals and Metal Products | 1.93 | 1.59 | 1.60 | 1.82 | 2.05 | 2.10 | 2.21 | 2.11 | 2.18 | 2.22 |
| **Interest Rates (percent, nominal)** | | | | | | | | | | |
| Federal Funds Rate | 5.02 | 0.27 | 0.32 | 1.30 | 4.97 | 5.40 | 5.20 | 5.60 | 5.00 | 4.04 |
| 10-Year Treasury Note | 4.63 | 2.78 | 3.01 | 3.67 | 5.83 | 6.03 | 5.86 | 6.14 | 5.76 | 4.67 |
| AA Utility Bond Rate | 5.94 | 5.77 | 6.09 | 6.39 | 7.81 | 7.95 | 7.49 | 8.83 | 8.04 | 5.79 |
| **Value of Shipments (billion 2000 dollars)** | | | | | | | | | | |
| Total Industrial | 5750 | 4862 | 4954 | 5240 | 6581 | 6652 | 6753 | 7519 | 7391 | 8451 |
| Non-manufacturing | 1490 | 1179 | 1197 | 1277 | 1636 | 1633 | 1603 | 1784 | 1760 | 1780 |
| Manufacturing | 4261 | 3683 | 3757 | 3963 | 4946 | 5019 | 5150 | 5735 | 5631 | 6671 |
| Energy-Intensive | 1239 | 1173 | 1194 | 1238 | 1354 | 1354 | 1374 | 1455 | 1445 | 1525 |
| Non-Energy Intensive | 3022 | 2510 | 2563 | 2725 | 3592 | 3666 | 3776 | 4279 | 4186 | 5145 |
| **Population and Employment (millions)** | | | | | | | | | | |
| Population with Armed Forces Overseas | 302.4 | 311.4 | 311.4 | 311.4 | 342.6 | 342.6 | 342.6 | 374.7 | 374.7 | 375.1 |
| Population (aged 16 and over) | 237.2 | 245.2 | 245.2 | 245.2 | 270.3 | 270.3 | 270.4 | 297.2 | 297.2 | 297.6 |
| Population, over age 65 | 38.0 | 40.4 | 40.4 | 40.4 | 55.0 | 55.0 | 55.0 | 72.3 | 72.3 | 72.3 |
| Employment, Nonfarm | 137.2 | 130.8 | 132.7 | 135.6 | 150.5 | 150.9 | 152.6 | 167.3 | 165.3 | 168.3 |
| Employment, Manufacturing | 13.9 | 11.2 | 11.5 | 12.2 | 11.8 | 12.0 | 12.3 | 10.2 | 10.1 | 11.7 |
| **Key Labor Indicators** | | | | | | | | | | |
| Labor Force (millions) | 153.1 | 153.6 | 154.0 | 155.9 | 166.3 | 166.4 | 168.4 | 176.0 | 175.6 | 181.5 |
| Non-farm Labor Productivity (1992=1.00) | 1.37 | 1.46 | 1.46 | 1.45 | 1.74 | 1.75 | 1.74 | 2.19 | 2.17 | 2.14 |
| Unemployment Rate (percent) | 4.63 | 10.19 | 9.35 | 8.26 | 5.74 | 5.51 | 5.53 | 4.92 | 5.54 | 4.78 |
| **Key Indicators for Energy Demand** | | | | | | | | | | |
| Real Disposable Personal Income | 8644 | 8668 | 9103 | 9017 | 11895 | 11903 | 12035 | 16310 | 16014 | 15450 |
| Housing Starts (millions) | 1.44 | 1.04 | 1.08 | 1.16 | 1.98 | 1.99 | 1.77 | 1.81 | 1.77 | 1.74 |
| Commercial Floorspace (billion square feet) | 77.3 | 81.0 | 81.1 | 81.2 | 91.6 | 91.5 | 92.3 | 104.4 | 103.9 | 103.3 |
| Unit Sales of Light-Duty Vehicles (millions) | 16.09 | 14.54 | 13.08 | 14.16 | 18.04 | 16.09 | 17.41 | 20.20 | 19.69 | 20.99 |

GDP = Gross domestic product.
Btu = British thermal unit.
Sources: 2007: IHS Global Insight Industry and Employment models, November 2008. Projections: Energy Information Administration, AEO2009 National Energy Modeling System runs NOSTIMLS.D041409A, STIMULUS.D041409A, and AEO2009.D120908A.

CAAGR CPI - All Urban
2.55%/yr 1.58%/yr
2010 → 2020 → 2030
2.20 → 2.83 → 3.31



090451 Hearing Exhibit - 000340

Attachment POD-3B

GRU AVERAGE COST OF DEBT
Performed by Eric Smith at PFM
Oct 14 2009

| | Aggregate Outstanding Debt Service | | | | | |
|---|---|---|---|---|---|---|
| Maturity | Par | Coupon | Interest | DS | Weights | Avg Cost of Debt |
| 10/1/2010 | 35,045,000 | | 36,445,300 | 71,490,300 | *38,029,878* | **4.126%** |
| 10/1/2011 | 36,635,000 | | 36,590,610 | 73,225,610 | *36,590,610* | **4.127%** |
| 10/1/2012 | 38,195,000 | | 35,034,342 | 73,229,342 | *35,034,342* | **4.121%** |
| 10/1/2013 | 39,880,000 | | 33,349,050 | 73,229,050 | *33,349,050* | **4.108%** |
| 10/1/2014 | 35,050,000 | | 31,526,369 | 66,576,369 | *31,526,369* | **4.084%** |
| 10/1/2015 | 36,570,000 | | 30,008,925 | 66,578,925 | *30,008,925* | **4.072%** |
| 10/1/2016 | 37,900,000 | | 28,454,861 | 66,354,861 | *28,454,861* | **4.063%** |
| 10/1/2017 | 39,405,000 | | 26,855,491 | 66,260,491 | *26,855,491* | **4.054%** |
| 10/1/2018 | 32,765,000 | | 25,165,762 | 57,930,762 | *25,165,762* | **4.039%** |
| 10/1/2019 | 34,130,000 | | 23,733,324 | 57,863,324 | *23,733,324* | **4.021%** |
| 10/1/2020 | 33,600,000 | | 22,192,402 | 55,792,402 | *22,192,402* | **3.990%** |
| 10/1/2021 | 24,790,000 | | 20,700,962 | 45,490,962 | *20,700,962* | **3.962%** |
| 10/1/2022 | 25,075,000 | | 19,708,134 | 44,783,134 | *19,708,134* | **3.959%** |
| 10/1/2023 | 26,070,000 | | 18,735,015 | 44,805,015 | *18,735,015* | **3.964%** |
| 10/1/2024 | 27,205,000 | | 17,631,275 | 44,836,275 | *17,631,275* | **3.948%** |
| 10/1/2025 | 26,930,000 | | 16,489,651 | 43,419,651 | *16,489,651* | **3.932%** |
| 10/1/2026 | 28,010,000 | | 15,358,992 | 43,368,992 | *15,358,992* | **3.913%** |
| 10/1/2027 | 29,255,000 | | 14,182,547 | 43,437,547 | *14,182,547* | **3.891%** |
| 10/1/2028 | 30,575,000 | | 12,994,686 | 43,569,686 | *12,994,686* | **3.877%** |
| 10/1/2029 | 31,950,000 | | 11,752,908 | 43,702,908 | *11,752,908* | **3.858%** |
| 10/1/2030 | 35,535,000 | | 10,455,064 | 45,990,064 | *10,455,064* | **3.834%** |
| 10/1/2031 | 36,860,000 | | 9,120,760 | 45,980,760 | *9,120,760* | **3.846%** |
| 10/1/2032 | 38,370,000 | | 7,738,860 | 46,108,860 | *7,738,860* | **3.864%** |
| 10/1/2033 | 31,095,000 | | 6,299,858 | 37,394,858 | *6,299,858* | **3.891%** |
| 10/1/2034 | 29,180,000 | | 5,081,687 | 34,261,687 | *5,081,687* | **3.884%** |
| 10/1/2035 | 30,320,000 | | 3,940,378 | 34,260,378 | *3,940,378* | **3.876%** |
| 10/1/2036 | 31,440,000 | | 2,754,316 | 34,194,316 | *2,754,316* | **3.861%** |
| 10/1/2037 | 14,565,000 | | 1,522,688 | 16,087,688 | *1,522,688* | **3.817%** |
| 10/1/2038 | 15,095,000 | | 959,653 | 16,054,653 | *959,653* | **3.789%** |
| 10/1/2039 | 10,230,000 | | 376,029 | 10,606,029 | *376,029* | **3.676%** |
| 10/1/2040 | | | | | | |
| Totals | 921,725,000 | | 525,159,898 | 1,446,884,898 | | |

**Attachment POD-5**

STANDARD POOR'S

RATINGSDIRECT®

September 9, 2009

# Gainesville, Florida Gainesville Regional Utilities; CP; Combined Utility

**Primary Credit Analyst:**
Judith Waite, New York (1) 212-438-7677; judith_waite@standardandpoors.com

**Secondary Credit Analyst:**
Jeffrey Panger, New York (1) 212-438-2076; jeff_panger@standardandpoors.com

## Table Of Contents

Rationale

Outlook

Markets

Operations

Competitive Position

Management

Bond Provisions

Related Research



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page

# Gainesville, Florida
# Gainesville Regional Utilities; CP; Combined Utility

**Credit Profile**

US$133.595 mil util sys rev bnds (taxable build america bnds) (Gainesville Regl Utils) ser 2009B due 10/01/2039

| | | |
|---|---|---|
| *Long Term Rating* | AA/Stable | New |

US$24.2 mil util sys rev bnds (federally taxable) (Gainesville Regl Utils) ser 2009A due 10/01/2016

| | | |
|---|---|---|
| *Long Term Rating* | AA/Stable | New |

US$22.918 mil util sys rev bnds (Gainesville Regl Utils) ser 2009C due 10/01/2020

| | | |
|---|---|---|
| *Long Term Rating* | AA/Stable | New |

**Gainesville, Florida**

Gainesville Regl Utils, Florida

Gainesville (Gainesville Regl Utils) util sys rev bnds

| | | |
|---|---|---|
| *Long Term Rating* | AA/Stable | Affirmed |

## Rationale

Standard & Poor's Ratings Services has assigned its 'AA' long-term rating to the City of Gainesville, Fla.'s system revenue bonds, series 2009A ($24.2 million), B ($135.6 million), and C ($22.9 million), issued for Gainesville Regional Utilities (GRU or the utility). Standard & Poor's also affirmed its 'AA' long-term rating on GRU's parity debt and its 'A-1+' short-term rating on the utility's commercial paper. The outlook is stable. Total debt outstanding after this issuance will be $949 million.

The utility will use bond proceeds to pay down commercial paper outstanding and fund the utility systems' capital costs.

The long-term rating reflects what we view as the following strengths:

- The combined utilities' solid operational profile and low production costs;
- A solid financial position, moderate debt-to-customer level, and adequate liquidity;
- Commission support for rate increases to maintain GRU's financial profile despite a large capital spending program;
- Experienced and proactive management team; and
- A stable economy with an increasing customer base.

We believe credit concerns include:

- Dependence on one generating unit to provide about 65% of the system's electricity; and
- Additional debt burden associated with a sizable capital spending program through 2014, although rate increases and the post-2013 reduction of debt service associated with existing debt mitigate this.

GRU provides electric, natural gas, water, wastewater, and telecommunication services to customers in the



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

Gainesville metropolitan area. The city commission governs the system.

The utility system's overall business risk profile is '3' on our scale of '1' (excellent) to '10' (vulnerable). The system provides reliable services at comparatively low rates to a customer base that is increasing steadily. The City of Gainesville owns the utility's assets; it operates all facilities except its 1.4% interest in the Crystal River 3 nuclear plant. GRU depends on the Deerhaven Unit 2 coal-fired plant to supply about two-thirds (65%) of the system's power. The rest comes from nuclear, natural gas, and oil-fired generating plants. Two purchased power contracts with Progress Energy Florida Inc. (PEF), priced at PEF's system average cost. The spot market provides supplemental power to meet peaking requirements.

GRU's dependence on the one unit is a risk, in our opinion, but the unit's strong operating record and the agreement with surrounding utilities to provide backup power in the event of an unplanned, long-term outage reduce this. The replacement power's cost, however, would be based on gas prices, which are much higher than those of coal and uranium. The gas, water, and wastewater utilities are managed efficiently, providing services at rates that are consistently low for Florida.

Based on load-growth forecasts, GRU believes that existing capacity will be sufficient to maintain a 15% reserve margin through 2023. The current reserve margin, including sales to the City of Alachua, Fla., and Seminole Electric Cooperative under all-requirements contracts, is 44%. By late 2013, GRU expects to add 100 megawatts (MW) of electricity fueled by a biomass generating unit under a 30-year, take-and-pay contract with American Renewables LLC. The capacity will replace the existing purchased power contracts. However, GRU expects to resell about half the biomass unit's energy under a 10-year contract.

GRU has substantial funding requirements to upgrade and expand the existing system. Debt, including the 2009 bonds, will fund about half of the capital investment. Capital spending through 2014 is an estimated $600 million, of which about 60% will go to the electric system. In 2009, the utility completed the Deerhaven emissions reduction retrofit to assure that the system will operate well within the limits of the Clean Air Interstate Rule and the Clean Air Mercury Rule. Future investment will primarily be for steam turbine and coal handling improvements, boiler component replacements, line extensions, and distribution improvements. The gas system will spend about $48 million, of which about $16 million is to complete the cleanup of a manufactured gas plant site. GRU expects the water system to be adequate through 2030, and the wastewater system through 2029. During the next five years, the utility will invest about $67 million in the water system and $90 million in the wastewater system for expansion, maintenance, and system improvements. GRU expects the telecommunications business to require about $33 million to continue expanding its fiber-optic system throughout the metropolitan area.

In our opinion, GRU's financial metrics continue to reflect the credit strength appropriate for 'AA' rating category. We believe this is due to both management's oversight of its risk profile, budgeting to assure an adequate cushion of cash flow and liquidity, and to the willingness of Gainesville's commissioners to approve utility rate increases needed to achieve the budget goals. The commission approves rates annually after public hearings, but in general, it has been able to implement GRU's requested increase. That GRU's utility rates are in the midrange for Florida utility systems (the gas rate is among the lowest in the state) helps assure support of required rate increases.

In 2008, GRU maintained what we view as strong coverage levels. Fixed charge coverage, which measures excess cash operating income net of transfers to the city's general fund, to combined debt service for the utilities, was a healthy 1.5x in 2008, and was marginally stronger than in previous years. The transfer to the general fund, which is



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

a based on a formula, has gradually declined to about 9.6% of revenue from more than 11% after Gainesville's commissioners agreed to allow GRU to retain a higher percentage of its net revenue to support capital investment. The fixed charge ratio was 1.6x after including a transfer from the rate stabilization fund. Debt service coverage before the transfer was more than 2x, which is consistent with previous performance.

GRU maintains strong liquidity for the ratings. Cash on hand at the end of fiscals 2004-2008 was equal to more than 100 days of operating expenses. In addition, GRU has two commercial paper programs that provide $110 million of short-term funding. The programs are backed by bank liquidity facilities: Bayerische Landesbank Gironzentrale provides an $85 million credit facility that expires Nov. 30, 2015; and SunTrust Bank provides a $25 million credit facility that expires Sept. 14, 2009, and is being extended. The $110 million covers working-capital requirements, which have not exceeded $50 million. We believe working-capital requirements are kept reasonably low in part because fuel costs are passed through to customers monthly. The city commission has authorized cash reserve requirements based on risk metrics that are updated annually. The rate stabilization fund (RSF) and the utility plant improvement fund (UPIF) also provide liquidity. The RSF, which amounted to $54 million for the electric utility and $70 million for the combined utilities as of Aug. 1, 2009, and the UPIF, which held about $18 million as of Aug. 1, will increase during the next five years to provide funding for capacity costs and to help limit rate increases. GRU's stated goal is to fund about half of capital investment, other than future generation, with reserved funds and current revenue.

Gas price risk is managed through gas purchase contracts brokered by The Energy Authority (TEA; a Georgia-based nonprofit corporation that municipal utilities founded in 1997 to maximize the value of generation and energy resources in a wholesale market), and the cost of managing the risk passes through to customers in the fuel component of rates. The program uses futures and options contracts that are traded on the New York Mercantile Exchange (NYMEX). Deposits required for these contracts amounted to $6.1 million through Sept. 1, 2009, $2.9 million in fiscal 2008, $4.9 million in fiscal 2007, $7.8 million in 2006, $5.4 million in 2005, and $3.1 million in 2004. In addition, GRU's share of guarantees for letters of credit issued by TEA's bank to cover purchase-and-sale contracts for electricity, natural gas, and related transmission amounted to $28.4 million in 2009.

GRU's use of interest-rate swaps also limits liquidity needs. Only 13% of interest expense is variable-rate, and interest on reserves largely hedges that risk. About 45% of interest expense is fixed-rate and 42% is synthetic fixed-rate, averaging a 3.66% interest rate. We rate he counterparties on these interest rate swaps 'AAA' or 'AA-'. The 2005C and 2006A swaps have a small degree of basis risk, in our opinion, since GRU will receive a floating rate based on LIBOR, whereas the bond floating rate is based on the Securities Industry and Financial Markets Association. The swaps terminate if the rating on the utility's debt falls to less than 'BBB-'.

## Outlook

The stable outlook reflects Standard & Poor's view that Gainesville's city commission is willing to support GRU's need for rate increases to maintain strong debt service coverage despite the increasing debt service level. The rate increases will also assure that internally generated funds provide a balanced proportion of the capital spending program.



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

## Markets

Characterizing GRU's market are moderate customer growth and an economic base composed primarily of education (University of Florida) and medical services. The utility's largest customers are the city of Gainesville, which accounts for less than 2% of revenue; medical centers such as the Veterans' Administration Hospital and Shands Healthcare, which is affiliated with the University of Florida (less than 3%); various state and federal agencies; some services of the University of Florida (although PEF is the primary electricity supplier) and other educational institutions such as Santa Fe Community College; and a few businesses such as Metal Container Corp. and Wal-Mart Stores Inc.

Gainesville's employment base, which is primarily education, municipal government and health care, is not as vulnerable to economic swings. As a result, the unemployment rate has been lower than the state average and is well below that of U.S. As of June 2009, the unemployment rate in Gainesville was 7.4%, compared with the state average of 10.8% and the national average of 9.5%. In addition, the University of Florida provides customers to a healthy base of small businesses. Because GRU's market is primarily a service economy, income levels are what we view as moderate. The median household effective buying income is about 70% of the regional and national medians, but this also reflects the high proportion of college students in the area. Customer growth during the past five years has increased about 2% annually for electricity, 2.5% for natural gas, 3% for water and wastewater. Migration to the Gainesville area continues, but is decreasing. Residential customers account for most of the combined utilities revenue: 45% of electric revenue, 45% of natural gas revenue, 59% of water revenue, and 72% of wastewater revenue.

## Operations

GRU has continued to expand facilities, and is able to provide low-cost, dependable service with adequate surplus capacity to meet maximum needs for electricity, gas, water, and wastewater.

It meets current electricity needs with 611 MW of generating capacity, of which 228 MW come from the Deerhaven coal-fired plant and 11 MW from the Crystal River unit 3 generating plant, a nuclear power plant that PEF operates. Combined, the low operating costs at these plants help keep overall electric costs relatively low. The remainder of the capacity is fueled by natural gas. GRU also has two all-requirements contracts with PEF: one for 50 MW through 2013 and one for 25 MW year-round, 50 MW in the summer through 2010. Total generating capacity provided a 44% reserve margin in fiscal 2008, and is adequate for estimated requirements through at least 2023. This forecast includes the purchased power contract with the 100 MW biomass plant, as well as continued demand side management to curtail peak requirements. GRU still leads other utilities in the state in lowering electricity demand.

In addition, PEF has applied to renew the Crystal River license for an additional 20 years after 2016, when the original license expires. GRU is also evaluating other proposals to provide additional baseload generation capacity fired with biomass and possibly municipal solid waste as a way to hedge against gas price volatility and new environmental requirements, such as renewable portfolio standards and carbon restraints.

The risk associated with GRU's dependence on primarily one plant, 228 MW Deerhaven unit 2, for almost all of its low-cost power is somewhat reduced by the agreement between GRU and other consumer-owned generating



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

facilities in north central Florida and Georgia including: Florida Municipal Power Agency, Jacksonville Electric Authority, Lakeland Electric Co.; Orlando Utilities Commission; the City of Tallahassee, Fla.; Seminole Electric Cooperative Inc.; and the Municipal Electric Authority of Georgia. Participants have committed to provide replacement power in the event of a long-term outage (2-12 months) of one of the baseload generating units designated under the agreement. Each utility will provide a pro rata share of the replacement power. However, the suppliers are reimbursed at an indexed price of a gas-fired unit, assuming a heat rate that corresponds to a combined-cycle gas-fired generating unit--a cost significantly higher than Deerhaven's own. The system has designated 100 MW of the 228 MW Deerhaven capacity to be covered under the agreement.

We believe Deerhaven's new scrubbing facilities will make a significant difference in the range of coal quality that GRU can use, and it is evaluating supply contract options for the three grades of coal. The utility also has a rail contract through 2019 at rates made more favorable by its ownership of a fleet of rail cars. Coal inventory at the Deerhaven facility usually provides about a 50-60-day supply.

## Competitive Position

GRU's service territory includes the Gainesville urban area and the surrounding unincorporated area. GRU electric utility serves the urban area, except for the University of Florida (served which PEF serves) and most of the unincorporated surrounding area. However, PEF, Clay Electric Cooperative Inc., Florida Power & Light Co., and Central Florida Electric Cooperative Inc. also provide service in the unincorporated areas. GRU has an agreement with Clay that establishes a service boundary between the two utilities in the unincorporated areas of Alachua County. The agreement extends through 2017 and has been approved by the Florida Public Service Commission.

GRU's residential electric, water and sewer rates are well within the average for Florida, and gas rates are at the low end of the scale. The utility reduces fuel and power costs by purchasing power and gas through TEA. GRU became an equity member of TEA in 2002. Other members include City Utilities of Springfield, Mo.; Jacksonville Electric Authority; the Municipal Electric Authority of Georgia; Nebraska Public Power District; and South Carolina Public Service Authority. TEA equity members have a total installed generating capacity of about 14,400 MW. There are 32 additional nonmember participating electric utilities across the nation, bringing the total capacity and power supply contracts to about 25,000 MW. GRU uses this wholesale purchase-and-sale option to offset gas price spikes that would otherwise increase system power costs. TEA purchases all of the utility's natural gas and manages the system's gas transportation entitlements. TEA's ability to find the best markets to buy and sell power and excess natural gas transportation entitlements maximizes the efficient use of generation assets, reduces GRU's costs, and increases its revenues. It also executes and manages financial hedges for its members, primarily in the form of NYMEX natural gas futures and options. A subsidiary of TEA, Colectric Partners Inc., allows members to join forces in buying materials.

GRU has two all-requirements wholesale customers. A contract with Seminole extends through 2012 and one with Alachua extends through 2010.

## Management

We view management as being experienced and proactive. In fiscal 2005, management identified and evaluated all of GRU's financial risks, established a framework for setting reserve fund levels, and identified other strategies to



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

manage financial risks. It developed this financial risk strategy in accordance with GRU's financial objectives:

- Providing Gainesville with a general funds transfer from each system that is in the top 10% in the state, when compared with those of other publicly owned utilities; and
- Maintaining uninsured bond ratings of 'AA' and 'Aa2' from Standard & Poor's and Moody's Investors Services, respectively.

## Bond Provisions

GRU establishes rates in accordance with the utilities system bond resolution and its subordinated bond resolution. Under these documents, rates are set to recover operations and maintenance expenses; debt service; utility plant improvement fund contributions; and costs for any other lawful purpose, such as the general fund transfer. The city covenants in the resolution to collect rates sufficient to yield net revenues that will be equal to at least 1.25x the senior-lien debt service. Each year during the budgeting process, and at any other time necessary, the city commission approves changes to the utility charges.

In accordance with bond resolutions, GRU maintains five restricted funds:

- Debt service funds to provide payment of principal and interest on or redeem debt outstanding;
- Subordinated debt funds to pay principal and interest on subordinated debt;
- An RSF accumulated to stabilize rates through transferring funds to and from operations as necessary, and to provide operating reserves;
- Construction funds to expand the system; and
- A UPIF to pay for certain capital projects or debt service, or otherwise repay bonds.

## Related Research

USPF Criteria: "Electric Utility Ratings," June 15, 2007

**Ratings Detail** (As Of September 9, 2009)

| | | |
|---|---|---|
| **Gainesville, Florida** | | |
| Gainesville Regl Utils, Florida | | |
| Gainesville (Gainesville Regl Utils) comm ppr nts ser C | | |
| *Short Term Rating* | A-1+ | Affirmed |
| Gainesville (Gainesville Regl Utils) sys comm pap nts ser D dtd 05/01/2000 due 05/01/2030 | | |
| *Short Term Rating* | A-1+ | Affirmed |
| Gainesville (Gainesville Regl Utils) util sys rev bnds ser 2005C dtd 11/01/2005 due 10/01/2010-2026 | | |
| *Long Term Rating* | AA/A-2/Stable | Affirmed |
| Gainesville (Gainesville Regl Utils) util sys rev bnds 2006A | | |
| *Long Term Rating* | AA/A-2/Stable | Affirmed |
| Gainesville (Gainesville Regl Utils) var rate util sys | | |
| *Long Term Rating* | AA/A-1+/Stable | Affirmed |
| Gainesville (Gainesville Regl Utils) var rate util sys rev bnds ser 2008B | | |
| *Long Term Rating* | AA/A-1+/Stable | Affirmed |
| **Gainesville (Gainesville Regl Utils)** | | |



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

**Ratings Detail** (As Of September 9, 2009) **(cont.)**

| | | |
|---|---|---|
| *Unenhanced Rating* | AA(SPUR)/Stable | Affirmed |

Many issues are enhanced by bond insurance.



Standard & Poor's. All rights reserved. No reprint or dissemination without S&P's permission. See Terms of Use/Disclaimer on the last page.

090451 Hearing Exhibit - 00352

Copyright © 2009, Standard & Poors, a division of The McGraw-Hill Companies, Inc. (S&P). S&P and/or its third party licensors have exclusive proprietary rights in the data or information provided herein. This data/information may only be used internally for business purposes and shall not be used for any unlawful or unauthorized purposes. Dissemination, distribution or reproduction of this data/information in any form is strictly prohibited except with the prior written permission of S&P. Because of the possibility of human or mechanical error by S&P, its affiliates or its third party licensors, S&P, its affiliates and its third party licensors do not guarantee the accuracy, adequacy, completeness or availability of any information and is not responsible for any errors or omissions or for the results obtained from the use of such information. S&P GIVES NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. In no event shall S&P, its affiliates and its third party licensors be liable for any direct, indirect, special or consequential damages in connection with subscribers or others use of the data/information contained herein. Access to the data or information contained herein is subject to termination in the event any agreement with a third-party of information or software is terminated.

Analytic services provided by Standard & Poor's Ratings Services (Ratings Services) are the result of separate activities designed to preserve the independence and objectivity of ratings opinions. The credit ratings and observations contained herein are solely statements of opinion and not statements of fact or recommendations to purchase, hold, or sell any securities or make any other investment decisions. Accordingly, any user of the information contained herein should not rely on any credit rating or other opinion contained herein in making any investment decision. Ratings are based on information received by Ratings Services. Other divisions of Standard & Poor's may have information that is not available to Ratings Services. Standard & Poor's has established policies and procedures to maintain the confidentiality of non-public information received during the ratings process.

Ratings Services receives compensation for its ratings. Such compensation is normally paid either by the issuers of such securities or third parties participating in marketing the securities. While Standard & Poor's reserves the right to disseminate the rating, it receives no payment for doing so, except for subscriptions to its publications. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

Any Passwords/user IDs issued by S&P to users are single user-dedicated and may ONLY be used by the individual to whom they have been assigned. No sharing of passwords/user IDs and no simultaneous access via the same password/user ID is permitted. To reprint, translate, or use the data or information other than as provided herein, contact Client Services, 55 Water Street, New York, NY 10041; (1)212.438.7280 or by e-mail to: research_request@standardandpoors.com.

Copyright © 1994-2009 Standard & Poors, a division of The McGraw-Hill Companies. All Rights Reserved.

**Attachment POD-6**

Moody's Investors Service

**New Issue: MOODY'S ASSIGNS Aa2 TO GAINESVILLE REGIONAL UTILITIES' DEBT ISSUANCES; OUTLOOK HAS BEEN CHANGED TO NEGATIVE**

Global Credit Research - 08 Sep 2009

**GAINESVILLE REGIONAL UTILITIES HAS APPROXIMATELY $784.51 MILLION OF OUTSTANDING REVENUE BONDS**

Gainesville (City of) FL Combined Util. Ent.
Electric Utilities
FL

**Moody's Rating**

| ISSUE | | RATING |
|---|---|---|
| Utilities System Revenue Bonds, 2009 Series A (Federally Taxable) | | Aa2 |
| **Sale Amount** | $36,280,000 | |
| **Expected Sale Date** | 09/15/09 | |
| **Rating Description** | Revenue | |
| Utilities System Revenue Bonds, 2009 Series B (Build America Bonds) | | Aa2 |
| **Sale Amount** | $144,420,000 | |
| **Expected Sale Date** | 09/15/09 | |
| **Rating Description** | Revenue | |
| Utilities System Revenue Bonds, 2009 Series C | | Aa2 |
| **Sale Amount** | $20,665,000 | |
| **Expected Sale Date** | 09/15/09 | |
| **Rating Description** | Revenue | |

**Moody's Outlook** Negative

**Opinion**

NEW YORK, Sep 8, 2009 -- Moody's Investors Service has assigned a Aa2 rating with a negative outlook to $178.5 million Gainesville's (FL) Utility System Revenue bonds including: $24.2 million 2009 Series A Utilities System Revenue Bonds (Federally Taxable), $133.6 million 2009 Series B Utilities System Revenue Bonds Build America Bonds (Federally Taxable), and $20.7 million 2009 Series C Utilities System Revenue Bonds. The bonds are expected to be priced in mid-September 2009. Simultaneously, Moody's has affirmed the Aa2 rating and revised the outlook to negative from stable on Gainesville Regional Utilities (GRU)'s outstanding debt (as of September 1, 2009) in the amount of $784.51 million.

The long-term Aa2 rating on the 2009 Series A, B and C bonds is based on GRU's positive financial operations, adequate cash position, stable economic base, and good utility management. The negative outlook considers electric rates that are projected to increase to support this additional debt and are becoming less competitive, leaving very little headroom to raise rates further. The outlook also considers the liquidity available to cover the variable rate debt and the future dependency on operating reserves to meet significant capital improvement and other operations and maintenance related costs increases.

USE OF PROCEEDS: The majority of the proceeds from the bond sale will be used primarily to fund fiscal years 2010 and 2011 capital improvement costs; approximately $14 million will be used to refund the taxable Utilities System Commercial Paper Notes, Series D.

LEGAL SECURITY: The bonds are secured by a senior lien pledge of net revenues of the combined utilities system of the City of Gainesville (the City; A2 Non-Ad Valorem Rating), which includes electric, natural gas, water, wastewater, and telecommunication systems. The rate covenant requires that net revenues equal at least 1.25 times aggregate debt service. There is no debt service reserve.

STRENGTHS

* Solid operational history supported by adequate liquidity levels.

* Positive financial operations and ample debt service coverage margins.

* Stable economic base with unemployment below U.S. and State of Florida averages.

* Sound financial management with focus on risk mitigation and long-term financial planning.

* Strong renewable energy program.

* Favorable debt repayment structure provides financing flexibility.

* Unregulated rate setting with sound record of certain and timely cost recovery.

* Diversified customer base and non-traditional revenue sources provide financial flexibility and stability.

CHALLENGES

* Six year capital improvement program puts additional pressure on currently above average rates.

* Lack of fuel diversity could place pressure on future rates.

* Meeting regulatory requirements could result in system modifications increasing costs substantially.

* Less competitive electric rates than other utilities in the region.

* Future dependency on rate stabilization fund.

MARKET POSITION/COMPETITIVE STRATEGY:

GRU, a combined utility system with five separate enterprises, is a municipally-owned facility located in the State of Florida (Aa1/Negative). The enterprises consist of electric generation, transmission, and distribution (Electric System), water production and distribution (Water System), a wastewater collection and treatment system (Wastewater System), a natural gas distribution system (Gas System) and a telecommunication system (GRUCom).

GRU's diverse customer base encompasses the City of Gainesville and surrounding unincorporated areas and the County of Alachua (County). The economy is dominated by the main campus of the University of Florida. Although GRU does not serve the main campus, in aggregate University of Florida is one of GRU's top ten largest electric customers serving many sites outside of the main campus. In addition, GRU serves the University of Florida campus with water and natural gas. The area's primarily economic base-education, government, and healthcare-has been a stabilizing force in the economy resulting in unemployment levels that are lower than State averages.

Moody's believes that the system's focus on customer satisfaction and retention through competitive total service package pricing and good service delivery has been beneficial, but less competitive electric rates, lack of electric fuel diversity, and funding of costly capital improvements will pose challenges for GRU going forward. While diversity of services affords some credit strength, 71% of fiscal year 2008 system gross revenues are derived from electric operations.

Fiscal year 2008 generating capacity of 608 MW with 50 MW of firm base load contract is compared to a peak of 457 MW. Surplus power and off-system sales, which had been dropping gradually since fiscal year 2004, increased in fiscal year 2008. Officials have pushed back the need for additional base load generation until 2023 by a series of measures in 2008 including securing of 50 MW of base load power from an agreement with Progress Energy through 2013, a landfill gas contract, 25 MW year round and 50 MW summer base load capacity contracts, upgrade of the CR3 nuclear plant, construction of a combined heat and power generating station, implementation of a solar feed-in-tariff program, and demand side

management. A long term wholesale power sales contract with the City of Alachua, which provides the city with 24 MW of power expired in December 2008, but has been extended for two years and is actively being negotiated. In addition, a recently entered biomass contract is expected to add 100 MW of firm load capacity by late 2013 and will substantially reduce carbon emissions. If additional short-term capacity is required before 2013, officials believe they can effectively bridge any temporary capacity shortfalls with firm capacity contracts with other Florida utilities.

The system has established strategic alliances with other utilities through it's participation in The Energy Authority (TEA), "Good Guys", and the Florida Municipal Power Agency's power pool, which have helped in fuel (natural gas) procurement, dispatching surplus power, and mitigating loss of GRU's major unit (228 MW Deerhaven 2). Deerhaven 2, which is GRU's primary base load and largest unit at 228 MW, accounts for over 37% of total potential generation resources. An extended outage for this unit provides some vulnerability which is balanced against the favorable operating and availability performance, and the ability to purchase excess power from the members of the "Good Guys". As mentioned previously, a series of base load power contracts have been entered into with Progress Energy Florida as a hedge against this risk as well as for natural gas volatility and to improve system reliability. These contracts include a five year, 50 MW contract through 2013, a two year 25 MW contract through 2010, and a two year 25 MW capacity ending at the end of 2010 limited to summer months.

The Electric System's generation fuel mix is not diverse with nearly 73% of the systems self generated energy based on coal and another 22% on natural gas, with nuclear and oil playing minor roles. Officials have taken steps to substantially diversity its energy resources by entering power purchase contracts through 2013 with Progress Energy Florida described above, construction of a natural gas fired combined heat and power generating station, acquisition of 4 MW per year of solar power through the first European style solar feed-in-tariff in the USA, and by entering into a long term contract for 100 MW of biomass fueled generation scheduled to come on line in late 2013.

Fuel contracts vary with an existing coal contract for 90% of GRU's needs through 2009. With installation of the Air Quality Control System and other systems that lower emissions at Deerhaven 2, newer contracts that extend through 2011 have been secured for lower grade coal. Approximately 79% of natural gas requirements are hedged through December 2010; oil is purchased through the spot market.

Concern with the possible consequences of potential carbon constraint regulations has been the cornerstone of GRU's energy supply planning for a number of years. As such, GRU has voluntarily engaged in several projects (described above) as well as adopted the Kyoto Protocol in anticipation of future renewable energy standards and carbon regulations. With these programs and other renewable energy programs, GRU expects to be 21.7% renewable by 2014, with a corresponding reduction in the use of coal and reduced reliance on the coal unit.

Moody's also expects that deregulation in Florida will proceed at a slower pace than the rest of the nation due to transmission constraints, minimal large customer exposure, and retail rates that are below the national average. We believe that Gainesville will have sufficient transition time to implement measures to remain competitive, if necessary.

The Water System reportedly has ample supply from its existing wellfield, which draws groundwater from the Floridian Aquifer, and water and sewer system treatment capacities are being expanded to provide for system needs through at least 2026. Currently, the Water System use is nearly half of the 54 MGD treatment capacity, and the Wastewater System's treatment capacity of 22.4 MGD provides for system needs through 2029. The Wastewater System has acquired the property and is securing funding to construct a treatment wetland to reduce nitrogen and phosphorus loadings to meet the Total Maximum Daily Load (TMDL) requirements applicable to the outfall of one of GRU's reclaimed water facilities with expected completion by 2019. The Water and Wastewater Systems serve the City of Gainesville and the immediately surrounding area (approximately 72% and two-thirds of the County's population, respectively), and are predominately residential in nature with no large customer dependency. Water and Wastewater operations generated 8% and 9%, respectively, of fiscal year 2008 gross revenues.

The Natural Gas System serves about 32% of the County's residents (33,777 customers) through four distribution points with Florida Gas Transmission. TEA has assumed responsibility for procurement of gas for the city; natural gas revenues accounted for 9% of total system revenues in fiscal year 2008. Finally, the system operates a GRUCom with 4,130 dedicated Internet access and 1,496 dial-up customers. GRUCom accounted for 3% of fiscal year 2008 gross revenues.

FINANCIAL POSITION AND PERFORMANCE:

GRU continued to report stable operating results for fiscal year 2008 with net revenues increasing nearing 16% compared to that in fiscal year 2007. Based on the March 31, 2009 unaudited quarterly financials, 2009 net revenues are projected to be nearly 9% lower than budget, but 12% higher than that in 2008. Electric System sales represented nearly 71% of the overall combined utility system revenues in fiscal year 2008. Energy sales for retail and wholesale customers from fiscal year 2007 to fiscal year 2008 were down slightly under 1% and down 2.2% for the 6 months ended March 2009 compared to the same time period in 2008. The primary driver of the decrease is the weakened economy. Despite the drop, retail revenues increased 7% in fiscal year 2008 compared to that in fiscal year 2007. The current downturn has left GRU long in certain low cost coal-fired base load resources, enabling it to realize certain upsides from the sale of power on a wholesale basis. However, recent declines in natural gas prices and loads in Florida have limited the potential for higher sales and margins.

Economic conditions have put further pressure on the budget and rates. As a result, GRU recommended a $31.7 million budget reduction for the fiscal years 2009 and 2010 budgets in expectation of further sale and revenue declines due to the economy. Planned reductions include delaying capital improvements, reducing overtime, and reducing operating and certain maintenance expenses. In addition to budget reductions, base rate increases for the Electric, Water, and Wastewater Systems were recommended for fiscal year 2010. The increases were approved on first reading of the ordinance. The second reading is mid-month. However, the increases were modest compared to those in the prior three years. Despite the base rate increases, electric residential customers will see a net decrease in their total bill compared to that in fiscal year 2008 due to fuel price decreases whose savings are directly passed through to customers. For most of the customers taking all of GRU's services, the electric fuel price reductions combined with natural gas purchased gas price reductions, are sufficient to overcome the water and wastewater rate increases.

To the extent that the economy is slower to recover than expected, GRU, which lacks a debt service reserve account, may be forced to draw down greater amounts of the rate stabilization fund. Fiscal year 2008 was the first year since fiscal year 2006 that GRU had a net transfer from the rate stabilization fund. Although there was a net transfer, the fiscal year 2008 balance of $63.9 million exceeds the fiscal year 2007 balance by $11 million. Further transfers are projected for fiscal years 2009 and 2010 with projected balances similar to that in 2005.

Officials have adopted a change in philosophy related to maintenance of reserves by replacing traditional funds earmarked for rate stabilization and utility plant improvement with an enterprise risk management program that reserves for categories of at-risk cash flows pursuant to a matrix. At-risk reserves (which include revenue, catastrophic events, construction and financial liability components) total $64.5 million for fiscal year 2010. GRU, which had systematically lowered reserves, is more recently attempting to strengthen reserve levels in anticipation of upcoming capital needs and to maintain adequate liquidity. Based on its reserve targets, GRU's reserve balance is over funded in 2009 and is projected to be over funded in 2010. Moody's believes that maintenance of a favorable level of liquidity is critical for electric utilities, especially in light of a lack of debt service reserve account and a potential for a substantial borrowing program.

The large General Fund transfer, dictated by a three-part formula which includes what an investor-owned utility would pay, influences retail rates and is an area of additional cost control. Because the three-year average of retail kWh delivered has been negative, the base component of the Electric System transfer will decrease for fiscal year 2010. This will be the first time that the three-year average has been negative. Officials project a transfer of $33.7 million for fiscal year 2009, which represents 9.6% of total gross revenues and almost one-third of the City's General Fund revenues. A statewide movement for property tax reform continues to develop. These measures, if adopted, could have a negative impact on city General Fund revenues. Officials have indicated that they will not seek to adjust the utility transfer formula as a result of pending property tax relief measures.

Senior debt service coverage equaled 2.37 times (X) (2.12X all debt) during fiscal year 2008. For fiscal year 2009, the senior debt service coverage ratio is expected to equal 2.08X (2.01X all debt). GRU projects lower senior debt service coverage ratios of approximately 2.0X during the period 2010 to 2013. Since 2004, senior debt service coverage has exceeded 2.25X.

CAPITAL PROGRAM:

The current six-year capital improvement program requires a total of approximately $600 million in capital

expenditures between fiscal years 2009 and 2014. Of the $600 million, $158 million has been previously borrowed, and approximately $165 million has been approved and will be covered by this bond issuer. Approximately 60% of the capital spending is for the Electric System. While historically, GRU has funded the capital program with 90% debt and 10% equity, the utility is moving to a debt-to-equity split of 60%-to-40%. Approximately, 52% of the capital improvement program is expected to be funded with debt (including this issue), 37% with equity, and the remainder from amounts in the construction fund from previous financings and accumulated cash balances. After this issue, officials anticipate issuing up to $137 million for the remainder of the program in 2011 and 2013.

In addition to the $708 million in senior debt outstanding, GRU has subordinate lien debt that comprises 9.7% ($76 million) of total debt. The subordinate lien debt consists of commercial paper notes. Approximately, 41% of the total debt outstanding is fixed rate, 46% synthetically fixed rate, 7% variable rate, and 6% synthetically fixed.

GRU has entered into seven swap agreements with four highly-rated counterparties for a total notional amount of $473.8 million. GRU is the fixed payor of six swaps and pays BMA for the seventh. The system is not required to post collateral, and cross-default provisions with specified indebtedness are in place. GRU has not received any up front payments on the transactions and termination payments are subordinate to senior lien bond payments. Mark-to-market values indicate that all swaps currently have a negative valuation.

**Outlook**

The negative outlook considers that electric rates are becoming less competitive due to expected increases and potential fuel volatility, leaving very little headroom to raise rates further. The outlook also considers the liquidity available to cover the variable rate debt, the future dependency on the rate stabilization fund over the next few years, and the weaker coverage levels over the next few years.

What Could Change the Rating - UP

The rating is unlikely to be upgraded given the negative outlook. The rating could stabilize if electric rates become more competitive and liquidity levels increase.

What Could Change the Rating - Down

The rating could face downward pressure if liquidity levels decrease and revenues drop resulting in a further decline in coverage levels.

KEY STATISTICS

FY 2008 Operations:

Sources of Power Supply: Coal, 73%; natural gas, 22%; nuclear, 4%; and oil, 1%

Net Capability (summer): 659 MW

Net Peak Demand: 457 MW

Revenue Share: Electric, 71%; natural gas, 9%; water, 8%; wastewater, 9%; and GRUCom, 3%

Debt Service Coverage (before transfers):

Senior debt: 2.37 times

All debt: 2.12 times

General Fund Transfers as % system gross revenues: 9.6%

Post Sale Bonds Outstanding:

Senior Lien: $888 million

All Debt: $950 million

ISSUER CONTACT

Jennifer Hunt, Chief Financial Officer

(352) 393-1312

The last rating action occurred on January 25, 2008, when Moody's assigned a Aa2 rating to GRU's 2008 Series A and Series B Utilities System Revenue Bonds and affirmed GRU's Aa2 rating on the then existing debt.

The principal methodology used in rating the current offering was the U.S. Public Power Utilities Methodology, published April 2008 which can be found at www.moodys.com in the Credit Policy & Methodologies directory, in the Rating Methodologies subdirectory. Other methodologies and factors that may have been considered in the process of rating this issuer can also be found in the Credit Policy & Methodologies directory.

**Analysts**

Denise Person
Analyst
Public Finance Group
Moody's Investors Service

Dan Aschenbach
Backup Analyst
Public Finance Group
Moody's Investors Service

**Contacts**

Journalists: (212) 553-0376
Research Clients: (212) 553-1653

Moody's Investors Service

**CREDIT RATINGS ARE MIS'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MIS DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. CREDIT RATINGS DO NOT CONSTITUTE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS ARE NOT RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. CREDIT RATINGS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MIS ISSUES ITS CREDIT RATINGS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.**

© Copyright 2009, Moody's Investors Service, Inc. and/or its licensors including Moody's Assurance Company, Inc. (together, "MOODY'S"). All rights reserved.

or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to, any error (negligent or otherwise) or other circumstance or contingency within or outside the control of MOODY'S or any of its directors, officers, employees or agents in connection with the procurement, collection, compilation, analysis, interpretation, communication, publication or delivery of any such information, or (b) any direct, indirect, special, consequential, compensatory or incidental damages whatsoever (including without limitation, lost profits), even if MOODY'S is advised in advance of the possibility of such damages, resulting from the use of or inability to use any such information. The credit ratings and financial reporting analysis observations, if any, constituting part of the information contained herein are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell or hold any securities. NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER. Each rating or other opinion must be weighed solely as one factor in any investment decision made by or on behalf of any user of the information contained herein, and each such user must accordingly make its own study and evaluation of each security and of each issuer and guarantor of, and each provider of credit support for, each security that it may consider purchasing, holding or selling.

MOODY'S hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MOODY'S have, prior to assignment of any rating, agreed to pay to MOODY'S for appraisal and rating services rendered by it fees ranging from $1,500 to approximately $2,400,000. Moody's Corporation (MCO) and its wholly-owned credit rating agency subsidiary, Moody's Investors Service (MIS), also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually on Moody's website at www.moodys.com under the heading "Shareholder Relations - Corporate Governance - Director and Shareholder Affiliation Policy."

**Attachment POD-8A**

J.P.Morgan

CLOSING MEMORANDUM

**City of Gainesville, Florida**
**Utilities System Revenue Bonds**
**$181,090,000**

| $24,190,000 | $156,900,000 |
|---|---|
| 2009 Series A | 2009 Series B |
| (Federally Taxable) | (Federally Taxable - Issuer Subsidy - Build America Bonds) |


**From:** Brian Middlebrook (212-272-2335; mobile: 908-578-2742)
Gary Krellenstein (212-270-7828)
Harris Kretsge (212-270-1050)
David Thorkelson (212-270-1117; mobile: 917-921-1611)


**To:** Gainesville Regional Utilities Series 2009 A&B Working Group

**Description:** Series 2009 A&B Wire Instructions

---

## PRE- CLOSING: WEDNESDAY, SEPTEMBER 23, 2009

Pre-closing details:

| | |
|---|---|
| Pre-Closing Date and Time: | Wednesday, September 23, 2009 at 2:00 PM |
| Pre-Closing Location: | Orrick, Herrington & Sutcliffe LLP<br>666 Fifth Avenue<br>New York NY 10103-0001 |
| Conference Room: | Room 23-A |
| Orrick Contacts: | Neil Wolk (212-506-5185)<br>Allison Young (212-506-5191) |

## CLOSING: THURSDAY, SEPTEMBER 24, 2009

Closing details:

| | |
|---|---|
| Closing Date and Time: | Thursday, September 24, 2009 at 9:00 AM |
| Pre-Closing Location: | Orrick, Herrington & Sutcliffe LLP<br>666 Fifth Avenue<br>New York NY 10103-0001 |
| Conference Room: | Room 23-A |
| Orrick Contacts: | Neil Wolk (212-506-5185)<br>Allison Young (212-506-5191) |

## Series 2009 A&B Sources and Uses of Funds

The following summarizes the sources and uses of funds for the Series 2009 A&B bonds.

| Series 2009 A&B Sources | |
|---|---|
| Bond Proceeds: | |
| Principal Amount of Taxable Series A and B Bonds | $181,090,000.00 |
| Total Sources | $181,090,000.00 |

| Series 2009 A&B Uses | |
|---|---|
| Uses of Funds: | |
| Deposit to Construction Fund | $179,004,682.37 |
| Cost of Issuance, including underwriters' discount | 2,085,317.63 |
| Total Uses | $181,090,000.00 |

## J.P. Morgan Wiring of Series 2009 A&B Bond Funds

On the morning of closing, J.P. Morgan Securities Inc. will wire **$179,588,857.37** in Federal Funds, representing the Series 2009A par amount of **$24,190,000.00**, less an Underwriters' discount of **$108,515.28**, and the Series 2009B par amount of **$156,900,000.00**, less an Underwriters' discount of **$1,392,627.35**, to the following account:

**SunTrust of Gainesville, Gainesville FL**

| | |
|---|---|
| Amount: | $179,588,857.37 |
| Account Name: | City of Gainesville Regional Utilities |
| Master Depository Account #: | 1000084101541 |
| ABA #: | 061000104 |
| Attention: | Linda Vaughn, 352-393-1337 |

## Release of the Series 2009 A&B Bonds

Upon approval of Bond Counsel and confirmation of the outlined wire receipts, representatives from Gainesville Regional Utilities, Bond Counsel, Trustee, and J.P. Morgan will call DTC (212-855-3752) to release the Series 2009 A&B Bonds to Account #187, closing the transaction.

Trustee Contact: Jean Clark, US Bank, 212-361-6173

**Attachment POD-8B**

MARSH

MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

September 15, 2009

# Gainesville Regional Utilities and Gainesville Regional Utilities Communication

## 2009 – 2010 Renewal Proposal

GPU
More than Energy

5

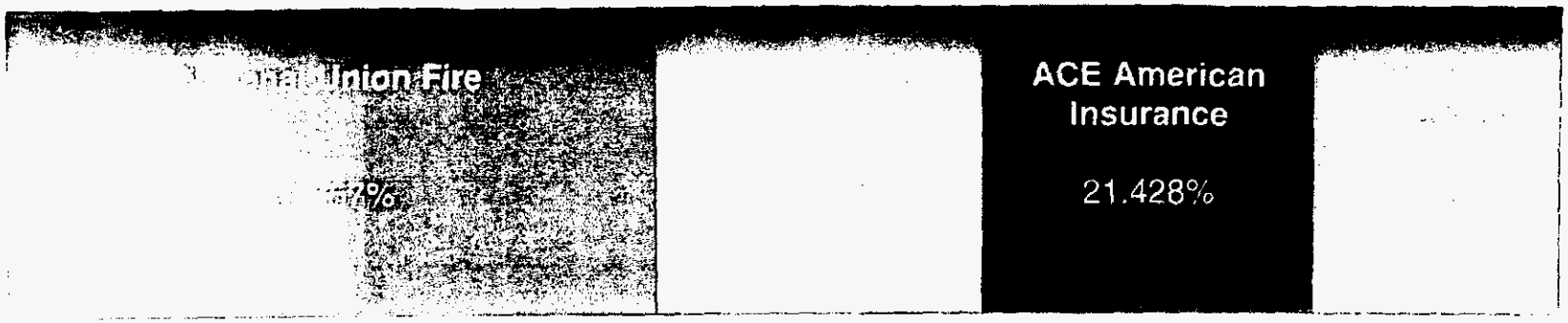
# Property / Boiler & Machinery



090451 Hearing Exhibit - 000366

# City of Gainesville
# Expiring Property Structure
# October 1, 2008 to October 1, 2009

**$350,000,000 Loss Limit**
**Program Premium: $1,154,232**




**Deductibles:**

| | |
|---|---|
| All other Perils: | $100,000 - All Non-Utility,<br>$250,000 - All Utility properties except $500,000 Deerhaven ST Generating Unit #2 and Kelly ST Generator #4,<br>$1.5/KVA or $250,000 whichever is greater as respects to Transformers |
| Flood: | Zone A - Max NFIP, whether purchased or not<br>Zone V - 2% of TIV involved in the loss subject to minimum $250K |
| Named Windstorm: | 2% of exposed TIV per affected location, except minimum $250K per occurrence, maximum $5,000,000 per occurrence |
| Transit: | $25,000 Non-Utility plant related |
| EDP: | $25,000 |

MARSH

MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

090451 Hearing Exhibit - 000367

# 5

# GRU/GREC LLC's Supplemental Response to Staff's First Request for Production of Documents (No. 1)

*Execution Version*

# POWER PURCHASE AGREEMENT FOR THE SUPPLY OF DEPENDABLE CAPACITY, ENERGY AND ENVIRONMENTAL ATTRIBUTES FROM A BIOMASS-FIRED POWER PRODUCTION FACILITY

by and between

**GAINESVILLE RENEWABLE ENERGY CENTER, LLC**

and

**THE CITY OF GAINESVILLE, FLORIDA**

d/b/a

**GAINESVILLE REGIONAL UTILITIES**

dated as of April 29, 2009

REDACTED

SUPP to POD 1

## TABLE OF CONTENTS

Page


1. GENERATION AND SALE OF PRODUCTS ..... 1

1.1 Generation and Sale of Test Power Products ..... 1
1.2 Generation and Sale of Products ..... 1

2. DELIVERY TERM ..... 1

2.1 Effective Date ..... 1
2.2 Delivery Term ..... 1
2.3 Renewal Option ..... 2
2.4 Survival ..... 2

3. CONTRACT PRICES ..... 2

3.1 Contract Prices ..... 2
3.2 Change in Law ..... 2
[redacted]

4. FUEL PROCUREMENT ..... 3

4.1 Fuel Procurement Responsibilit ..... 3
4.2 Impact on Facility Operation ..... 4
4.3 Minimum Sustainability Standa for Forest-Produced Biomass ..... 4
4.4 Fuel Specification ..... 4
4.5 Fuel Procurement [redacted] ..... 5
4.6 Forest Stewardship Ince ments ..... 6
[redacted]

5. TAXES AND FE ..... 7

5.1 Selle to Pay ..... 7
5.2 Purchase to Pay ..... 7
5.3 Co eration ..... 7
5.4 Re medies ..... 7

6. DELIVERY, TITLE, AND RISK OF LOSS ..... 7

6.1 D very ..... 7
6.2 Seller Responsibility for Delivery ..... 7
6.3 Tra fer of Title and Risk of Loss ..... 7
6.4 Seller's Covenant of Title and Freedom from Liens ..... 7
6.5 Defense of Title or Other Interests Warranted ..... 8
6.6 Purchaser's Covenant of Title and Freedom from Liens ..... 8

7. METERING ..... 8

7.1 General ..... 8
7.2 Metering Point ..... 8
7.3 Telemetering Equipment and Data Transmission Equipment ..... 8


REDACTED

**TABLE OF CONTENTS**
(continued)

**Page**


7.4 Testing and Inspection of Metering Equipment ..... 8

8. BILLING AND PAYMENT ..... 9

8.1 Billing ..... 9
8.2 Contents of Billing Statement ..... 9
8.3 Estim ated Information ..... 10
8.4 Paym ent ..... 10
8.5 Billing Disputes ..... 10
8.6 Late Payment ..... 10

9. STANDBY, SUPPLEMENTAL AND STARTUP POWER ..... 10

9.1 Standby, Supplemental and Startup Power Agreement ..... 10
9.2 Supply of Standby, Supplemental and Startup Power ..... 10

10. DISPATCH AND SCHEDULING ..... 10

10.1 Scheduling by Purchaser ..... 10
10.2 Designation of Operating Representatives ..... 10
10.3 Schedules and Forecasts ..... 11
10.4 Outages ..... 11
10.5 Good Utility Practice ..... 13

[redacted]

11. PRE-OPERATION PERIOD; COMMISSIONING AND TESTING ..... 14

11.1 Pre-Operation Period ..... 14
11.2 Commissioning and Testing ..... 14

12. OPERATIONS, MAINTENANCE AND PERFORMANCE STANDARDS ..... 14

12.1 Reasonable Efforts to Maximize Performance ..... 14
12.2 Facility Upgrades ..... 14
12.3 Operating Performance Standards ..... 14

[redacted]

12.5 Contractors ..... 15

13. PERFORMANCE SECURITY ..... 15

[redacted]

14. SCHEDULE GUARANTEES AND LIQUIDATED DAMAGES ..... 16

[redacted]

15. EXCUSE FOR PERFORMANCE ..... 17


REDACTED

**TABLE OF CONTENTS**
(continued)

Page


15.1 Force Majeure ..... 17
15.2 Purchaser Obligations ..... 17
15.3 Purchaser Delay ..... 17

16. COMPLIANCE WITH LEGAL REQUIREMENTS ..... 18

16.1 Governmental Jurisdiction and Regulatory Compliance ..... 18
16.2 Approvals, Licenses, and Permits for the Facility ..... 18
16.3 Renewable Energy Credits; Environmental Attributes ..... 18
16.4 Provision of Support ..... 18
16.5 No Contractual Zoning; No Contracting of Police Powers ..... 19

17. INDEMNIFICATION ..... 19

17.1 Seller's Indemnities ..... 19
17.2 Purchaser's Indemnity ..... 19
17.3 Defense ..... 20

18. INSURANCE ..... 20

18.1 Insurance by the Seller ..... 20
18.2 Purchaser's Approval of Insurance ..... 21
18.3 Seller's Certificates of Insurance ..... 22
18.4 Insurance by the Purchaser ..... 22
18.5 Seller and Purchaser's Insurance ..... 22
18.6 Purchaser's Certificates of Insurance ..... 22

19. REPRESENTATIONS AND WARRANTIES ..... 23

19.1 Seller's Representations and Warranties ..... 23
19.2 Purchaser's Representations and Warranties ..... 24

20. COVENANTS RELATING TO CONSTRUCTION FINANCING ..... 25

20.1 Cooperation ..... 25
20.2 Documents ..... 25
20.3 Notices ..... 26

21. ASSIGNMENT ..... 26

21.1 Assignment by Seller ..... 26
21.2 Assignment by Purchaser ..... 26
21.3 Successors and Assigns ..... 26

22. CONTRACT ADMINISTRATION, MONITORING [redacted] ..... 26

22.1 Contract Administration; Reports and Records; Meetings ..... 26
[redacted]
22.3 Access Rights ..... 27

23. NOTICE ..... 27


REDACTED

**TABLE OF CONTENTS**
(continued)

**Page**


23.1 Notices ..... 27
23.2 Receipt of Notice ..... 28
23.3 Address Changes ..... 28
23.4 Operational Notices ..... 28

24. DISPUTE RESOLUTION ..... 28

24.1 Dispute Resolution Process ..... 28
24.2 Arbitration Procedure ..... 28
24.3 Performance During Dispute ..... 29
24.4 Waiver of Jury Trial ..... 29

25. DEFAULT; TERMINATION ..... 29

25.1 Seller Events of Default ..... 29
25.2 Default by Seller ..... 30
25.3 Purchaser Events of Default ..... 31
25.4 Default by Purchaser ..... 32
25.5 Duty/Right to Mitigate ..... 32

26. LIMITATION OF LIABILITY ..... 32

26.1 Limitation on Liability ..... 32
26.2 No Implied Warranties ..... 32
26.3 No Recourse; Limited Liability ..... 33

27. PURCHASER'S OPTION TO PURCHASE FACILITY ..... 33

[redacted]

28. CHOICE OF LAW; CHOICE OF FORUM ..... 35

28.1 Applicable Law ..... 35
28.2 Choice of Forum ..... 36

29. CONTRACT DOCUMENTS; INTERPRETATION ..... 36

29.1 Schedules and Appendices ..... 36
29.2 Entire and Complete Agreement ..... 36
29.3 Independent Contractor ..... 36
29.4 Third Party Beneficiaries ..... 37
29.5 English Language ..... 37
29.6 English Units ..... 37
29.7 Gender and Plural ..... 37
29.8 Calendar Days ..... 37
29.9 Headings ..... 37
29.10 Complementary Reading ..... 37
29.11 Amendments ..... 37


REDACTED

**TABLE OF CONTENTS**
(continued)

**Page**


29.12 Severability ..... 37
29.13 Waiver ..... 37
29.14 Consideration ..... 38
29.15 Confidentiality ..... 38

Schedule I Definitions ..... i
Appendix I Facility ..... xi
Appendix II Products ..... xi
Appendix III Contract Prices ..... xv
Appendix IV Interconnection One Line Diagram ..... xvi
Appendix V Pre-Operation Period Standards ..... xvii
Appendix VI Template of Operating Procedures ..... xix
Appendix VII Standby, Supplemental and Startup Power Agreement ..... xx
Appendix VIII Sustainability Standards ..... xxvii
Appendix IX Initial Testing Standards and Operational Capacity Testing ..... xxx


REDACTED

This **POWER P URCHASE AG REEMENT FOR TH E SUPPL Y OF DE PENDABLE CAPACITY, E NERGY AND ENVIRONME NTAL ATTRIBUTES FROM A BIOMASS-FIRED POWER PRODUCTION FACILITY** (this "Agreem ent") is m ade and entered into as of April 29, 2009 (the "Effective Date"), by and among:

(1) GAINESVILLE RENEWABLE ENERGY CENTER, LLC, a Delaware Limited Liability Company ("Seller"); and

(2) THE CITY OF GAINESVILLE, FLORIDA d/b/a GAINESVILLE REGIONAL UTILITIES ("Purchaser").

RECITALS:

WHEREAS, Seller intends to build, operate and maintain a 100 M W (net) bio[illegible]-fired power production facility, located in Alachua C ounty, Florida, wh[illegible] will utilize biom[illegible]ass fuels and sell power to Purchaser; and

WHEREAS, Purchaser intends to purchase all of the [illegible]ergy product[illegible] from the facility, as well as o f the associated Enviro nmental Attr ibutes and Ca[illegible]ity At tributes, upon the te rms and conditions contained herein.

**NOW, THEREFORE**, in consideratio[illegible] of the covenant s contained herein, and for other good and valuable consideration, the receipt a[illegible]d adequacy of[illegible] which are hereby acknowledged, the parties hereto agree as follows:

1. GENERATION AND SALE OF PRODUC[illegible]

1.1 Generation and Sale of Test [illegible]Products. From tim e to tim e until th e Commercial Operation [illegible]ate, Selle[illegible] shall generate, sell and deliver the Test Power Products t[illegible]elivery [illegible]oint and P urchaser shall purchase and take delivery at the De[illegible]livery Poin[illegible]all o[illegible]the T est Power P roducts produc ed by the Facility pur[illegible]t to the term[illegible]of this Agreement.

1.2 Generatio[illegible]nd Sale of Products. Seller shall generate, sell and deliver the Products to t[illegible]e Delivery Point and P urchaser shall purchase and take delivery at the Delivery P[illegible]int of all of the Products produced by the Facility pursuant to the [illegible]rms of th[illegible]s Agreement during the Delivery Term.

2. DELIVE[illegible]TERM

2.1 Effective Date. This Ag reement shall be ef fective as of the date spe cified in the introductory paragraph hereof, provide d it has been approved by the City Commission of the City of Gainesville prior to June 5, 2009.

2.2 Delivery Te rm. This Agreem ent shall rem ain in f ull f orce and ef fect until the thirtieth (30 th) annive rsary of th e Comm ercial Operat ion Date ( the " Delivery Term").



*REDACTED*

REDACTED

2.3 Renewal Option. This Agreement may be renewed and extended for one additional five-year period by mutual agreement and written confirmation of the Parties on the same terms and conditions as are applicable during the Delivery Term. Such written confirmation by both Parties must be received and agreed to no later than one hundred twenty (120) days before the end of the Delivery Term.

2.4 Survival. Applicable provisions of this Agreement shall continue in effect after termination to the extent necessary to provide for final billings and adjustments related to the period prior to termination, provided that each Party shall make commercially reasonable efforts to complete such billings and adjustments within one (1) year of termination. Section 29.15, *Confidentiality*, shall survive the termination of this Agreement for a period of three (3) years.

3. CONTRACT PRICES

3.1 Contract Prices.

[redacted]

3.2 Change in Law.

[redacted]

REDACTED

[redacted]

[redacted]

[redacted]

[redacted]

4.2 Impact on Facility Operation. Fuel procurement shall be managed in a manner such that it shall not stop or otherwise impede the operations of the Facility.

[redacted]

4.3 Minimum Sustainability Standards for Forest-Produced Biomass. Seller and/or Purchaser, as applicable, shall use commercially reasonable efforts to ensure the Suppliers comply with the Minimum Sustainability Standards for Forest-Produced Biomass set forth in Appendix VIII, and Seller and/or Purchaser, as applicable, shall terminate contracts with Suppliers who do not comply with such standards.

4.4 Fuel Specification.

4.4.1 Seller covenants that the fuel utilized by the Facility to generate the Energy delivered to Purchaser shall consist of forest residue, waste pallets, municipal wood waste, agricultural residue, wood storm debris, whole tree chips, clean construction and demolition debris, and other clean sources of wood as well as small amounts of saw dust and fines from mill residues.

[redacted]

REDACTED



*REDACTED*

[redacted]

4.5 Fuel Procurement [redacted]

4.5.1 Seller shall hire an independent forestry consultant to conduct annual audits of Seller's compliance with the Minimum Sustainability Standards for Forest-Produced Biomass. The independent forestry consultant shall conduct inspections and visits to a randomly selected sample of harvesting sites no less than twice per calendar year.

4.5.2 Seller shall institute a documentation policy to ensure that Suppliers comply with biomass fuel supply contract terms.

4.5.3 Supply contracts for Forest-Produced Biomass fuel shall incorporate the Minimum Sustainability Standards for Forest-Produced Biomass and Suppliers shall agree to compliance with these standards.

4.5.4 Each supply contract for Forest-Produced Biomass must be signed by a professional forester representing the Supplier certifying that the professional forester has been engaged by the Supplier to ensure compliance with the Minimum Sustainability Standards for Forest-Produced Biomass and confirming the professional foresters understanding of and commitment to fulfill this responsibility.

4.5.5 Each delivered load of biomass fuel must be labeled by a unique identification number ("ID") corresponding to the supplier ID, contract ID, tract ID, crew, transport, date and time and be accompanied by a manifest signed by the harvesting foreman and driver listing such information. If possible, Seller shall seek to use electronic media to increase the accuracy of the information.

4.5.6 Seller shall record the delivery identification information.



*REDACTED*

090451 Hearing Exhibits - 000379

4.5.7 Seller shall inspec t at least ten per cent (10 %) of all deliv ered load s to assure com pliance with Parts 1.3, 1.6 and 1.7 within Appen dix VIII, th e Minimum Sustainability Standards for Forest-Produced Biomass.

4.5.8 Suppliers shall keep on f ile harvesting contracts, cutting agreem ents, and other related docum ents for each h arvested area and thes e files shall be available for inspection by Seller for a period of three (3) years following harvest.

4.5.9 Seller shall conduct sem i-annual inspecti ons of all Su liers to veri compliance with the Facility's reco rd-keeping proced and harvesti practices.

4.5.10 Seller shall reject non-complying deliveries o biomass fuel.

4.5.11 Seller shall suspend deliveries from a bi ass fu supplier f a period of no less than one (1) year if the suppli is found t in n -com pliance in three (3) separate instances with one-year per

4.6 Forest Stew ardship In centive Pay m ts.

[redacted]

REDACTED



*REDACTED*

5. TAXES AND FEES

5.1 Seller to Pay. Seller shall pay or cause to be paid all taxes, fees or governmental charges imposed by any government authority ("Taxes") on or with respect to the Products arising from the production or ownership thereof prior to the Delivery Point.

5.2 Purchaser to Pay. Purchaser shall pay or cause to be paid all Taxes on or with respect to the Products arising from the purchase, use or ownership thereof and from the Delivery Point (other than franchise or income taxes that are related to the sale of the Products to Purchaser and are, therefore, the responsibility of the Seller).

5.3 Cooperation. Seller and Purchaser shall use reasonable efforts to implement the provisions of and to administer this Agreement in accordance with the intent of the parties to minimize taxes, so long as neither Party is materially adversely affected by such efforts.

5.4 Remedies. In the event Seller is required to remit or pay Taxes that are Purchaser's responsibility hereunder, Purchaser shall promptly reimburse Seller for such Taxes. If Purchaser is required to remit or pay Taxes that are Seller's responsibility hereunder, Purchaser may deduct the amount of any such Taxes from any sums due to Seller. Nothing shall obligate or cause a Party to pay or be liable to pay any Taxes for which it is exempt under the law.

6. DELIVERY, TITLE, AND RISK OF LOSS

6.1 Delivery. Seller shall deliver Products to the Delivery Point.

6.2 Seller Responsibility for Delivery. Seller shall bear all costs of delivery, including insurance, and all risk of loss with respect to Products until they have been delivered to the Delivery Point.

6.3 Transfer of Title and Risk of Loss. Purchaser shall take title to the Products and to the same extent Seller shall be deemed to have conveyed one hundred percent (100%) of its right, title and interest therein to Purchaser, when the Products are delivered to the Delivery Point. Purchaser shall bear all risk of loss to the Products from and after delivery of the Products at the Delivery Point. Purchaser shall be responsible for all transmission arrangements and all costs associated therewith necessary to transmit the Energy purchased hereunder from and after the Delivery Point.

6.4 Seller's Covenant of Title and Freedom from Liens. Seller covenants to Purchaser that title to all Products shall pass to Purchaser free and clear of all liens, claims, security interests or encumbrances.



*REDACTED*

090451 Hearing Exhibits - 000381

6.5 Defense of Title or Other Interests Warranted. At its own expense, Seller shall defend all claims by third parties against Seller's title or other proprietary interests of Seller in the Products up to the point at which title passes to the Purchaser.

6.6 Purchaser's Covenant of Title and Freedom from Liens. Purchaser covenants that title to all payment shall pass to Seller free and clear of all liens, claims, security interests or encumbrances.

## 7. METERING

7.1 General. The Purchaser shall design, approve, furnish, install, own, inspect, test, maintain and replace when necessary, all Metering Equipment. The Metering Equipment shall be capable, at a minimum, of providing all data necessary to determine the megawatt hours of Energy delivered during each 15-minute interval period and the total megawatt hours of Energy delivered during each Billing Period. The metering devices shall account only for MWh delivered to the Delivery Point and the Seller shall not be compensated for any MWh losses realized due to energy transformation or transmission from the Seller's Facility to the Delivery Point. The Seller shall have regular access, by mutually agreeable means, to the metered data necessary for the Seller to prepare Billing Statements, as defined below in Section 8, and for other reasonable purposes associated with the Facility's operation and maintenance.

7.2 Metering Point. Metering shall be performed at the Delivery Point.

7.3 Telemetering Equipment and Data Transmission Equipment. The Purchaser shall design, approve, furnish, install, own, inspect, test, maintain and replace when necessary, such telemetering equipment and data transmission equipment as Purchaser may reasonably require to transmit such data to its Systems Control Center.

7.4 Testing and Inspection of Metering Equipment.

7.4.1 The Purchaser shall maintain the accuracy of all Metering Equipment installed pursuant to the Interconnection Agreement by regular testing and calibration in accordance with recognized standards (*e.g.*, ANSI C12.1 – 2008). The Purchaser shall test the Metering Equipment for accuracy at least annually and may test the equipment on a more frequent basis if so desired. The Seller may request a test of the Metering Equipment for accuracy at any time. The Seller shall bear the cost of any test it requests of the Metering Equipment should the accuracy be found to be within the accuracy parameters stated below. Any meter tested in accordance with recognized standards and found to register within one percent (1%) accuracy, whether above or below the accurate value per the tests, shall be considered correct and accurate. If any of the inspections or tests disclose an error exceeding one percent (1%), either fast or slow, the Purchaser shall promptly repair, recalibrate or replace the Metering Equipment.



REDACTED

090451 Hearing Exhibits - 000382

7.4.2 A discovered m etering inaccuracy rate sh all be docum ented and used to adjust prev ious readin gs. The affected Billing Period invoice an d associated payment shall be ad justed as necessary by th e corrected MWh reading for the actual period dur ing which the Metering Equipm ent rendered inaccurate measurements if such period can be ascertained. If the actual period cannot be ascertained, an adjustm ent shall be m ade to the measurements taken during the tim e the Meter ing Equipm ent was in service since last tested, but not ex ceeding three (3) Billing Periods. Th e results of all Metering Equipm ent te sting and ca libration sh be maintained for a period of three (3) years and shall be o n to examina n by Seller at reasonable times upon written notice to Purch r.

8. BILLING AND PAYMENT

8.1 Billing. Seller shall prepare and subm it a statem ent ("Billing Statement") for each Billing Period within ten (10) Business Days follow the end of the Billing Period; *provided, however*, that the Purchas shall n evert less be ob ligated to pay any amount properly billed without r ga to whether th Billing S tatement was provided within such time period.

8.2 Contents of Billing State ment. The Billing State ment shall contain th e following information for the Billing Peri d:

[redacted]

REDACTED

8.3 Estimated Information. [redacted]

8.4 Payment. [redacted]

8.5 Billing Disputes. [redacted]

8.6 Late Payment. Any amounts not paid to Seller when due shall bear interest at the Late Payment Rate from the due date to the date of payment.

9. STANDBY, SUPPLEMENTAL AND STARTUP POWER

9.1 Standby, Supplemental and Startup Power Agreement. Prior to the Commercial Operation Date, Purchaser and Buyer shall enter into a Standby, Supplemental and Startup Power Agreement in substantially the form set forth in Appendix VII.

9.2 Supply of Standby, Supplemental and Startup Power. Purchaser shall supply electricity to Seller for the Facility's standby, supplemental and startup load according to the Standby, Supplemental and Startup Power Agreement for so long as that Standby, Supplemental and Startup Power Agreement shall remain in effect.

10. DISPATCH AND SCHEDULING

10.1 Scheduling by Purchaser. After the Commercial Operation Date, Purchaser shall be responsible for scheduling the Facility's daily production in accordance with the written operating procedures to be developed in accordance with Part 1.3 of Appendix V.

10.2 Designation of Operating Representatives.



*REDACTED*

090451 Hearing Exhibits - 000384

10.2.1 Purchaser shall notify Seller of its designated Schedulers. Seller shall notify Purchaser of its designated Operators. The Schedulers and Operators so designated shall be authorized to administer the terms of this Section 10. Each Party shall notify the other of any changes to their respective operating representatives.

10.2.2 Each Party shall maintain a twenty-four-hour telephone number that can be used to contact operating representatives designated under this Section 10, and shall notify the other of any changes to the telephone numbers.

10.3 Schedules and Forecasts. Seller shall provide such schedules and forecasts as Purchaser may reasonably request from time to time, including:

10.3.1 At least thirty (30) days prior to the production of Test Power Products.

10.3.2 At least sixty (60) days prior to (i) the Commercial Operation Date and (ii) the beginning of each calendar year, Seller shall provide to Purchaser Seller's generation forecast for the upcoming calendar year, which forecast shall be consistent with the schedule of Planned Maintenance for such calendar year established pursuant to Section 10.4.

10.3.3 Each month on or before the twentieth (20th) day of such month, Seller shall provide or cause to be provided to the Scheduler Seller's generation forecast for the following month, any planned events or activities which could have a material effect on Seller's generation forecast, and the start and finish dates and times of such planned events or activities. Seller shall give, or shall cause to be given, prompt notice to the Scheduler of any planned deviation in such forecast.

10.3.4 Each day on or before 8:00 a.m. EPT, Seller shall provide or cause to be provided to the Scheduler Seller's generation schedule for the next day in hourly scheduling intervals, any planned events or activities which could reasonably have a material effect on Seller's generation schedule, the start and finish dates and times of such planned events or activities, and the actual quantity of Energy delivered during the previous forecast period in hourly scheduling intervals. Seller shall promptly notify the Scheduler of any planned deviation in such schedule.

10.3.5 The details of the forecasts and schedules specified above shall be coordinated by the Parties cooperating in good faith. Seller shall utilize Good Utility Practice in developing and preparing the forecasts and schedules.

10.4 Outages.

10.4.1 Planned Maintenance.

REDACTED

(a) Seller shall subm it a written annua l m aintenance plan containing its forecast of Planned Maintenance for th e co ming year n o later than sixty (60) days prior to the Commercial Operation Date an d the start of each calen dar year. Any and all changes to such plan shall be mutually agreeable to Seller, Purchaser, and to FRCC and promptly comm unicated to P urchaser in writing as soon as practicable.

(b) Not less than seven (7) days prio r to any Planned Maintenance, Seller shall notify the Scheduler of the timing, expected duration and the impact upon the quantity of Energy to be delivered to Purchase r. Prior to reducing the quantity of Energy to be delivered to Pu rchaser because of Planned Maintenance, Seller shall notify the Scheduler of the latest information regarding the timing, the rate at which the Fac ility will be rem oved, or ram ped down, f r service e, expected du ration and the expected im pact upon the quantity of Energy to be delivered. D uring the P lanned Maintenance, Seller shall notify the Scheduler of any changes to the expected duration of the Planned Maintenance outage as soon as practicable.

(c) Seller shall notify the Scheduler prior to beginning the startup process for the Facility followin g a Plann ed M ain tenance outag e. Such notification shall in clude the tim ing of the start-up and th e rate a t which the Facility will be returned, or ram ped up, to service.

(d) Seller shall work with Purchaser to schedule Planned Maintenance in a manner that minimizes the economic cost to Purchaser of such outages. Seller and Purchaser shall comply with FRCC operating procedures regarding any such *Planned Maintenance.*

10.4.2 Maintenance Outage.

(a) Upon the occurrence of an even t necessitating a Maintenance Outage, Seller shall notify the Schedule r of the reason, tim ing, expected duration, the im pact upon the quantity of Energy to be delivered to Purchaser, and the scheduling flexibility of each Maintenance Outage. The Scheduler and Seller shall agree upon a schedule for the Maintenance Outage, which schedule shall minimize the impact upon Facility operati ons. If the Scheduler and Seller cannot agree, Seller shall schedule the Ma intenance Outage and give the Scheduler prior notice of such schedule. Unless otherw ise agreed to by Seller and S cheduler, Seller shall use reaso nable ef forts to conf ine all Ma intenance Ou tages to weekends, holidays, and, to the extent necessary, non-holiday weekdays other than between the hours of 7 a.m. to 10 a.m. and 4 p.m. to 7 p.m. EPT.

(b) During the Maintenance Outage, Seller shall notify the Scheduler of any changes to the expected duration of the outage as they become known.

(c) Seller sha ll not begin th e sta rtup p rocess to re turn the Fa cility to service following a ful l or partial s hutdown without prior notice to Scheduler.



*REDACTED*

REDACTED

Such notification shall include the timing of the start-up and the ramp up rate of that portion of the Facility returning to service.

(d) Seller shall work with Purchaser, when practical, to minimize the economic cost to Purchaser of any Maintenance Outages.

10.4.3 Forced Outage.

(a) As soon as practicable after the occurrence of a Forced Outage, Seller shall notify the Scheduler, to the extent information is available, of the reason for, the timing of, and the impact upon the quantity of Energy delivered to Purchaser of such outage. Seller shall provide a good faith estimate of the duration of the Forced Outage.

(b) During an extended Forced Outage, Seller shall notify the Scheduler of any changes to the expected duration of the outage as they become known.

(c) Seller shall notify the Scheduler prior to returning the Facility to service following a Forced Outage. Such notification shall include the timing of the start-up and the ramp up rate of that portion of the Facility returning to service. If Seller is able to initiate an immediate restart following a Forced Outage, Seller shall notify Scheduler of the foregoing information as soon as practicable. If Purchaser has entered into a contract to purchase capacity or energy to offset the lost capacity and/or production of the Facility during the Forced Outage, then Seller shall not return the Facility to service prior to the end of the estimated duration of the Forced Outage provided under clause (a) directly above.

(d) Seller shall work with Purchaser, when practical and in compliance with Good Utility Practice, to minimize the economic cost to Purchaser of any Forced Outages.

10.4.4 Outage Reports.

Purchaser may from time-to-time request, and Seller shall provide, a report of the cause of any Facility outage and the actions taken by Seller to correct the situation.

10.5 Good Utility Practice. Purchaser may dispatch and schedule the Facility subject to the standards set forth in this Section 10 and shall use reasonable efforts to dispatch and schedule the Facility in a manner that is consistent with Good Utility Practice.

[redacted]



*REDACTED*

090451 Hearing Exhibits - 000387

[redacted]

11. PRE-OPERATION PERIOD; COMMISSIONING AND TESTING

11.1 Pre-Operation Period. Prior to the Commercial Operation Date, Seller shall comply with the pre-operation period requirements set forth in Appendix V.

11.2 Commissioning and Testing. Seller shall commission and test the Facility in accordance with the requirements set forth in Appendix IX.

12. OPERATIONS, MAINTENANCE AND PERFORMANCE STANDARDS

12.1 Reasonable Efforts to Maximize Performance. Subject to the terms of this Agreement, Seller shall use commercially reasonable efforts consistent with Good Utility Practice to operate the Facility in a manner that maximizes the Products generated by the Facility over the Delivery Term.

12.2 Facility Upgrades. Seller, in its sole discretion may sell or otherwise dispose of any machinery, equipment, or other personal property constituting part of the Facility that Seller determines has become inadequate, obsolete, worn out, unsuitable, or unnecessary, provided that substitute property having equal or greater utility but not necessarily the same function in the operation of the Facility in producing and delivering the Products is installed in the Facility and such removal and substitution would not materially impair the efficiency of operation of the Facility, adversely affect the structural integrity or electrical output of the Facility, or change the nature of the Facility to the extent that it would no longer constitute the type of electricity generating facility operated prior to such replacement.

12.3 Operating Performance Standards.

[redacted]



*REDACTED*

090451 Hearing Exhibits - 000388

[redacted]

12.5 Subcontractors. Seller shall operate the Facility in accordance with this Section 12. Seller may use its own employees or subcontractors may be used to perform the operation and maintenance services on the Facility.

[redacted]

13. PERFORMANCE SECURITY

[redacted]



*REDACTED*

090451 Hearing Exhibits - 000389

[redacted]

SCHEDULE GUARANTEES AND LIQUIDATED DAMAGES

[redacted]



*REDACTED*

[redacted]

15. EXCUSE FOR PERFORMANCE

15.1 Force Majeure. Seller shall not have any liability or be considered to be in breach or default of its obligations under this Agreement to the extent that performance of such obligation is delayed or prevented, directly or indirectly due to Force Majeure, and may suspend its construction or operation of the Facility upon the occurrence and during the continuance of any event constituting a Force Majeure, and may have the Guaranteed Construction Commencement Date and Guaranteed Commercial Operation Date extended by a period equal to the time lost by reason of such Force Majeure, plus such additional time as may be reasonably necessary to overcome the effect of such Force Majeure (including without limitation the time required for any resultant demobilization and remobilization), provided that (i) within a reasonable time after Seller has knowledge of the commencement of such event of Force Majeure and again within a reasonable time after resumption of the Work after such suspension occurs, Seller shall submit a notice to Purchaser describing in detail the event of Force Majeure, the effect thereof on the Facility, the length of delay and the measures taken or to be taken to minimize such delay, (ii) Seller uses commercially reasonable efforts to remedy its inability to construct or operate the Facility and to minimize delay caused by such event of Force Majeure, (iii) Seller promptly resumes its performance at the cessation of the event, and (iv) such event of Force Majeure does not cause a suspension of construction greater than 48 continuous hours. Seller shall continue to perform its obligations under this Agreement so far as commercially practical and shall seek all reasonable alternative means for performance not prevented by Force Majeure. Seller shall notify Purchaser in writing of all actions Seller proposes to take, including any alternative means for performance not prevented by the event of Force Majeure.

15.2 Purchaser Obligations. Purchaser shall not be obligated to purchase Products that cannot be delivered due to disruptions, breakdowns, electrical system failures and/or mechanical failures, maintenance or repair, including, for reasons of Force Majeure, to the Facility, prior to the Delivery Point or outside of Purchaser's System. However, Purchaser shall be obligated to purchase Products delivered to the Delivery Point, or that cannot be delivered due to disruptions, breakdowns, electrical system failures and/or mechanical failures, maintenance or repair of Purchaser's System.

15.3 Purchaser Delay. Seller shall not have any liability or be considered to be in breach or default of its obligations under this Agreement to the extent that performance of such obligation is delayed or prevented, directly or indirectly, by acts or omissions of Purchaser (a "Purchaser Delay"). Seller may suspend its construction or operation of the Facility upon the occurrence and during the continuance of any event constituting a Purchaser Delay, and may have the



*REDACTED*

090451 Hearing Exhibits - 000391

Guaranteed Construction Commencement Date and the Guaranteed Commercial Operation Date extended by a period equal to the time lost by reason of such Purchaser Delay, plus such additional time as may be reasonably necessary to overcome the effect of such Purchaser Delay (*including* without limitation the time required for any resultant demobilization and remobilization), provided that (i) within a reasonable time after Seller has knowledge of the commencement of such event of Purchaser Delay and again within a reasonable time after resumption of the Work after such suspension occurs, Seller submits a notice to Purchaser describing in detail the event of Purchaser Delay, the effect thereof on the Facility, the length of delay and the measures taken or to be taken to minimize such delay, (ii) Seller uses commercially reasonable efforts to remedy its inability to construct or operate the Facility and to minimize delay caused by such event of Purchaser Delay, and (iii) Seller promptly resumes its performance at the cessation of the event. Seller shall continue to perform its obligations under this Agreement so far as reasonably practical and shall seek commercially reasonable alternative means for performance not prevented by Purchaser Delay. Seller shall advise Purchaser in writing of all actions Seller proposes to take, including any alternative means for performance not prevented by the event of Purchaser Delay.

16. COMPLIANCE WITH LEGAL REQUIREMENTS

16.1 Governmental Jurisdiction and Regulatory Compliance. Each Party shall at all times comply with all applicable laws, ordinances, rules, and regulations applicable to it, including, but not limited to, the anti-discrimination provisions of the City of Gainesville, Code of Ordinances. As applicable, each Party shall give all required notices, shall procure and maintain all necessary governmental permits, licenses, and inspections necessary for performance of this Agreement, and shall pay its respective charges and fees in connection therewith.

16.2 Approvals, Licenses and Permits for the Facility. Except for the Determination of Need by the Florida Public Service Commission, which Purchaser shall obtain, Seller shall obtain at its own expense all approvals, licenses and permits required by all federal, state and local governmental agencies for construction, testing and operation of the Facility.

16.3 Renewable Energy Credits; Environmental Attributes. Seller shall be responsible for applying for all regulatory or other approvals necessary for the output of the Facility to qualify in the State of Florida for Renewable Energy Credits as defined under applicable federal and state rules; *provided, however*, that Purchaser shall provide such assistance at its own expense as Seller shall reasonably request. Purchaser shall be responsible for applying for all regulatory or other approvals necessary for the output of the Facility to qualify for any Environmental Attribute; *provided, however*, that Seller shall provide such assistance at its own expense as Purchaser shall reasonably request.

16.4 Provision of Support. Seller shall make available, upon Purchaser's reasonable request, any personnel of Seller and any records relating to the Facility to the



*REDACTED*

REDACTED

extent that Purchaser requires the same in order to fulfill any regulatory reporting requirements, or to assist Purchaser in litigation, including, but not limited to, proceedings before utility regulatory commissions. Purchaser shall make available, upon Seller's reasonable request, any personnel of Purchaser and any records relating to the Facility to the extent that Seller requires the same in order to fulfill any regulatory reporting requirements, or to assist Seller in litigation, including, but not limited to, proceedings before utility regulatory commissions.

16.5 No Contractual Zoning; No Contracting of Police Powers. The Parties recognize that Purchaser is also the government entity that is vested with the authority to grant or deny certain development approvals, including but not limited to, land use and zoning changes, subdivision plats, development plan approval, and building permits. The Parties agree that nothing contained in this Agreement shall be interpreted or construed as an approval, waiver or agreement to approve or waive any development plan, development permit, rezoning, comprehensive plan amendment or any other governmental requirement for Seller's intended use and occupancy of the Premises. Nothing contained in this Agreement shall be interpreted or construed as contracting away the exercise of the police powers of the Purchaser.

17. INDEMNIFICATION

17.1 Seller's Indemnities. Seller agrees to indemnify Purchaser and its affiliates and principals, and the managers, officers, agents and employees of each of them from and against any and all damages, costs, claims, expenses and liabilities (including, without limitation, reasonable attorneys fees) resulting from, or arising out of or in any way connected with, the facilities on Seller's side of the Delivery Point, or Seller's operation and/or maintenance of the Facility, including without limitation any loss, claim, action or suit, for or on account of injury, bodily or otherwise, to, or death of, persons, excepting only such loss, claim, action or suit as may be caused solely by the willful misconduct or negligence of Purchaser, officers, employees, agents or representatives.

17.2 Purchaser's Indemnity. Purchaser hereby agrees to indemnify Seller and its affiliates and principals, and the managers, members, stockholders, directors, officers, agents and employees of each of them (the "Seller Indemnified Parties") for claims brought against the Seller Indemnified Parties only to the extent that they are found to result from the sole negligence of Purchaser, its governing body, or its employees. This indemnification shall not be construed to be an indemnification for the acts, or omissions of third parties, independent contractors or third party agents of the Purchaser. This indemnification shall not be construed as a waiver of Purchaser's sovereign immunity, and shall be interpreted as limited to only such traditional liabilities for which Purchaser could be liable under the common law interpreting the limited waiver of sovereign immunity. An action may not be instituted on a claim against Purchaser unless the claimant presents the claim in writing to Purchaser's risk manager within three (3) years after such claim accrues or Purchaser's risk manager denies the claim in writing. For



REDACTED

090451 Hearing Exhibits - 000393

purposes of this paragraph, the requirements of notice to Purchaser's risk manager and denial of the claim are conditions precedent to maintaining an action but shall not be deemed to be elem ents of the cause of action and shall not affect the date on which the cause of action accru es. No twithstanding any other provisions of this paragraph, the value of this indemnification is limited to the maximum sum of [redacted] as the result of all claim s and judgments arising out of the sam e incident or occurren ce, not to exceed the sum of [redacted] for any claim or judgm ent or portions thereof. In addition, this inde mnification shall be construed to l it recovery by the indem nified party agai nst Purchaser to only those dam es caused by Purchaser's sole negligence, and shall specifically exclude an y attorney's fees or costs associated therewith.

17.3 Defense. When required to indemnify a Pe rson pursuant to this Sectio 17, Purchaser or Seller, as applicable, sha ll assume and conduct with du e diligence and in good faith the defense of any such suit against such party, whether it shall be joined therein ; *provided, however*, that without relievi the Purchaser or Seller of its obligations hereunder, su ch indemnified Perso m ay elect to participate, at its own expense, in the defense of a such suit.

## 18. INSURANCE

18.1 Insurance by the Se ller. The Seller shall m aintain in full force and effect a t all times within ten (10) days af th e Construction Commencem ent Date and continuing until the Term ination Date, insurance po licies with insuranc e companies authorized to business in the State of Florida with a Best Insurance Reports rating of "A-" or bet and a financial size category of "IX" or higher (or other companies acceptable to the Purchaser), with limits and coverage provisions in no event less than the limits and coverage provisions set forth below:

18.1.1 Builder's All Risk Property : Builder's All Risk Property insur ance providing co verage in an am ount at least equal to the full replacem ent value of th e Facility against "all ri sks" of physical los s or dam age, including coverage for earth m ovement, flood and boiler and m achinery and providing delayed start up coverage in an amount at least equal to one year de lay. The Build er's All Ri sk Property insurance m ay contain separate su b-limits an d deductibles subject to insurance com pany underwriting guidelines. The Builder's All Risk Property insurance shall be m aintained in acco rdance with th e term s availab le in the insuran ce market for sim ilar facilities. The Builde r's All Risk Property insu rance shall terminate at the Commercial Operation Date.

18.1.2 All Risk Property : From the Comm ercial Op eration Date through the Termination Date, All Risk Property insurance providing coverage in an amount at least equal to the full repl acement value of the Facility against "all risks" of physical loss or da mage, including coverage for earth movement, flood and boiler and m achinery. The All Risk Property



*REDACTED*

090451 Hearing Exhibits - 000394

insurance may contain separate sub-limits and deductibles subject to insurance company underwriting guidelines. The All Risk Property insurance shall be maintained in accordance with the terms available in the insurance market for similar facilities.

18.1.3 Workers' Compensation Insurance: Workers' compensation insurance as required by state laws.

18.1.4 Employer's Liability Insurance: Employer's liability insurance [redacted] all employees of the Seller in the amount of [redacted] per occurrence.

18.1.5 General Liability Insurance: Liability insurance against claims of personal injury (including bodily injury and death) and property damage. Such insurance shall provide coverage for products completed operations, blanket contractual, explosion, collapse and underground coverage, broad form property damage and personal injury insurance with a [redacted] limit per occurrence.

18.1.6 Automobile Liability Insurance: Automobile liability insurance against claims of personal injury (including bodily injury and death) and property damage covering all owned (if any), leased, non-owned and hired vehicles used in the performance of the Seller's obligations under this Agreement with [redacted] minimum limit per occurrence for combined bodily injury and property damage and containing appropriate no-fault insurance provisions wherever applicable.

18.1.7 The amounts of insurance required in the foregoing subsections 18.1.4 and 18.1.5 may be satisfied by the Seller purchasing coverage in the amounts specified or by any combination thereof, so long as the total amount of insurance meets the requirements specified above.

18.1.8 Casualty. In the event that any building constructed on the Premises is damaged or destroyed by fire or other casualty and, as a result of such event, such building's remaining useful life is determined to be equal to or greater than fifty percent (50%) of its remaining useful life prior to such event, Seller shall restore or reconstruct such building so damaged or destroyed. However, if such building's remaining useful life is determined to be less than fifty percent (50%) of its remaining useful life prior to such event, Seller shall have no obligation to restore or reconstruct such building so damaged or destroyed; provided however this does not relieve Seller from its other obligations under this Agreement.

18.2 Purchaser's Approval of Insurance. On or before the Construction Commencement Date, Seller shall obtain the approval of Purchaser (which approval shall not be unreasonably withheld) of the insurers with which the insurance referred to in this Section 18 shall be maintained. Thereafter, Seller



REDACTED

090451 Hearing Exhibits - 000395

shall provide that no cancellation or material change thereof shall be effective until at least thirty (30) days after being mailed to Purchaser and shall notify Purchaser in writing at least thirty (30) days before obtaining coverage from any additional insurer or new insurer, and Purchaser shall have the right to approve (which approval shall not be unreasonably withheld) any such additional or new insurer.

18.3 Seller's Certificates of Insurance. Certificates of insurance in a form reasonably satisfactory to Purchaser shall be furnished by Seller to Purchaser on or before the Construction Commencement Date.

18.4 Insurance by the Purchaser. Purchaser shall maintain in full force and effect at all times within ten (10) days after the Construction Commencement Date and continuing until the Termination Date, insurance policies with insurance companies authorized to do business in the State of Florida with a Best Insurance Reports rating of "A-" or better and a financial size category of "IX" or higher (or other companies acceptable to the Seller), with limits and coverage provisions in no event less than the limits and coverage provisions set forth below:

18.4.1 Workers' Compensation Insurance: Workers' compensation insurance as required by state laws.

18.4.2 Employer's Liability Insurance: Employer's liability insurance for all employees of Purchaser in the amount of [redacted] per occurrence.

18.4.3 General Liability Insurance: Liability insurance against claims for personal injury (including bodily injury and death) and property damage. Such insurance shall provide coverage for products completed operations, blanket contractual explosion, collapse and underground coverage, broad form property damage and personal injury insurance with a [redacted] limit per occurrence.

18.4.4 The amounts of insurance required in the foregoing subsections 18.4.2 and 18.4.3 may be satisfied by the Purchaser purchasing coverage in the amounts specified or by any combination thereof, so long as the total amount of insurance meets the requirements specified above.

18.5 Seller and Purchaser's Insurance. On or before the Construction Commencement Date, Purchaser shall notify Seller in writing of the insurers with which the insurance referred to in this Section 18 shall be maintained. Thereafter, Purchaser shall notify Seller in writing at least thirty (30) days before obtaining coverage from any additional insurer or new insurer, or a cancellation or material change occurs with respect to Purchaser's insurance during the Delivery Term.

18.6 Purchaser's Certificates of Insurance. Certificates of insurance in a form reasonably satisfactory to Seller shall be furnished by Purchaser to Seller on or before the Construction Commencement Date.



090451 Hearing Exhibits - 000396

## 19. REPRESENTATIONS AND WARRANTIES

### 19.1 Seller's Representations and Warranties.

19.1.1 Organization. Seller represents and warrants to Purchaser that Seller is duly organized and validly existing under the laws of the State of Delaware and that Seller is qualified to do business in the State of Florida.

19.1.2 Power and Authority. Seller represents and warrants to Purchaser that Seller has the requisite limited liability company power and authority to enter into this Agreement and to perform according to the terms of this Agreement.

19.1.3 Duly Authorized. Seller represents and warrants to Purchaser that the execution, delivery and performance of this Agreement by Seller has been duly authorized by all requisite corporate action.

19.1.4 Duly Executed. Seller represents and warrants to Purchaser that this Agreement has been duly executed and delivered by Seller and constitutes the legal, valid and binding obligation of Seller, enforceable against it in accordance with the terms hereof, subject, as to enforceability of remedies, to limitations imposed by bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting the enforcement of creditor's rights generally and to general principles of equity.

19.1.5 No Breach of Existing Indebtedness. Seller represents and warrants to Purchaser that the execution and delivery of this Agreement does not contravene any provision of or constitute a default under, any indenture, mortgage, or other material agreement binding on Seller or any valid order of any court or any regulatory agency or other body having authority to which Seller is subject.

19.1.6 No Breach of Law. Seller represents and warrants to Purchaser that none of the execution, delivery and performance by Seller of this Agreement, the compliance with the terms and provisions hereof, and the carrying out of the transactions contemplated hereby, conflicts or will conflict with or result in a breach or violation of its operating agreement or any of the terms, conditions, or provisions of any law, governmental rule or regulation or any applicable order, writ, injunction, judgment or decree of any Governmental Authority against Seller.

19.1.7 No Governmental Authorization Needed. Seller represents and warrants to Purchaser that no authorization, consent, approval, order of, notice to or registration, qualification, declaration or filing with, any Governmental Authority, is required for the execution, delivery and performance by Seller of this Agreement or the carrying out by Seller of the transactions contemplated hereby, other than regulatory and similar approvals and permits needed with respect to the construction and operation of the



*REDACTED*

REDACTED

Facility or f or certif ication or oth er recogn ition of the RECs or other Environmental Attributes.

19.1.8 Judgments, Lawsuits, Actions or Proceedin gs. Seller repres ents and warrants to Purchaser th at there are, to the best of Se ller's knowledge, no judgments, lawsuits, actions or pr oceedings, pending or threatened, whether involving a governmental authority or private party, against Seller (or any m ember entities), that, if decided adverse ly agai nst Seller (or any member entity), would p revent it fr om fulfilling its ob ligations he reunder or under this Agreement.

19.1.9 Financial C ondition. Se ller r epresents and warr ants to Pur chaser tha t no financial event has occurred and no f inancial co ndition exists that has had a Material Adverse Change.

19.2 Purchaser's Representations and Warranties.

19.2.1 Organization. Purchaser represents and warrants to Seller that Purchaser is duly organized and validly existing under the laws of the State of Florida.

19.2.2 Power and Authority . Purchaser represents and warrants to Seller that Purchaser h as th e r equisite powe r and auth ority to en ter into th is Agreement and to perform according to the terms of this Agreement.

19.2.3 Duly Authorized . Purch aser represe nts and wa rrants to Se ller tha t th e execution, de livery and perfor mance of this Agr eement by Purchaser have been duly auth orized by all requisite governmental action.

19.2.4 Duly Executed . Purcha ser rep resents and warrants to S eller tha t this Agreement has be en duly executed and delivered by Purchaser and constitutes the lega l, valid an d binding obligation of Purchaser, enforceable against it in accordan ce w ith the term s hereof, subject, as to enforceabilit y of rem edies, to limitations imposed by bankruptcy, ins olvency, reorganization, moratorium or other similar laws relating to or affecting the e nforcement of cred itor's righ ts genera lly and to general principles of equity.

19.2.5 No Breach of Existing Indebtedness . Purchaser represents and warrants to Seller that the execu tion and d elivery of this Agree ment does not contravene any provisio n of, or constitu te a default under, any indenture, mortgage, or other m aterial agreement binding on Purchaser or any valid order of any court, or any regula tory agency or other body having authority to which Purchaser is subject.

19.2.6 No Breach of Law . Purchaser represents and warrants to Seller that none of the execution, delivery and perform ance by Purchaser of this Agreement, the com pliance with the terms and provisions hereof, and the carrying out of the trans actions contem plated hereby, conflicts or will



REDACTED

090451 Hearing Exhibits - 000398

conflict with or result in a breach or violation of Purchaser's charter or any of the term s, conditions, or provision s of any la w, governmental rule or regulation or any applicab le order, writ, injuncti on, judgment or decree of any Governmental Authority against Purchaser.

19.2.7 No Governm ental Authorization Needed . Purchaser represents and warrants to Seller that no authorization, consent, approval, order of, notice to or reg istration, q ualification, declaratio n or filin g with any Governmental Authority, is required for the execution, deli ery and performance by Purchaser of this Agree ment or the c rrying out by Purchaser of the transactions contempl ated hereby, other than approval by the City Co mmission of the City of Gainesville, Florida, and regulato y approvals and perm its under applicable federal, state and loca laws and regulations needed with respect to the operat n of the facility, i uding, but not limited to the certificate o f need det i ination by the Florida Public Service Comm ission and envir enta rm its is ued by the Florida Departm ent of Environmen tal Protection. urchaser further represents and warrants that (i) it has c plied or will om ply in a timely fashion with all com petitive bidding, pub notice, election, referendum , prior appropriation or other procedures requ d to be followed or taken by it under any applicable l v and all relevant co titutional, organic or other governing docum ents, (ii) entry into and perform ance of this Agreem ent by it are for a proper pu c purpose with in the meaning of any applicable law and all relevant cons tional, or nic or oth er governing documents, and (iii) the t m of this Agr oes not extend beyond any applicable limitation imp by any law or other re levant constitutional, organic or other governing docu

19.2.8 Jud ts, Laws its, Actions or Proceedings . Purchaser represents and warrants t eller that there are, to the best of Purchaser's knowledge, no judgments, l suits, actions or pr oceedings, pending or threatened, whether invo ing a governm ental au thority or private party, against Pu haser (or any m ember entities), that, if decided adversely against Purch er (or any m ember entity ), would prevent it f rom f ulfilling its obligat ns hereunder or under this Agreement.

## 20 COVE NTS RELATING TO CONSTRUCTION FINANCING

20.1 Coo eration. Purchaser recognizes that Seller ma y seek to obtain debt financing for the Facility and Purchaser hereby agrees to cooperate reasonably with Seller's efforts to secure such financing, and to provide Seller and its lenders on a tim ely basis with such consents and related docum ents, as are reasonably requested by the lenders and reasonably acceptable to Purchaser.

20.2 Documents. Purchaser s hall prov ide, execute an d deliver to Selle r, or at Seller 's request, to Lender, such documents, cert ificates, ins truments, co nsents and information as shall be within the c ontrol of Purchaser to provide and as Seller or



REDACTED

090451 Hearing Exhibits - 000399

Lender may reasonably request as a condition to any take down of any portion of the Facility Financing. Purchaser further agrees to act in good faith to modify this Agreement to accommodate Lend er's reasonable and cus tomary requirem ents; *provided, however*, that no such m odification shall change the econom ic terms of the Agreement or im pose any obligati on on Purchaser that would m aterially increase Purchaser's costs or the risks allocated between the Parties.

20.3 Notices. Seller shall deliver to Purchaser, as soon as practicable and in any event, unless otherwise specified, within ten ( 10) business days after Seller obtains actual know ledge thereo f, written n otice of (i) the occurrence of any Materi Adverse Change, and (ii) any litigation or sim ilar proceed ing a ecting Seller which the amount involved is in excess of Five Million Dollars ($5,000,000).

21. ASSIGNMENT

21.1 Assignment by Seller . This Agree ment shall not be as ned by S ller to an y Person without the prior written consen t of Purchaser, ich shall not be unreasonably withheld or delayed; *provided* Seller may c terally assign its interest hereunder to a Lende r. In the event of assignm ent of this A greement by Seller to a Lender, Seller shall re ain fully r onsib le acco rding to this Agreement for all of its obligatio s and liabilities here nder. No such assignm ent shall alter or im pair the rights f any su rety. P urchaser agrees to provide such legal opinions and consents as ay be reasona ly requested by Seller and Lender in connection with such financi

21.2 Assignment by Purch . This Agreem ent shall not be assigned by Purchaser without the prior writt nt of Seller, which shall not be unreasonably withheld or delayed.

21.3 Successors and signs. his Agreement shall bind and inure to the benefit of the parti to this Agre ent a d any succe ssor or assign ee ac quiring an interest hereu r consisten ith Sections 21.1 and 21.2 hereof.

22. CONTRACT AD NISTRATION, MONITORING [redacted]

22. Contract Administration; Reports and Records; Meetings . Seller sha ll s ubmit to urchaser n annual written report, which report shall include, at a m inimum, a cription of the operation of the Facility and planne d maintenance, unplanned ma enance and upgrades to the Facilit y, and an evaluation of problem s and deficiencies and a description of any planned corrective action with respect hereto. Seller sh all keep such full and detailed accounts following g enerally accepted accounting p rinciples as m ay be necessary for proper financial management under this Agreem ent. Seller and Purchaser shall conduct quarterly (or such other frequency as shall be mutu ally agreeable) teleconferences or, if the parties agree, quarterly m eetings at mutually agreeab le locations between representatives of Seller and Purchaser to review th e status of the Facility, including the status of construction prior to the Commercial Operation Date.



REDACTED

[redacted]

22.3 Access Rights. Purchaser, its authorized agents, employees and inspectors shall have the right of ingress to and egress from the Facility Site and the Facility at any time upon prior notice and for any purposes reasonably connected with this Agreement [redacted] While at the Facility and on the Facility Site, such persons shall comply with all applicable law and observe such safety precautions as may be reasonably required and communicated to such representatives by Seller or Seller's representatives and shall not interfere with the operation of the Facility [redacted]

23. NOTICE

23.1 Notices. All notices, consents and other communications required or permitted by this Agreement shall be in writing and shall be delivered by hand or overnight courier service, sent by certified or registered mail or sent by telecopy (or, if explicitly permitted, by email) as follows:

23.1.1 *If to the Seller:*

Gainesville Renewable Energy Center, LLC
75 Arlington St., [redacted] Floor
Boston, MA 02116
Attention: James Gordon
Telephone: (617) 482-6150
Telecopy: (617) 482-6159

23.1.2 If to Purchaser:

For administrative/operational issues:
Gainesville Regional Utilities
301 S.E. 4th Avenue
Gainesville, FL 32614-7117
Attention: Assistant General Manager,
Energy Supply - John Stanton
Telephone: (352) 393-1789
Telecopy: (352) 334-2786

For legal/compliance issues:
*Gainesville Regional Utilities*
301 S.E. 4th Avenue



*REDACTED*

090451 Hearing Exhibits - 000401

REDACTED

Gainesville, FL 32614-7117
Attention: General Manager
Telephone: (352) 393-1007
Telecopy: (352) 334-2277

23.2 Receipt of Notice. All notices and other communi cations given to any party hereto in accordance with the prov isions of this Agreem ent shall be d emed to have been given on the date of receipt if delivered by hand or over ight cou service or sent by telecopy or email, or on the date seven (7) da after dispat if sent by ce rtified or reg istered m ail if m ailed, in each ca se d ered, sent r mailed (properly addressed) to such party.

23.3 Address Changes. Changes in the respective ad dr ees or a dresses t which such notices shall be directed m ay be made from time time by any such person by notice to Seller and Purchaser.

23.4 Operational Notices. A ll operational not es lu ding n o es of all Facility outages) must be in writing (including by teleco or em ail), except tha t routine operational notices and communications and notices ring an emergency or other unforeseen event m ay be m ad in pers on or by tel hone to an operational contact. Purchaser and Seller sh ll provide each other contact inform ation for an operational contact at least sixty 60) da ys p or to the Comm ercial Operatio n Date.

Prior notification of a nt or situation to be made pursuant to this Section 23.4 shall be given a reason ble a t of time in advance of such event or situation.

24. DISPUTE RESOL TION

24.1 Dispu e Resolution roces If either Seller o r Purchaser b elieves it ha s a claim under is Agreeme the designated representative of the claimant shall initiate a laim by bmitting uch claim in writing, including a detailed description, to the designated resen tative of the other pa rty, who shall review the claim and shall res nd in wri g of h is findings and recommendations concern ing the clai m w hin a re sonable time period not to exceed thirty (30 ) days. If the claim is not solved w hin such thirty (30) day pe riod, the claim ant may further pursue the c n by submitting the claim to arbitration pursuant to the Arbitration Procedure.

24.2 Arbitration Procedure. Any controversy, dispute or claim between Seller an d Purchaser arising out of or relating to this Agreem ent, or the breach thereof, shall be settled finally and conclusiv ely by ar bitration accord ing to the Rules of the American Arbitration Association then in effect, unless the parties m utually otherwise agree. If the parties fail to agree on an arbitrator within thirty (30) days following the date of a written n otice by on e party to the other ca lling f or arbitration, the parties shall promptly designate an arbitrator from a list of persons from the Nationa l Roster of Arbitrators and Mediators following said R ules and



REDACTED

that arbitrator shall select an arbitrator from the National Roster of Arbitrators and Mediators who will adjudica te the issue. The costs and e xpenses of arbitra tion shall be paid as awarded by the arb itrators; otherwise costs and expenses shall be shared equally. Seller and Purchaser shall each abide by and perform any required actions according to any resulting arbitr ation award. The arb itration award, when issued, shall be final and shall be en forceable in any court of co mpetent jurisdiction. The location for the arbitration shall be Alachua County, Florida.

24.3 Performance During Dispute. While any controversy, disp ute or cl aim ari out of or relating to this Agreem ent is pending, Seller and Purchase shall contin o perform their obligations hereunder to th e extent possible not withstanding s h controversy, dispute or claim.

24.4 Waiver of Jury Trial. EACH P ARTY KNOWI NG Y, VOL NT AR AND INTENTIONALLY WAIVES THE RIGHT TO A AL BY J URY I N RESPECT OF ANY LITIGATION BA SED ON THI GREEM ENT, OR ARISING OUT OF, UNDER OR IN C NNE C N WITH THIS AGREEMENT AND ANY AGREEMEN E CUTED OR ONTEMPLATED TO BE EXECUTED I N CONJUNCTION WI THIS AGREEMENT. EACH PARTY F URTHER WAIVE S ANY RIGHT TO ONSOLIDATE ANY ACTION, P ROCEEDING OR C OUNTERCLAIM A ISING OUT OF OR IN CONNECTION W ITH THIS AGR EEMENT AND ANY OTHE R AGREEMENT EXEC UTED C CONT EMPLATED TO BE EXECUTED IN CONJUNCTION W ITH THIS A REEME NT, OR ANY MATTE R ARISING HEREUNDER OR THEREUNDE WHICH A JURY TRIAL HAS NOT OR CANNOT BE WAIV THIS PROVISION IS A MATE RIAL INDUCEMENT TO EACH OF THE PARTI OR ENTERING INTO THIS AGREEMENT.

25. DEFAULT; TERM ATION

25.1 Selle Events of De ult . ach of th e following shall b e considered a default by Seller ch such ev t being called a "Seller Event of Default"):

25.1.1 Sel def ts in any r espect in th e observance or perform ance of any materi bligation hereunder, includ ing, but not lim ited to, failure to m e a paym ent when due, failure by Se ller to provide ad equate security, or reach b y Seller of a rep resentation or warranty, and S eller has not ured such def ault within th irty (30) days after written notice from Purchaser specifying the default a nd dem anding that the sam e be remedied; provided that if Seller ha s comm enced reasonable efforts to cure the default within such thirty (30) days (and the default is such that it could reaso nably be ex pected to be possible to cure) and continues to diligently p ursue tho se efforts, then Seller sha ll have an ad ditional thir ty (30) days in which to cure the default;

25.1.2 Seller's failure to cure any m aterial default under any m aterial Faci lity financing agreem ent or other m aterial debt in strument en tered into b y



REDACTED

090451 Hearing Exhibits - 000403

Seller if Seller has failed to cure the default within the time allowed for a cure under such agreement or instrument unless the event out of which the asserted default arose is in formal arbitration pursuant to an arbitration clause in an agreement of which Seller is a party, or litigation;

[redacted]

25.1.5 A Material Adverse Change has occurred with respect to Seller and Seller fails to provide such performance assurances as are reasonably requested by Purchaser within thirty (30) days from the date of such request;

25.1.6 Seller files a petition commencing a voluntary case under the Bankruptcy Code, or for liquidation, reorganization or an arrangement pursuant to any other federal or state bankruptcy law, or is adjudicated a debtor or be declared bankrupt or insolvent under the Bankruptcy Code, or any other federal or state law as now or hereafter in effect relating to bankruptcy, insolvency, winding-up or adjustment of debts, or makes an assignment for the benefit of creditors, or admits in writing its inability to pay its debts generally as they become due, or if a petition commencing an involuntary case under the Bankruptcy Code or an answer proposing the adjudication of Seller as a debtor or a bankrupt or proposing its liquidation or reorganization pursuant to the Bankruptcy Code, any other federal or state bankruptcy law is filed in any court and Seller consents to or acquiesces in the filing thereof or such petition or answer is not discharged or denied within thirty (30) days after the filing thereof; or

25.1.7 A custodian, receiver, trustee or liquidator of Seller, or of all or substantially all of the assets of Seller, is appointed in any proceeding brought by Seller, or any such custodian, receiver, trustee, or liquidator is appointed in any proceeding brought against Seller and is not discharged within thirty (30) days after such appointment, or if Seller consents to or acquiesces in such appointment.

25.2 Default by Seller. (a) If, during the continuance of this Agreement, one or more Seller Events of Default occurs, then in any such case, Purchaser, at its option, may terminate this Agreement by delivering written notice to the Seller and may pursue any and all legal or equitable remedies provided by law or pursuant to this Agreement.

(b) With respect to Seller Event of Default set forth in Section 25.1.3, if Purchaser decides to exercise its option to terminate this Agreement pursuant to Section 25.2(a) and Seller decides to sell the Facility in its as-built condition as a



REDACTED

090451 Hearing Exhibits - 000404

result thereof, Seller may not sell the Facility unless Seller shall have complied with the requirements set forth in Section 27.3, *Right of First Offer*.

25.3 Purchaser Events of Default. Each of the following shall be considered a default by Purchaser (each such event being called a "Purchaser Event of Default"):

25.3.1 Purchaser defaults in the payment of any sum undisputedly due the Seller payable hereunder and Purchaser has not cured such default within twenty (20) days after receipt of written notice from Seller that such payment is due;

25.3.2 Purchaser defaults in any respect in the observance or performance of any material obligation contained herein (other than a payment default covered under Section 25.3.1) and Purchaser has not cured such default within thirty (30) days after written notice from Seller specifying the default and demanding that the same be remedied; provided that if Purchaser has commenced reasonable efforts to cure the default within such thirty (30) days (and the default is such that it would reasonably be expected to be possible to cure) and continues to diligently pursue those efforts, then Purchaser shall have an additional thirty (30) days in which to cure the default;

25.3.3 A Material Adverse Change has occurred with respect to Purchaser and Purchaser fails to provide such performance assurances as are reasonably requested by Seller within thirty (30) days from the date of such request;

25.3.4 Purchaser files a petition commencing a voluntary case under the Bankruptcy Code, or for liquidation, reorganization, or for an arrangement pursuant to any other federal or state bankruptcy law, or is adjudicated a debtor or declared bankrupt or insolvent under the Bankruptcy Code, or any other federal or state law as now or hereafter in effect relating to bankruptcy, insolvency, winding-up or adjustment of debts, or makes an assignment for the benefit of creditors, or admits in writing its inability to pay its debts generally as they become due, or if a petition commencing an involuntary case under the Bankruptcy Code or an answer proposing the adjudication of Purchaser as a debtor or a bankrupt or proposing its liquidation or reorganization pursuant to the Bankruptcy Code any other federal or state bankruptcy law is filed in any court and Purchaser consents to or acquiesces in the filing thereof or such petition or answer is not discharged or denied within ninety (90) days after the filing thereof; or

25.3.5 A custodian, receiver, trustee or liquidator of Purchaser or of all or substantially all of the assets of Purchaser, is appointed in any proceeding brought by Purchaser, or any such custodian, receiver, trustee, or liquidator is appointed in any proceeding brought against Purchaser and is not discharged within ninety (90) days after such appointment, or if Purchaser consents to or acquiesces in such appointment.



*REDACTED*

REDACTED

25.4 Default by Purchaser. If, during the continuance of this Agreement, one or more Purchaser Events of Default shall occur, then in any such case, Seller, at its option, may terminate this Agreement by delivering written notice to Purchaser and may pursue any and all legal or equitable remedies provided by law or pursuant to this Agreement.

25.5 Duty/Right to Mitigate. Each Party agrees that it has a duty to mitigate damages and covenants that it will use commercially reasonable efforts to minimize any damages it may incur as a result of the other Party's performance or non-performance of this Agreement.

26. LIMITATION OF LIABILITY

26.1 Limitation on Liability. Unless expressly herein provided, neither Party (including its subcontractors, vendors of any tier, or their respective officers, directors, employees, agents or affiliates) shall be liable for any incidental, consequential, punitive, exemplary or indirect damages, lost profits or other business interruption damages, by statute, in tort or contract, under any indemnity provision or otherwise, provided that the foregoing exclusion shall not preclude recovery by a Party of delay damages, or any liquidated damages expressly herein provided, nor shall it be construed to limit recovery by an indemnitee under any indemnity provision in respect of a third party claim. Unless expressly herein provided, and subject to the provisions of Section 17 (Indemnities), it is the intent of the parties that the limitations herein imposed on remedies and the measure of damages be without regard to the cause or causes related thereto, including the negligence of any party, whether such negligence be sole, joint or concurrent, or active or passive. For breach of any provision for which an express remedy or measure of damages is provided, such express remedy or measure of damages shall be the sole and exclusive remedy therefore, the obligor's liability shall be limited as set forth in such provision and all other remedies or damages at law or equity with respect to such breach are waived except to the extent expressly set forth herein. If no remedy or measure of damages is expressly provided herein, the obligor's liability shall be limited to direct actual damages only, such direct actual damages shall be the sole and exclusive remedy and all other remedies or damages at law or in equity are waived. To the extent any damages required to be paid under this Agreement are liquidated, the Parties acknowledge that the damages are difficult or impossible to determine or otherwise obtaining an adequate remedy would be inconvenient, and the damages provided for by this Agreement constitute a reasonable approximation of the full harm or loss. The Parties further confirm that the express remedies and measures of damages provided by this Agreement satisfy the essential purposes of the Agreement.

26.2 No Implied Warranties. ANY REMEDIES SPECIFIED HEREIN FOR DEFECTS OR BREACH OF WARRANTY SHALL BE EXCLUSIVE. ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY, AT LAW OR IN EQUITY, WHETHER ORAL OR WRITTEN, AND WHETHER ARISING FROM CUSTOM OR TRADE OTHERWISE INCLUDING BUT



REDACTED

090451 Hearing Exhibits - 000406

NOT LIMITED TO WARR ANTIES OF MER CHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL NOT APPLY.

26.3 No Recourse; Lim ited Liability . N o recourse under or upon any obligation contained in this Agreement shall be had against [redacted] or any pa rtner, m ember, manager, stockholder, director, officer or em ployee of Seller. Purchaser expressly waives and rele ases all right to assert liabilit y under this Agreem ent against, or to satisfy any claim arising hereunder or thereunder against, any such person.

27. PURCHASER'S OPTION TO PURCHASE FACILITY

[redacted]

REDACTED

*REDACTED*

[redacted]

28. CHOICE OF LAW; CHOICE OF FORUM

28.1 Applicable Law. Seller and Purchaser agree that the laws of the State of Florida shall govern the validity, interpretation, construction and performance of this Agreement without regard to their internal principles of conflict of laws.

28.2 Choice of Forum. Seller and Purchaser agree, with respect to matters not subject to the provisions regarding Arbitration in Section 24, to submit to the jurisdiction of the federal courts located in Alachua County, Florida, in any litigation between the parties, or, if the federal courts lack jurisdiction, the state courts located in Alachua County, Florida.

29. CONTRACT DOCUMENTS; INTERPRETATION

29.1 Schedules and Appendices. The following Schedules and Appendices are made a part of this Agreement:

| | |
|---|---|
| Schedule I | Definitions |
| Appendix I | Facility |
| Appendix II | Products |
| Appendix III | Contract Prices |
| Appendix IV | Interconnection One Line Diagram |
| Appendix V | Pre-Operation Period Standards |
| Appendix VI | Template of Operating Procedures |
| Appendix VII | Standby, Supplemental and Startup Power Agreement |
| Appendix VIII | Sustainability Standards |
| Appendix IX | Initial Testing Standards and Operational Capacity Testing |

29.2 Entire and Complete Agreement. This Agreement, including any referenced attachments, and any other documents incorporated by reference therein, shall constitute the complete agreement between Seller and Purchaser relating to the Facility, superseding all prior agreements or undertakings. Any exceptions or additional terms are hereby rejected unless specifically agreed to in writing by Seller and Purchaser. No course of prior dealing or performance between Seller and Purchaser or usage of trade shall be relevant to supplement, explain, interpret or modify any term, condition or instruction used in this Agreement.

29.3 Independent Contractor. Nothing in this Agreement shall be deemed to constitute either Party a partner, agent or legal representative of the other party or to create any fiduciary relationship between the Parties. Seller is, and shall remain, an independent contractor in the construction and operation of the Facility, maintaining complete control of its personnel, workers, subcontractors and operations required for construction and operation of the Facility.

REDACTED

29.4 Third Party Beneficiaries. This Agreement shall be for the sole benefit of the Seller and Purchaser and for such other parties only as expressly provided in this Agreement and then subject to the terms of this Agreement.

29.5 English Language. Seller and Purchaser agree that the official language of this Agreement shall be English. Purchaser hereby represents that it has sufficient knowledge of the English language to fully understand this Agreement. This Agreement shall be in the English language and all documentation related thereto shall also be in the English language.

29.6 English Units. Seller and Purchaser agree that the official system of units of this Agreement shall be the United States Standard measure (English) unit system. All drawings and other written material shall show English units.

29.7 Gender and Plural. Unless the context of this Agreement otherwise requires, words of any gender include each other gender and words using the singular or plural number also include the plural or singular number, respectively.

29.8 Calendar Days. Whenever this Agreement refers to a number of days, such number shall refer to calendar days unless Business Days are specified.

29.9 Headings. Captions and headings in this Agreement are for reference only and do not constitute a part of the substance of this Agreement.

29.10 Complementary Reading. All documents comprising this Agreement, including any modifications or additions thereto, shall be read in a complementary manner.

29.11 Amendments. This Agreement may be amended or modified only by a written agreement between the parties hereto.

29.12 Severability. The invalidity or unenforceability of any provision of this Agreement shall in no way affect the validity or enforceability of any other provision hereof. Any invalid or unenforceable provision shall be deemed severed from this Agreement and the balance of this Agreement shall be reformed in such a manner as to effect to the maximum extent possible the original intent of Seller and Purchaser.

29.13 Waiver. Unless otherwise specifically provided by the terms of this Agreement, no delay or failure to exercise a right resulting from any breach of this Agreement shall impair such right or shall be construed to be a waiver thereof, but such right may be exercised from time to time and as often as may be deemed expedient. Any waiver shall be in writing and signed by the party granting such waiver. If any representation, warranty or covenant contained in this Agreement is breached by either party and thereafter waived by the other party, such waiver shall be limited to the particular breach so waived and not be deemed to waive any other breach under this Agreement.

REDACTED

29.14 Consideration. Seller and Purchaser agree that the mutuality of the agreements, promises and covenants set forth in this Agreement are sufficient consideration for such agreements, promises and covenants, and Seller and Purchaser hereby acknowledge the sufficiency and adequacy of the same.

29.15 Confidentiality. Purchaser and Seller recognize that the terms of this Agreement and materials or information regarding the Facility may constitute trade secrets governed by Sections 815.045, Florida Statutes, 812.081, Florida Statutes and 815.043(3), Florida Statutes, which restrict the use and disclosure of trade secrets as that term is defined in the applicable sections. To the extent permitted by Florida law, each of the Parties agrees that it shall keep strictly confidential the terms of this Agreement and any materials or information regarding the Facility (including, without limitation, any data delivered by Seller to Purchaser and vice versa) delivered or received in connection herewith and any other agreements entered into pursuant hereto all of which is marked as proprietary or confidential; provided that the terms hereof may be disclosed to the attorneys, accountants and other consultants of the parties involved in assisting the parties with this Agreement, as long as such parties agree to be bound by the foregoing confidentiality requirement and further provided that each party shall be fully liable for any breach of this Section by any attorney, accountant or other consultant to whom it has disclosed such information. The provisions of this Section shall not apply to information, notwithstanding any confidential designation thereof, that is previously known to the receiving party without any restriction as to disclosure or use at the time it is furnished, which is or becomes generally available to the public without breach of any confidentiality obligation by the receiving party or which is received from a third party without limitation or restriction on said third party by the receiving party at the time of disclosure. Further, the Parties acknowledge that the designation of this Agreement or any other material as "confidential", or "trade secret" and the City of Gainesville's refusal to disclose such material, may be challenged in a court of competent jurisdiction by any person. Seller by so designating any material agrees to hold harmless and indemnify the Purchaser from any award to a plaintiff for damages, costs or attorney fees and from any costs and attorney fees incurred by the Purchaser by reason of any action to require disclosure of this Agreement or Seller's materials, and the Purchaser's refusal to disclose the same. Provided, however, that Purchaser shall give prompt written notice to Seller of the receipt of any demand for disclosure and commencement of any action to compel disclosure.

REDACTED

IN WITNESS WHEREOF, Seller and Purchaser have caused this Agreement to be executed in their respective names by persons duly authorized to do so on their behalf.

GAINESVILLE RENEWABLE ENERGY CENTER, LLC ("Seller")

By: /s/ James S. Gordon
Name: James S. Gordon
Title: President

THE CITY OF GAINESVILLE, FLORIDA d/b/a GAINESVILLE REGIONAL UTILITIES ("Purchaser")

By: /s/ Robert E. Hunzinger
Name: Robert E. Hunzinger
Title: General Manager

APPROVED AS TO FORM AND LEGALITY:

By: /s/ Raymond O. Manasco, Jr.
Name: Raymond O. Manasco, Jr.
Title: Utilities Attorney

REDACTED

## Schedule 1
## Definitions

The following Definitions are made a part of this Agreement:

[redacted]

"Affiliate" means, with respect to any person, any other person (other than an individual) that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with, such person. For this purpose, "control" means the direct or indirect ownership of fifty percent (50%) or more of the outstanding capital stock or other equity interests having ordinary voting power.

"Agreement" means this Agreement, the Appendices and any other documents incorporated or referenced therein.

[redacted]

REDACTED



*REDACTED*

[redacted]

"Bankruptcy Code" means Title 11, United States Code, and any other state or federal insolvency, reorganization, moratorium or similar law for the relief of debtors.

[redacted]

"Billing Period" means a calendar month.

"Business Day" means any day except Saturdays, Sundays and other days on which the bank institutions of New York City, New York, do not provide services pursuant to applicable law or the policies of the bank institutions.

[redacted]

"Change in Law" has the meaning specified in Section 3.2 hereof.

"Commercial Operation Date" means [redacted]

"Construction Commencement Date" means [redacted]

[redacted]

"Contract Prices" has the meaning specified in Section 3.1 hereof.

[redacted]

"Delivery Point" means [redacted]

"Delivery Term" has the meaning specified in Section 2.2 hereof.

"Dependable Capacity" means [redacted]

"Eastern Prevailing Time" or "EPT" means the prevailing eastern time in Alachua County, Florida.

[redacted]

"Effective Date" has the meaning specified in the introductory paragraph of this Agreement.

"Energy" means any and all three phase, sixty hertz electric energy generated by the Facility and available for sale during the Delivery Term, but not including energy obtained from other sources used for station loads or dissipated by transformer and transmission losses, if any.

"Environmental Attributes" means [redacted]

[redacted]

"Facility" means the Facility more particularly described in Appendix I hereto.

"Facility Financing" means financing for the acquisition, development, construction, and ownership of the Facility and related purposes including any required reserve accounts, any capital additions, any operational needs relating to the Facility and any refinancing or replacement financing of any of the foregoing.

"Facility Site" has the meaning set forth in Appendix I hereto.

[redacted]

"Force Majeure" means [redacted]



*REDACTED*

[redacted]

"Forest-Produced Bio mass" m eans biom ass de rived from forestry operations m eeting the appropriate specifications for use by Seller to produce electricity in the Facility, as opposed to biomass derived from mill residue, urban forestry and urban land clearing.

"Forest Stewardship In centive Paym ents" m eans the forest stewardship incentiv e paym ents set forth in Appendix VIII attached hereto.

"FRCC" means the Florida Reliability Coordination Council, Inc. or successor thereto.

"FRCC Requirements" means the operating, planning and readiness standards adopted by FRCC to assure the safe and reliable operation of Florida's electrical system.

[redacted]

"Good Utility Practice" m eans any practices, methods, and acts (including but not limited to the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry) that, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act, to the exclusion of all others, but rather is intended to include acceptable practices, methods, and acts generally accepted in the region. With respect to the Facility, Good Utility Practice includes but is not limited to taking reasonable steps to ensure the following:

(i) That adequate equipment, materials, resources and supplies (excluding fuel) are available to meet the Facility's needs;

(ii) That sufficient operating personnel are available and are adequately experienced, trained, and licensed as necessary to operate the Facility properly and efficiently, and are capable of responding to reasonably foreseeable emergency conditions whether caused by events on or off the site of the Facility;

(iii) That preventative, routine and non-routine maintenance and repairs are performed on a basis that ensures reliable long-term and safe operation, and are performed by knowledgeable, trained and experienced personnel utilizing proper equipment and tools;

(iv) That appropriate monitoring and testing are performed to ensure that equipment is functioning as designed;

(v) That equipment is not operated recklessly, or in a manner that is unsafe to workers, the general public, or the environment, or without regard to defined limitations, such as steam pressure, temperature, and moisture content, chemical content of make-up



090451 Hearing Exhibits - 000418

water, flood conditions, safety inspection requirements, operating voltage, current, volt-ampere reactive (VAR) loading, frequency, rotational speed, polarity, synchronization, or control system limits;

(vi) That equipment will function properly under both normal and reasonably expected emergency conditions; and

(vii) That the Facility is operated in conformance with the applicable FRCC operating procedures.

"Ground Lease" means the ground lease with respect to the Facility between Purchaser and Seller.

[redacted]

"Interconnection Agreement" means the interconnection agreement between Seller and Purchaser, as it may be amended from time to time.

[redacted]

"Late Payment Rate" means, in relation to any period for which a late payment charge may be incurred under this Agreement, the prime rate as announced from time to time by the Bank of America or its successor plus [redacted] per annum.

"Legal Requirements" means and includes all applicable laws, statutes, ordinances, orders, rules, regulations or requirements of any federal, state or municipal government, agency, department, commission, board or officer having jurisdiction over the Facility.

"Lender" means the financial institution named in a notice from the Seller as providing part of the Facility Financing, its successors and assigns.

[redacted]



*REDACTED*

"Material Adverse Change" m eans [redacted]

"Metering Equipment" m eans the m etering and te lemetry equipm ent provided pursuant to the terms of the Interconn ection Agreement, which s hall be owned by the Purchaser and shall be in accordance with FRCC Requirem ents. Any changes to the m eters, telemetry equipment, voltage transformers, current transfor mers, and associat ed panels, hardware, conduit and cable, which will affect the data bein g receiv ed by Seller sh all not be agreed to by Purch ser without [redacted] t consulting with Seller.

"Metering Point(s)" means the Delivery Point.

"Minimum Sustainability Standards for Forest-Produced Biomass" [redacted] the m eaning set forth in Appendix VIII attached hereto.

[redacted]

"Operator(s)" m eans the persons responsible for f recasting, sc duling and controlling the output of the Facility on behalf of Seller.

"Party" and/or "Parties" means the Seller, the urchaser, or the Seller and the Purchaser.

"Payment" has the meaning specified in Section [redacted] hereof.

"Period Hours" means the aggregate [redacted] of hours for a given period.

"Person" means any individual, co rpo ation, coo erative, partnershi p, join venture, association, join-stock company, limi nership, limited liability company, limited liability partnership, trust, or governmental organizat

"Planned Maintenanc means [redacted]

"Pre ises" has the meaning set forth in the Ground Lease.

[redacted]



*REDACTED*

090451 Hearing Exhibits - 000420

"Products" means the products set forth in Appendix II attached hereto.

"PSC" means the Florida Public Service Commission.

[redacted]

"Purchaser" has the meaning specified in the introductory paragraph hereof.

"Purchaser Delay" has the meaning specified in Section 15.1 hereof.

"Purchaser Event of Default" has the meaning specified in Section 25.3 hereof.

[redacted]

"Purchaser's System" means the electric transmission system and generating units owned by Purchaser.

[redacted]

"Renewable Energy Credit" or "REC" means a certificate of proof, issued by the applicable regulatory authority or organization, for compliance with renewable energy standards, that one unit of electricity was generated by an eligible renewable energy resource.

[redacted]



*REDACTED*

"Schedule Guarantees and Liquidated Dam ages" means the guarantees and liquidated dam ages set forth in Section 14 hereof.

"Scheduler(s)" means Purchaser's representative or representatives res ponsible for day-to-day scheduling.

"Seller" has the meaning specified in the introductory paragraph hereof.

"Seller Event of Default" has the meaning specified in Section 25.1 hereof.

"Seller Indemnified Parties" has the meaning specified in Section 17.2 hereof.

[redacted]

"Standby, Supplem ental and Startup Load" m eans the electri ergy r d to ele ric generation necessary to serve the parasitic gene rating f acilit statio equiremen s when the Facility is either opera ting or not operating (Supplem ental oad), or to rve t e parasitic or other power needs of the Facility w hen it is not operatin r the power n of the Facility when in the startup mode prior to synchronizing.

"Standby, Supplem ental and Startup Power" m ans the electric en us ed to serve Standby, Supplemental and Startup Load.

[redacted]

"Supplier" eans any enti with which the Seller enters into an agree ment to pur chase Forest-Produc iomass

"System Eme ncy" m ns a phys ical condition or situation that, in th e judgm ent of FRCC or chas er, a ts or will affect the abili ty of Purchaser to accept the Products from the Facili at the Deli ery Point.

[redacted]

REDACTED

"Taxes" has the meaning specified in Section 5.1 hereof.

"Test Power Products" m eans Produc ts that are delivered prior to the Comm ercial Operation Date.

[redacted]

REDACTED

## Appendix I
## Facility

**1. Facility**

1.1 The Facility will be a new one hundred (100) MW (total net) biomass-fired electric generating facility, consisting of a biomass fuel handling system, a biomass-fired boiler, a condensing steam turbine generator with evaporative cooling towers and auxiliary support equipment. The Facility will also utilize a Zero Liquid Discharge system to eliminate wastewater discharges. The Facility will be designed in accordance with standards normally used in the utility industry so that the Facility will, with standard operating and maintenance practices, be designed to provide full service over the [redacted] design life of the Facility.

1.2 The Facility will utilize a bubbling fluidized bed boiler to produce superheated steam. The boiler will be equipped with a baghouse to control particulate matter. [redacted] Superheated steam from the boiler will be admitted to a single steam turbine with four extractions for feedwater heating. The steam turbine will generate electricity before exhausting axially into the condenser with cooling water provided from the wet evaporative cooling tower.

1.3 The primary fuels for the Facility will be forest residue, mill residue, forest thinnings and urban wood waste. Supplementary fuels could include herbaceous plant matter, agricultural residues, woody storm debris, whole tree chips and pulpwood chips.

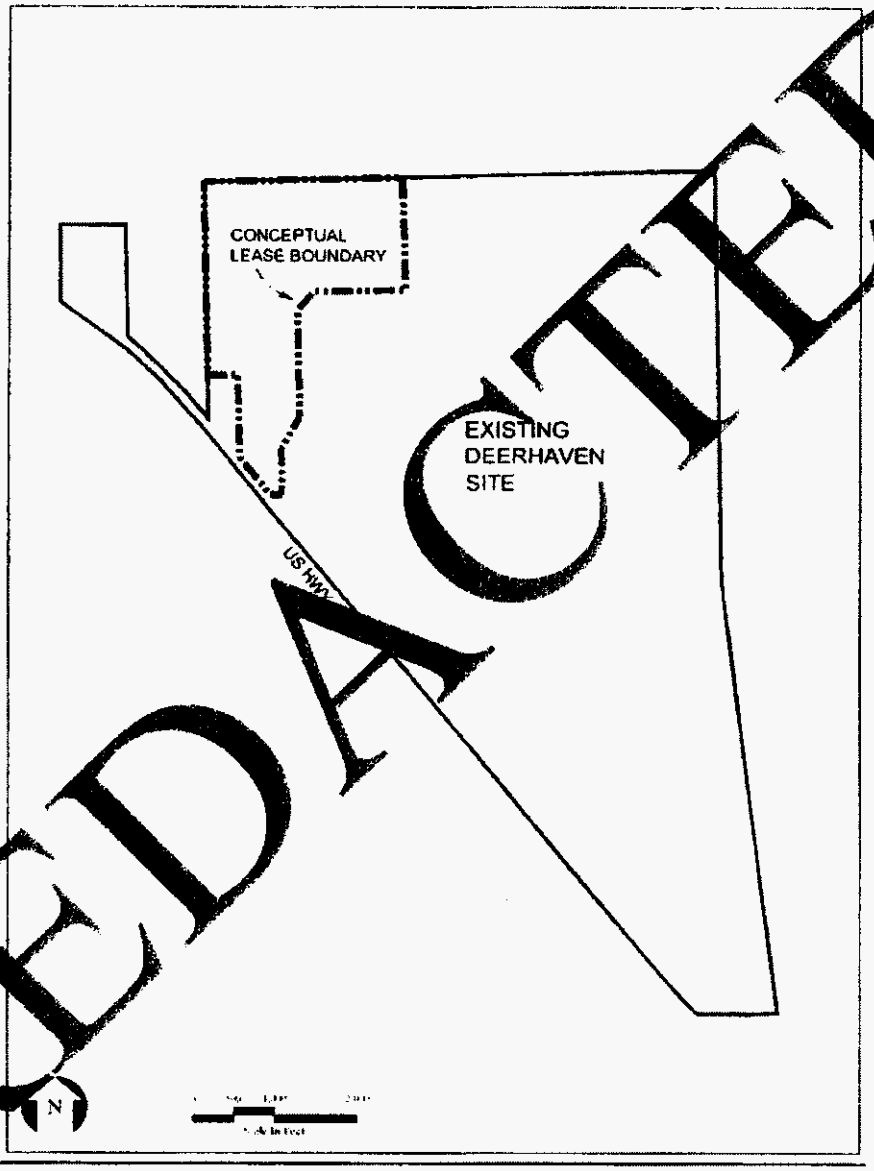
1.4 The biomass fuel handling system will consist of [redacted]

1.5 Electric power will be produced in the steam turbine generator at the nominal generator voltage. The Facility will increase the voltage at an on-site substation and transmit the power through aerial transmission lines to the interconnection point. When the steam turbine generator is off-line, station service power will be obtained by back feeding.

REDACTED

## 2. Facility Site

The Facility Site shall be the area of land depicted in the conceptual map below subject to a more precise description of such area in the Ground Lease to be entered into by the Parties prior to the Construction Commencement Date.




REDACTED

## Appendix II
## Products

| Product | Quantity Sold to Purchaser |
|---|---|
| Dependable Capacity | One Hundred Percent (100%) |
| Energy | One Hundred Percent (100%) |
| Environmental Attributes | One Hundred Percent (100%) |

REDACTED



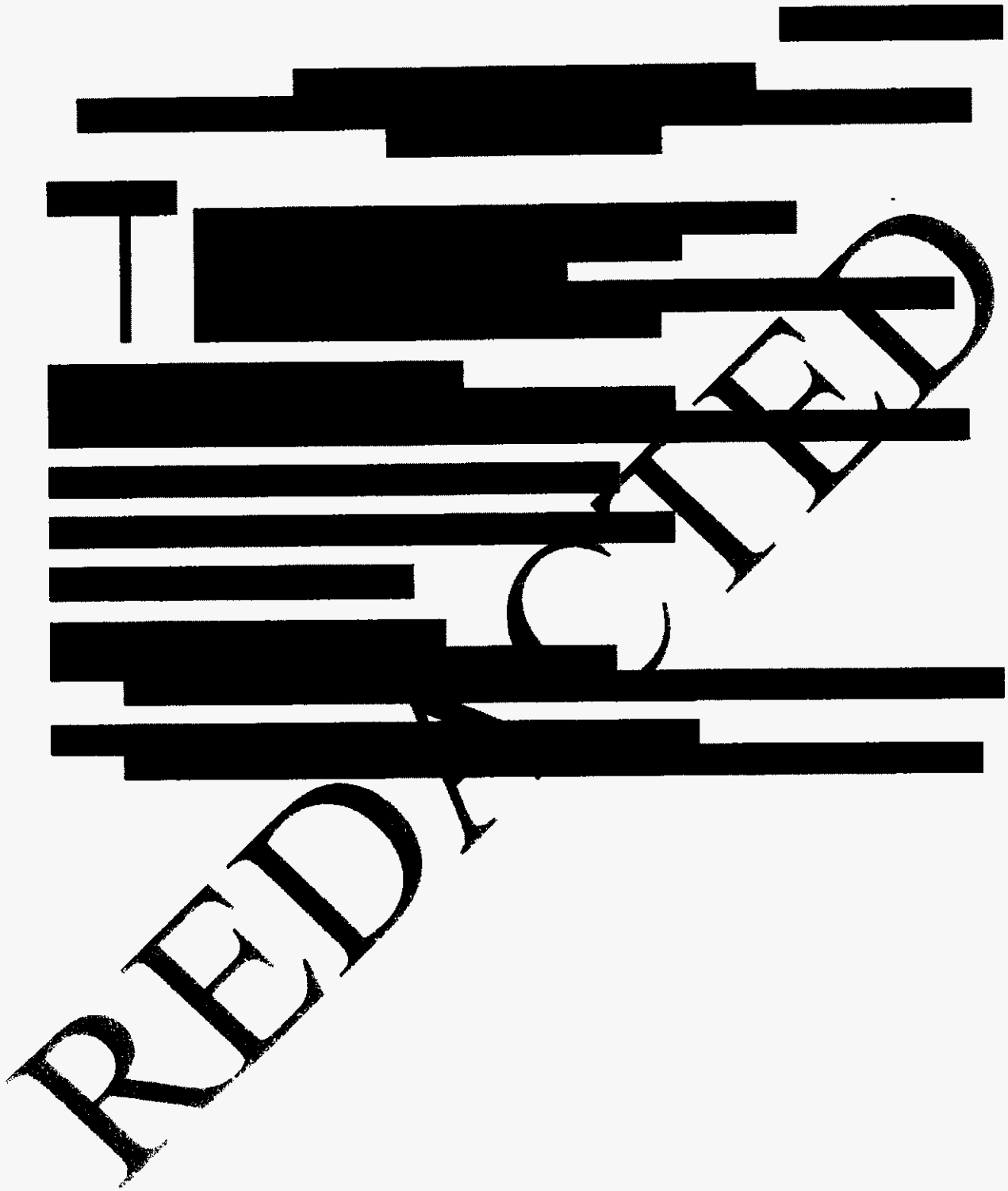
*REDACTED*

Appendix III
Contract Prices

[redacted]



*REDACTED*





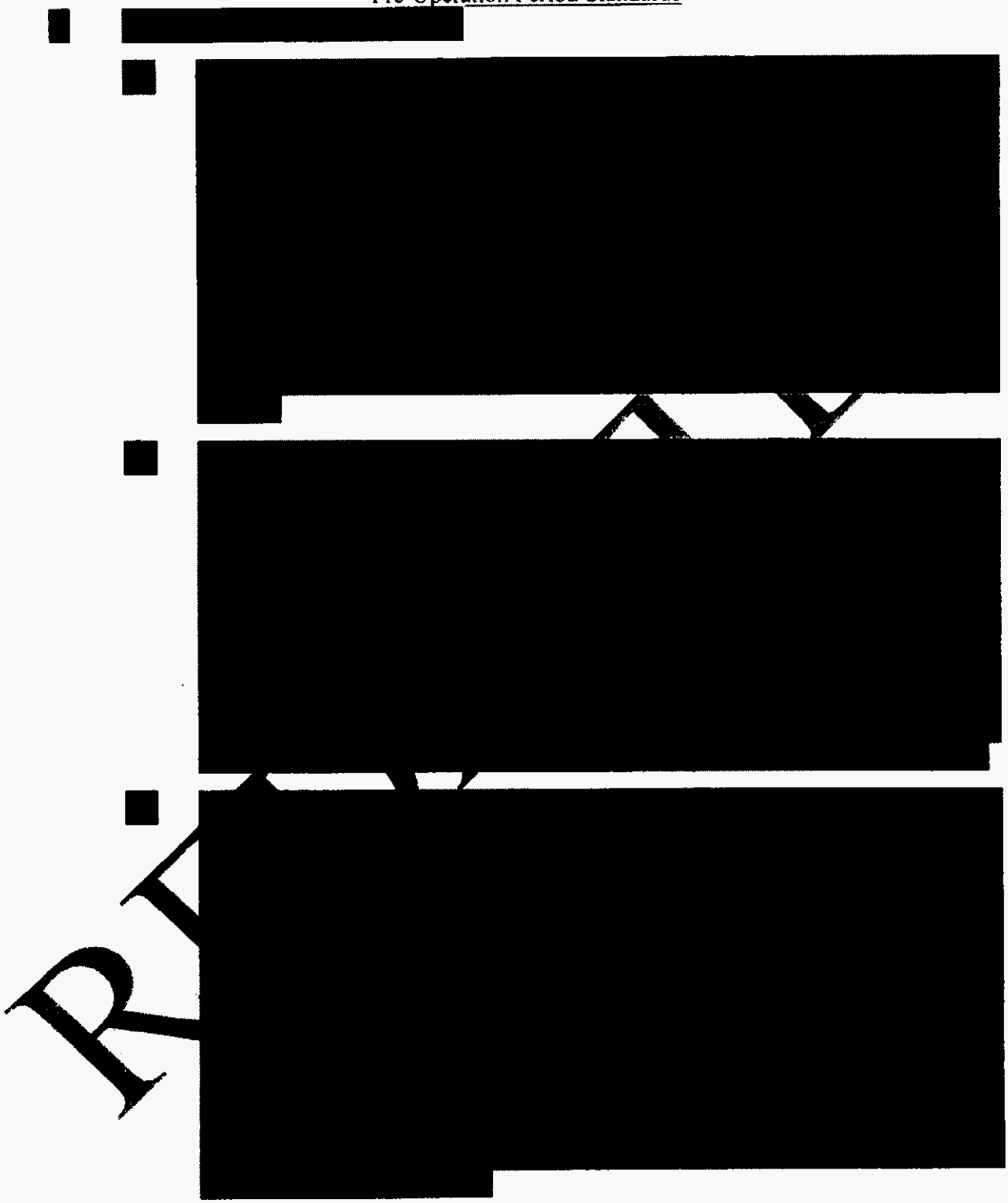

*REDACTED*

## Appendix IV
## Interconnection One Line Diagram

The parties hereto agree to work together in good faith to produce a mutually agreeable interconnection one line diagram prior to the Construction Commencement Date, which shall be inserted into this appendix.

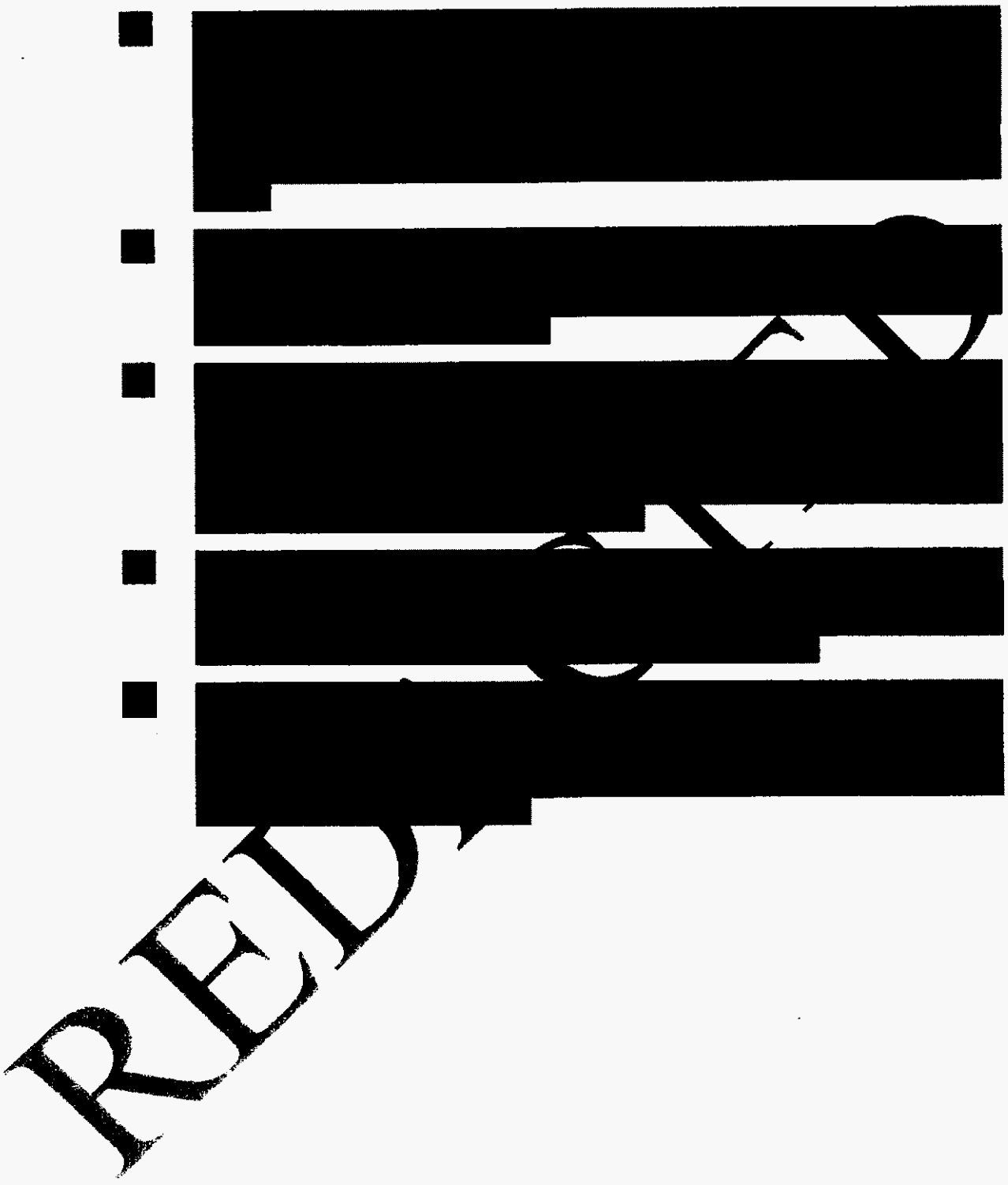
REDACTED

Appendix V
Pre-Operation Period Standards





*REDACTED*


REDACTED

## Appendix VI
## Template of Operating Procedures

The parties hereto agree to work together in good faith to produce a mutually agreeable template of operating procedures by May 15, 2009, which shall be inserted into this appendix.

REDACTED



*REDACTED*

Appendix VII
Standby, Supplemental and Startup Power Agreement

This POWER PURCHASE AGREEMENT for Standby, Supplemental and Startup Power is made and entered into this _day of ___, 20____, (thi s " Contract") by THE CITY OF GAINESVILLE, FLORIDA d/b/a GAINESVILLE REGIONAL UTILITIES, herein referred to as "CITY," and GA INESVILLE RENEW ABLE ENER GY CENTER, LLC, a Delaware Lim ited Liability Company, herein referred to as "CUSTOMER." CITY and CUSTOMER shall a e referred to herein as Parties collectively and as Party individually.

**WITNESSETH**

WHEREAS CUSTOMER has f acilities that are currently serv d by CITY or CUS MER has facilities capable of being served by CITY and other electricity supp rs a well.

WHEREAS CUS TOMER desires to receive St andby, Supple men a nd Start up Powe r Service for such f acilities exclusively from CITY but on ly u the terms a n nditions set forth in this Contract.

WHEREAS C ITY agrees to se ll and deli r to CUSTOMER d CUSTOMER agre es to purchase a nd pay for t he tota l requirements of t andby, S upplemental an d Start up Power Servi ce for CUSTOMER's sole use, subject to the provi ons of this Co tract.

WHEREAS the Parties acknowledge tha is Co tract applies only to the S tandby, Supplemental and Startup Power Ser e provided to TOMER's facilities and does not apply to any other services obtained from C T

WHEREAS the ability to inte pt CUS TOMER's S tandby, Suppl emental a nd Start up Power Service provides b ne to the sy tem during periods when CUSTOMER's generating facilities are not ope ting and C Y is ex eri encing extrem e conditions, such as generation shortages, transm is n and distrib ion circu it overload, and extrem ely high power costs to serve CITY's firm ser e custome .

NOW, THEREFORE, in co ideration of the fore going and of benefits to be obtained from the covenants erein the Parties gree as follows:

ARTICLE I

TERM OF CONTRACT

SECTION 1.1 - The term of this Contract shall commence on the date exec uted by the Partie and shall continue in effect for an initial term of ten (10) years. After such initial ten (10) year period, this Contract shall be automatically extend ed for succ eeding periods of t hree (3) years each, provided that this Contract may be canceled by eit her Part y pursuant to earl y t ermination provisions in Se ction 6.5 here of, and furthe r provided that, notwithstanding such e arly termination provisions, this Cont ract m ay be canceled by either Party at the end of said in itial ten (10) year



090451 Hearing Exhibits - 000433

period or at the end of any subs equent extension, provided that three (3) year's written notice of intent to cancel is given to the other Party.

## ARTICLE II

## GENERAL PROVISIONS

SECTION 2.1 - For a s long a s this Contra ct re mains in e ffect, CUSTOMER agr ees that CITY shall be its exclusive supplier of Sta ndby, Suppl emental and Startup P ower Se throughout the term of this Co ntract except when CUSTOMER will supply au iary power f m CUSTOMER's own generation.

SECTION 2.2 - All terms an d conditions under th e normally pplicab le Ra Schedule , Large Power, shall apply to service supplied hereunder to CUSTOM , excep as modif by this Contract.

SECTION 2.3 - Service under this Contract is subj ect o interruption ring ny time period when CUSTOMER's genera ting Facility is not ope rating an t the same e, electric power capacity and energy is r equired fr om in terruptible lo ad to : ( a) intain s ervice to C ITY's f irm power customers and firm power sales commitments (b) supply ergency Interchange service to another utility f or its f irm load obligations o ly . W hen CUSTOM R's ge nerating Facility is operating, CITY ma y re quire th at CUST OME serve its o wn Su pplemental Power r equirements from CUSTOMER's ge neration such that CIT will thus ha ve the Supplemental Power amounts, which would otherwise be serving th e Facility's rasitic load equir ements, available to serve its native f irm service cust omers. Because CUSTO 's F ility provides el ectric capacity and energy to CITY, CITY will not phys interrupt service to the Facility where that would caus e the Facility to be rendered inca pable f pro capacity and en ergy to CITY pursuant to the Power Purchase Agreement.

SECTION 2.4 - CITY ves the right to test the availability or operability of interruptible capacity, irrespective of CITY syst capa ity availability or operating conditions.

SECTION 2.5 - rsuant t any agre ement to prov ide serv ice here under, CI TY and CUSTOMER may stipulat r the provision of "Buy-Through" service for CUSTOMER to replace power d ng time f interru n pursuant to Section 2.3 (c) above. For all "Buy-Through" service purchased behalf of CUSTOMER, CUSTOMER shall pay CITY three dollars ($ 3.00) per MWh for such ener s well a reimburse CITY for associat ed energy and transmission costs nec essary t the deli y of "Buy-Through" energy to CITY's system for CUSTOMER.

SECTION 2.6 - CITY shall make reas onable e fforts to pr ovide a dvance noti ce t o TOMER of a n impending interruption of s ervice sufficient to enable CUSTOMER to m odify its o ations or avail itself of the "B uy-Through" prov ision in General Prov isions "S ection 2.5", above.

REDACTED

## ARTICLE III

## APPLICABLE CHARGES, CREDITS, AND DISCOUNTS

SECTION 3.1 - For service hereunder, CUSTOMER will pay the equivalent of charges embodied in the unbundled Base Rate components of CITY's prevailing Large Power Service Rate as published in the City of Gainesville Code of Ordinances, excluding the unbundled Distribution Service components, plus the prevailing Retail Fuel Adjustment Charge.

SECTION 3.2 - For service hereunder, an Interruptible Service Demand Credit of [redacted] shall be applied to the Demand Charge not more than applied to the interrupted demand, inclusive of any other applicable discounts.

SECTION 3.3 - The charges to which the Interruptible Service Demand Credit shall be applied will be the prevailing unbundled Base Rate components of CITY's Large Power Service Rate as published in the City of Gainesville Code of Ordinances, excluding the unbundled Distribution Service components.

SECTION 3.4 - The actual charges for Standby, Supplemental and Startup Power Service will be CITY's prevailing Large Power Customer Charge plus the energy-based equivalent of the unbundled components of CITY's prevailing Large Power Service Demand and Energy Charges, excluding the unbundled Distribution Service components and reduced by an amount equal to the aforementioned Interruptible Service Demand Credit, [redacted] plus CITY's prevailing Retail Fuel Adjustment Charge. An example of the rate calculation for Standby, Supplemental and Start up Power Service is presented in Attachment 1 to this Contract.

## ARTICLE IV

## CUSTOMER COMMUNICATION

SECTION 4.1 - Communications between CITY and CUSTOMER shall be accomplished via telephone or personal computer and via other ancillary equipment and software which shall be owned, operated and maintained by CITY.

SECTION 4.2 - CUSTOMER shall supply, at no charge to CITY, a dedicated telephone line that will serve as the communications equipment data link between CITY and CUSTOMER.

SECTION 4.3 - CUSTOMER shall be responsible for allocating a dedicated area within its premises, subject to CITY approval, for CITY installation, operation and maintenance of the communications equipment.

SECTION 4.4 - CITY shall install the communications facilities on CUSTOMER's premises, at no charge to CUSTOMER, no later than six (6) months following execution of this Agreement. CITY shall remove the communications facilities from CUSTOMER's facilities, at no charge to CUSTOMER, no later than ninety (90) days following of termination of this Agreement.

SECTION 4.5 - For interruptible service provided hereunder, interruptions to CUSTOMER's electric service shall be accomplished via manual switching devices and other ancillary equipment. Such switching equipment shall be owned, operated and maintained by CITY.

SECTION 4.6 - CITY shall utilize the communications equipment to provide CUSTOMER with as much notice as CITY deems practical that CITY has a need to interrupt CUSTOMER's electric service. CUSTOMER understands and agrees that under certain conditions CITY may not be able to provide CUSTOMER with such notice. In such conditions, interruption of CUSTOMER's electric service is to occur immediately.

SECTION 4.7 - CUSTOMER's electric service under this Contract shall commence with the first full billing period following the installation date of the switching and communications facilities.

## ARTICLE V

## BILLING AND PAYMENT

SECTION 5.1 – CITY shall prepare and submit a statement (a "Billing Statement") for each Billing Period within ten (10) Business Days following the end of the Billing Period.

SECTION 5.2 – CUSTOMER shall pay CITY the sum due within fifteen (15) Business Days of receipt of a Billing Statement from CITY.

SECTION 5.3 – Any amounts not paid to CITY when due shall bear interest at the Late Payment Rate from the due date to the date of payment.

## ARTICLE VI

## MISCELLANEOUS

SECTION 6.1 - This Contract may not be modified or amended, and conditions hereunder may not be waived, except in writing, signed by or on behalf of both Parties.

SECTION 6.2 - This Contract shall be governed by and construed in accordance with the laws of the State of Florida. Venue for any litigation arising under this Contract shall be in the federal or state courts in Gainesville, Florida.

SECTION 6.3 - Any amendment to this Contract shall be effective upon the date of execution of such amendment by the Parties and subject to the regulatory authority of the Gainesville City Commission and the statutory authority of the Florida Public Service Commission. Both parties shall be bound by any duly executed amendment to this Contract unless such amendment is disapproved by order of the Florida Public Service Commission or declared invalid by a court having competent jurisdiction over this Contract.

REDACTED

SECTION 6.4 - The rights and obligations of CUSTOMER under this Contract shall not be assignable to any party without the prior written consent of CITY, which shall not be unreasonably withheld or delayed.

SECTION 6.5 - If at any time during the term of this Contract CUSTOMER violates any terms and conditions of this Contract or of related CITY policies, CITY may discontinue service and terminate the Contract. CUSTOMER may avail itself to an early termination of this Contract, pursuant to all the provisions of this Section, by providing three (3) years' advance written notice to the CITY of such intent to terminate early. In the event of an early termination of this Contract, whether by either Party, normally applicable rate schedules become applicable immediately and if the early termination is at the request of CUSTOMER or because of a violation of CUSTOMER's obligations under this Contract, CUSTOMER will be required to reimburse the CITY for any Interruptible Service Demand Credits granted previously and for all reasonable costs incurred by the CITY due to such early termination.

SECTION 6.6 - Should the CITY become aware of any pending legislative or regulatory change which is likely to have an adverse impact upon the CITY's tax exempt bond status, due to provisions of this Contract, CITY shall promptly notify CUSTOMER thereof whereupon the Parties shall negotiate in good faith to modify the provisions of the Contract to eliminate such adverse impact on the CITY's tax exempt bond status.

REDACTED

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be executed by their duly authorized officers or representatives, and copies delivered to each Party, as of the day and year first above stated.

THE CITY OF GAINESVILLE, FLORIDA d/b/a GAINESVI LLE REGIONAL UTILITIES ("CITY")

By: _____
Name:
Title:

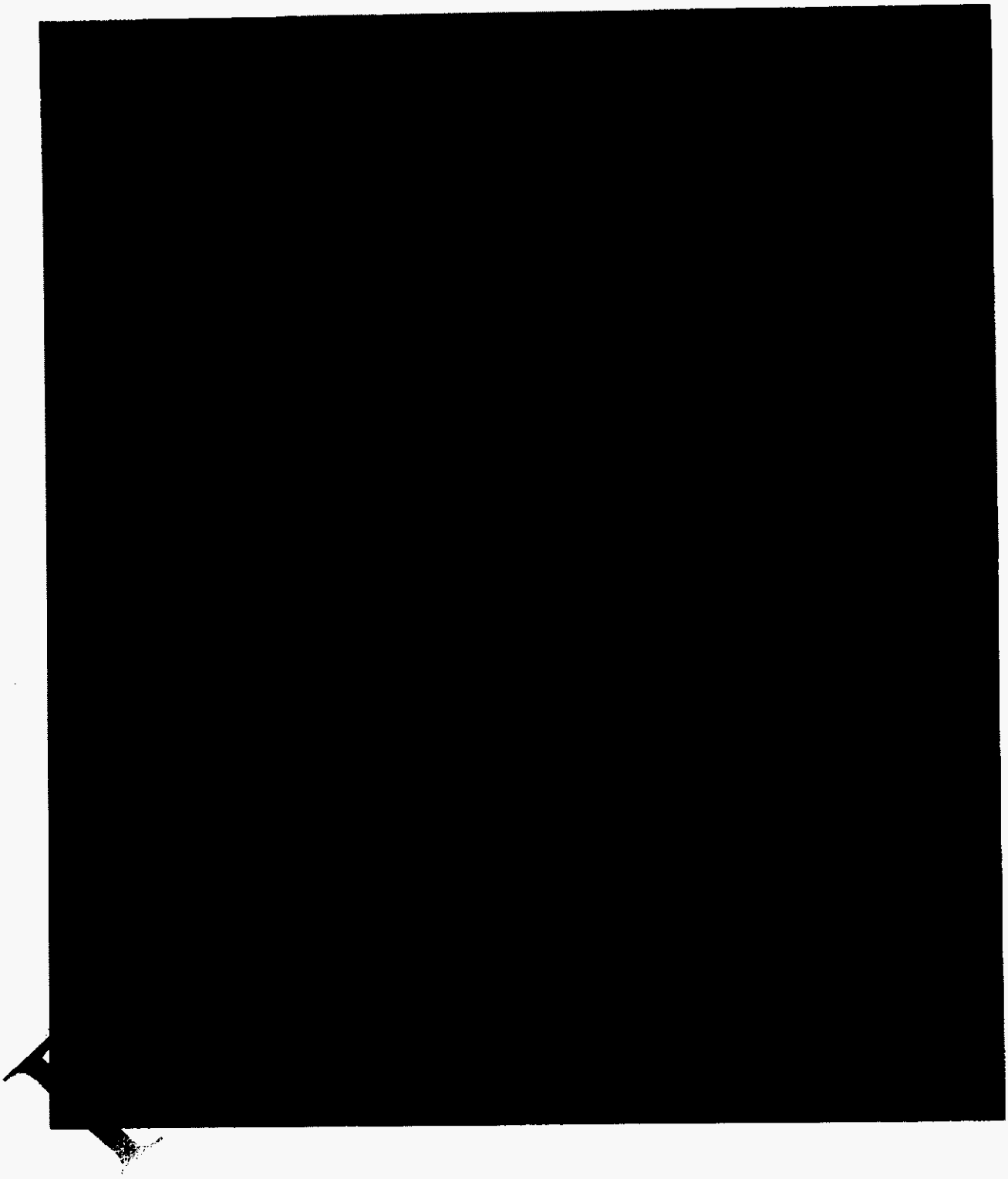
GAINESVILLE RENEWABLE ENERGY CENTER, LLC ("CUSTOMER")

By: _____
Name:
Title:

APPROVED AS TO FORM AND LEGALITY:

By: _____
Name: Raymond O. Manasco, Jr.
Title: Utilities Attorney, Gainesville Regional Utilities

REDACTED





*REDACTED*

Appendix VIII
Sustainability Standards

## 1. Minimum Sustainability Standards for Forest-Produced Biomass

The following standards shall apply only to Forest-Produced Biomass.

**1.1** Seller shall em ploy, or shall indirectly em ploy through contra t, at least t professional foresters to manage the biomass fuel procurement for the Facility.

**1.2** Seller shall m anage the biom ass fue l proc urement for the F acility in accorda ce with the following general goals:

a. Promote forest health.

b. Provide for long-term forest produc by integrati reforestation with harvesting.

c. Seek to protect forest reso ces from threats s h as wildfire, pests and diseases.

d. Safeguard critical wate oil and habita resources.

e. Apply an ecosystem perspe to preserve biological diversity.

**1.3** Seller shall only utiliz e bio s fuel harve sted in com pliance with the Best Management Practices for Silvic ure published by the Florida Departm ent of Agriculture and Consum Services, Divi sion of Forestry ("BMP"). Presumption of BMP compli shall e given to harv ested properties covered by a Notice of Inte o Implemen "BM NOII") in acco rdance with Rule 5I-6.004 FAC. Up to five pe nt of the h vest areas not covered by a BMPNOII shall be random ly inspected Seller' foresters to ensure BMP compliance.

**1.4** Sel shall no tilize b iomass fuel harvested during the conversion of a natural f est to p mation fore st. Natu ral forest shall be defined as a forest ecosystem at was naturally regenerated and contains most of the principal cha racteristics a key elem ents of na tive ecosystem s, such as com plexity, structure and bio-div sity.

**1.5** Seller shall not utilize biom ass fuel harvested from a legally-designated conservation area excep t to the extent that th e applicable conservation easement, agreement or sim ilar such docum ent does not specifically prohibit harvesting of such biom ass. This does not preclude th e use of biom ass fuels harvested from publicly owned lands where such harvesti ng is com patible with the management goals and objectives as determined by the managing agency.

REDACTED

1.6 Seller shall not utilize stum ps as biom ass fuel except to the exten t that such stumps are harvested according to a wr itten con tract accom panied by a written statement from a certified professional fores ter tha t the harvesting of the identified stumps is desired for ecological and environmental reasons.

1.7 Seller shall not utilize biom ass fuel derived from non-native species id entified as invasive by the Florida Departm ent of Environm ental Protection unless being harvested as a part of a forest or ecosystem restoration program.

1.8 Seller shall require landowners contrac ting to supply biom a fuel to repl harvested tracts within three years as a condition for renewing pply contrac from those tracts after harvest.

1.9 Seller shall require its Suppliers to at tend an ann l sustai ability a est practices seminar organized by Seller.

1.10 Seller shall only utilize biom ass f uel tha t i h arvested i m pl ance with the Florida Endangered and Threatened Sp Act (s. 37 91), the Florida Endangered Species Protection Act (s. 9.411) e Preservation of Native Flora of Florida Act (s.581.185) and the fe al Endange Species Act (ESA) of 1973 (16 U.S.C. 1531-1544). Biom as fuel obtained by fo ha rvests that result in damaging populations of endan ered or thre atened species, as designated by the State of Florida, is not elig ible or purchase by Seller. Any lack of eligibility for purchase based on this s tandard all not n ece sarily extend to an entire parcel or other unit of property, but on ly are necessary for m aintenance of th e endangered and threa d species. Pur haser and Selle r shall co llaborate to ensure compliance wi this dard.

2. **Forest Stewardship Incentive yments**

2.1 Purch ser wishes t rovid land owners a financial incentive to promote forestry pract s co nsidere o be superio r to the m inimum sust ainability standards ontaine in Part 1 o th is Appendix VIII, in terms of promoting b iodiversity and environme l prot ction. The program to ach ieve this objective consists of three pri ary comp nts:

a. Th adoption by reference of third party stewardship certification rograms.

b. A program of eligibility that will provide growers with a guaranteed price premium for having certified their forest plan through a qualified stewardship program.

c. A program of ongoing evaluation and adjustment of the plan to reflect the results obtained and changing market conditions, including an advisory committee of forestry professionals.



*REDACTED*

REDACTED

2.2 Purchaser wi ll be responsi ble for the ad ministration of the Forest Stewardship Program and will reim burse the Seller for any paym ents made to Suppliers under this progr am. Purchaser also re tains the right to m odify the Forest Stewardship Program at any time.

2.3 Once a g rower has certified specific land properties, docum entation will be provided by Purchaser that entitles the grower to a pr emium paym ent that will remain fixe d as long as the continued pa rticipation in the certified program is verified.

2.3.1 If the level of f inancial incen tives per ton as socia[illegible] with a specif[illegible]c stewardship program decreases th rough tim e, the grower [illegible]ll s till [illegible]e entitled to the leve l of incentive effective at the [illegible]me they ent[illegible]d into the program.

2.3.2 If the level of incentive increases for a [illegible]pecific [illegible]ardship [illegible]ogram , the grower will not be entitled to that inc[illegible]ase.

2.3.3 A grower may opt to change to a[illegible]i ffer[illegible] stewardship program but m ust be certified under that progra[illegible] and w *ill o[illegible] be eligible to receive the* level of incentive available at the time the new [illegible]rtification is obtained.

2.4 Payments will be m ade to qua[illegible]ied Suppliers [illegible] y Seller b ased on deliv ered wet tonnage, provided the fuel speci[illegible]ations oth[illegible]rwise im posed by Seller for the *proper operation of the Facility a*[illegible]*et.* Th[illegible]se paym ents will be reim bursed by Purchaser.

2.5 Purchaser will b e re sp[illegible]nsible f[illegible]r [illegible]rtifying with the ce rtifying progr am that the grower has com plied wi[illegible] the program once loads from that property start being delivered[illegible] u[illegible]er will reta in th e righ t to m ake its own determ ination of conti[illegible]ed verifica[illegible] if de[illegible]med necessary.

REDACTED



*REDACTED*

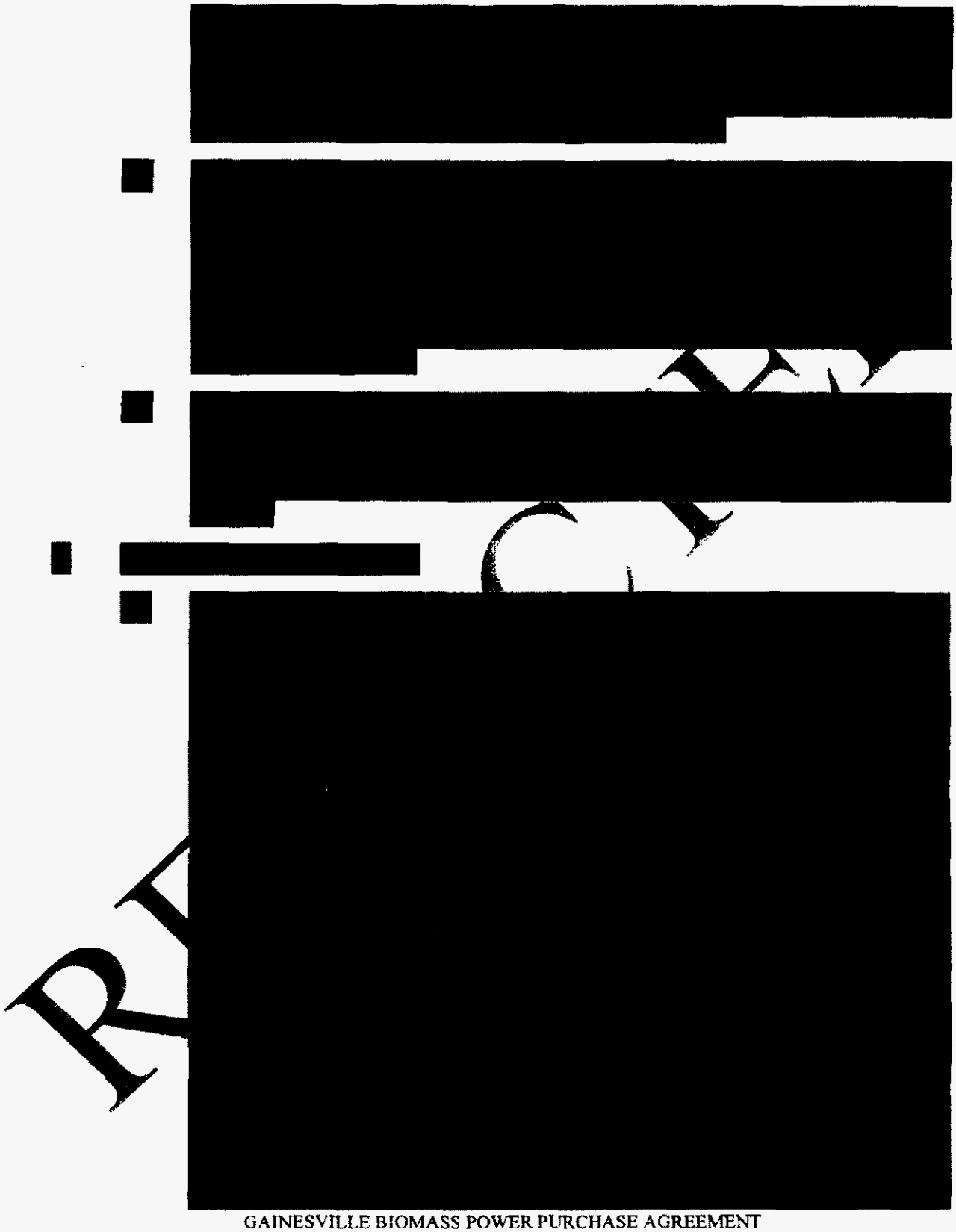
Appendix IX
Initial Testing Standards and Operational Capacity Testing

[redacted]

REDACTED

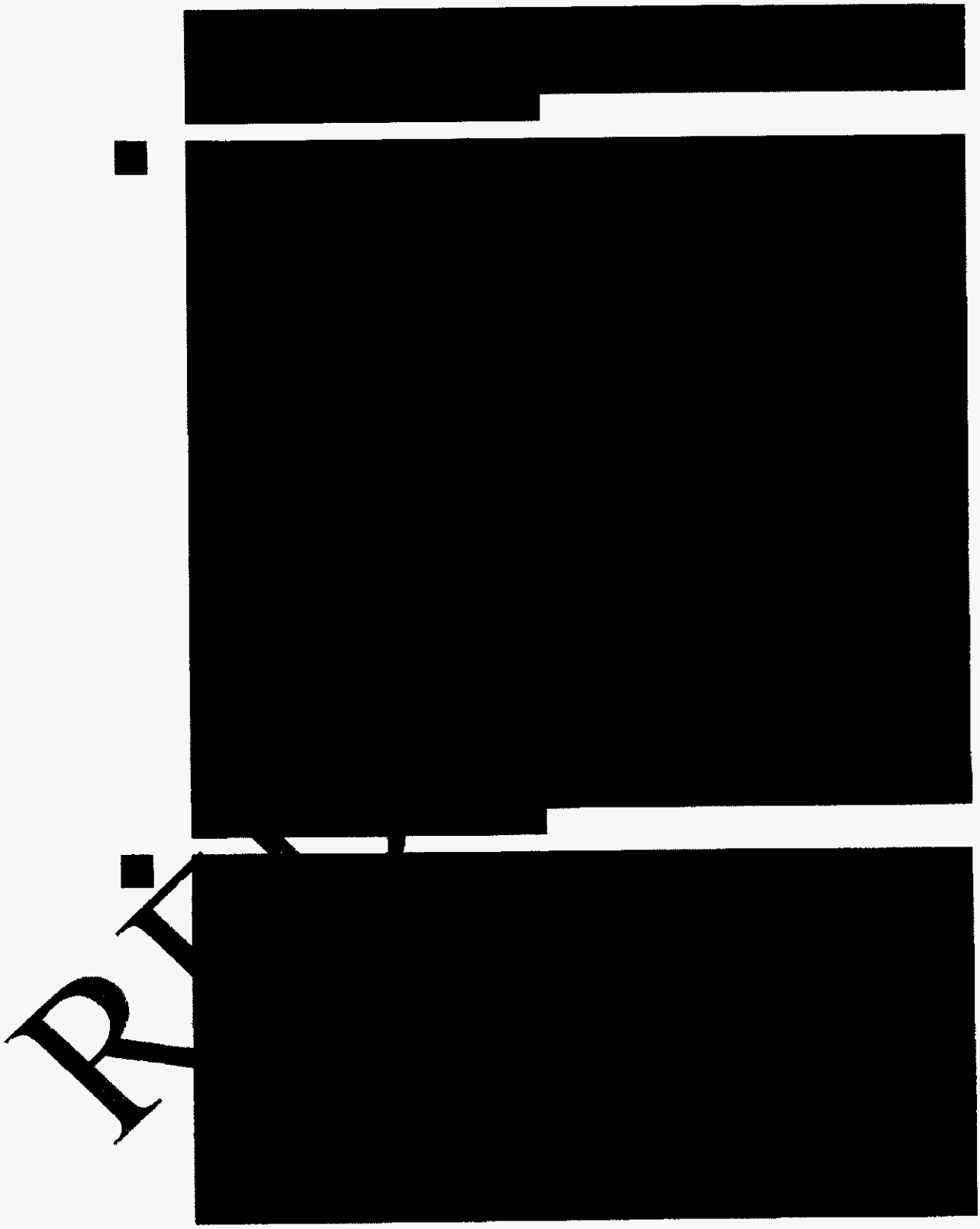


*REDACTED*





*REDACTED*





*REDACTED*

REDACTED

# 6

# GRU/GREC LLC's Supplemental Response to Staff's Second Request for Production of Documents (No. 12)

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

| | |
|---|---|
| In re: Joint petition to determine need for Gainesville Renewable Energy Center in Alachua County, by Gainesville Regional Utilities and Gainesville Renewable Energy Center, LLC. | DOCKET NO. 090451-EM<br><br>DATED: NOVEMBER 4, 2009 |

RESPONSES TO STAFF'S SECOND REQUEST FOR PRODUCTION OF DOCUMENTS TO GAINESVILLE RENEWABLE ENERGY CENTER (NOS. 9-13)

Gainesville Regional Utilities (GRU) and Gainesville Renewable Energy Center, LLC (GREC LLC), pursuant to Rule 28-106.206, Florida Administrative Code, Rule 1.340, Florida Rules of Civil Procedure, and the Order Establishing Procedure in this matter, hereby respond to Staff's Second Request for Production of Documents (Nos. 9-13).

NOV - 4 2009

12. **Please refer to page 8-8, Section 8.3.3 of the Application. Please provide a copy of the City Commission's decision not to consider additional capacity using fossil fuels and instead direct Gainesville Regional Utilities (GRU) staff to pursue biomass alternatives for future capacity needs.**

**Response to Request No. 12**
Please refer to the enclosed CD labeled "GRU POD 2 #9-13 Responses." The CD includes the information requested in POD No. 12.

Skip to Main Content. Please Contact Us if there is anything we can do to improve the Accessibility of this page.

- Home
- Meet Governor Crist
  - Biography
  - Pledge/Philosophy
  - Contact
- Meet the First Lady
- Priorities
  - Crist/Kottkamp Budget
  - Safety and Security
  - Property Tax and Insurance Reform
  - Education Initiatives
  - Adoption/Abuse Prevention Initiatives
  - Civil Rights
  - Healthcare Initiatives
  - Open Government
  - Plain Language
- Media Center
  - News Releases
  - Frequently Requested Records
  - Notes from the Capitol
  - Schedule
  - Audio/Video and Photo Gallery
  - Governor Crist's Weekly Podcast
  - Executive Orders
  - Speeches
  - Downloads
  - Legislative Actions
- Podcasts
- The Crist Team
  - Lt. Governor
    - Biography
    - Pledge/Philosophy
    - Contact
  - Meet the Staff
  - Gubernatorial Appointments
    - Board and Commission Vacancies
    - Judicial Appointments
    - Pending Nominees for Judicial Vacancies
  - Internships
- MyFlorida
- Contact

Exec Order
07-126
07-127
07-128
Signed 7/13/07

GOVERNOR CRIST SIGNS EXECUTIVE ORDERS TO REDUCE GREENHOUSE GASES

July 13, 2007

Contact:

ERIN ISAAC
850-488-5394

MIAMI – Governor Charlie Crist today signed three Executive Orders initiating Florida's energy policy. The Governor also signed partnership agreements with Germany and the United Kingdom outlining an agreement that focuses on climate policies and mutual economic benefits. The signing ceremony concluded the Serve to Preserve Florida Summit on Global Climate Change held at the Intercontinental Miami Hotel in Miami on July 12-13, 2007.

"Florida is providing the moral leadership needed to preserve our state's beautiful natural environment, and state government is leading by example by taking immediate action to reduce greenhouse-gas emissions," Governor Crist said. "However, our actions do not stop here. During the next few months, Florida's Action Team on Energy and Climate Change will develop further recommendations for our state's long-term climate-friendly efforts."

The Executive Orders carry out Governor Crist's commitment to reducing Florida's greenhouse gases and increasing energy efficiency. As a result, Florida will pursue renewable energy sources such as solar and wind energy, as well as alternative energy such as ethanol and hydrogen.

Governor Crist signed Executive Order 07-126, titled "Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government"; Executive Order 07-127, "Immediate Actions to Reduce Greenhouse Gas Emissions within Florida"; and Executive Order 07-128, "Florida Governor's Action Team on Energy and Climate Change."

"Germany and the United Kingdom are recognized as worldwide leaders in actively addressing global climate change," said Governor Crist. "Florida is honored to join these great nations in calling for a post-Kyoto Protocol that protects the planet's climate systems by reducing emissions of greenhouse gasses beyond 2012."

Governor Crist signed two partnerships agreements, "Partnership on Global Climate Change, Action between the United Kingdom and the State of Florida," and "Partnership on Global Climate Change, Action with the Federal Republic of Germany and the State of Florida."
Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government

State government will first measure greenhouse gas emissions and develop a Governmental Carbon Scorecard. State government will then work to reduce emissions 10 percent by 2012, 25 percent by 2017, and 40 percent by 2025. To achieve that goal, state buildings constructed in the future will be energy efficient and include solar panels whenever possible. Office space leased in the future must be in energy-efficient buildings as well. Any purchased state vehicles should be fuel efficient and use ethanol and biodiesel fuels when available. State government will also seek to partner with an energy-efficient rental-car company for the 2009 contract.

**Immediate Actions to Reduce Greenhouse Gas Emissions within Florida**

Governor Crist directed the adoption of maximum emission levels of greenhouse gases for electric utilities. The standard will require a reduction of emissions to 2000 levels by 2017, to 1990 levels by 2025, and by 80 percent of 1990 levels by 2050. Florida will also adopt the California motor vehicle emission standards, pending approval of the U.S. Environmental Protection Agency waiver. The standard is a 22-percent reduction in vehicle emissions by 2012 and a 30-percent reduction by 2016.

Florida will also require energy-efficient consumer appliances to increase efficiency by 15 percent of current standards. Governor Crist also requested that the Public Service Commission adopt a 20 percent Renewable Portfolio Standard by 2020, with a strong focus on solar and wind energy.

**Partnerships with Germany and the United Kingdom**

Governor Crist committed to partnering with Germany and the United Kingdom to discuss and promote initiatives that broaden the Kyoto Protocol and reduce the emission of greenhouse gases beyond 2012.

The State of Florida will exchange delegations with Germany and with the United Kingdom to create a forum for sharing public policy experience and exchanging science and technology, placing a particular emphasis on the sharing of ideas and policies related to energy efficiency and renewable energy sources. The individual partnership agreements will increase climate-friendly trade between the State of Florida and the Federal Republic of Germany and between the State of Florida and the United Kingdom.

**Florida Governor's Action Team on Energy and Climate Change**

Governor Crist will appoint diverse stakeholders to a Governor's Action Team on Energy and Climate Change. Team members will create a Florida Climate Change Action Plan that will include strategies beyond today's Executive Orders to reduce emissions, including recommendations for proposed legislation for consideration during the 2008 Legislative Session and beyond.

"Florida's economy, the health of our people, and the quality of our environment will be shaped by the bold action steps taken by Governor Crist today," said Secretary Michael W. Sole of the Florida Department of Environmental Protection. "This summit is a watershed event in Florida's history, and I applaud Governor Crist for his leadership on this important issue."

Governor Crist was joined at the signing ceremony by California Governor Arnold Schwarzenegger. Governor Schwarzenegger, who was also the luncheon keynote speaker, is a national leader in reducing greenhouse gas emissions. He has helped reduce traffic congestion and clean the air by establishing the California Hydrogen Highway.

"Governor Schwarzenegger is truly a national and international leader on the issue of global climate change," Governor Crist said. "I am honored that he has taken time out of his busy schedule to join us and share his expertise with us."

**About the Serve to Preserve Florida Summit on Global Climate Change**

The summit brought together policy makers, academics, scientists, environmentalists and the business community to discuss the impact of climate change in Florida. These experts helped develop best practices related to alternative fuels and emission standards. The group's strongest recommendations helped shape procedures for state agencies and future legislation. For more information, visit www.MyFloridaClimate.com or www.flgov.com.

To offset the energy used for the summit, the State of Florida has worked with the non-profit CarbonFund.org to estimate the carbon emissions created by summit participants through their use of transportation, hotel operations and food preparation. Because carbon emissions have global impact, supporting renewable energy anywhere can compensate for the environmental impact of the summit. The State of Florida's financial support of renewable wind energy in New Mexico will counterbalance the carbon emissions generated by the summit.

Under Florida law, e-mail addresses are public records. If you do not want your e-mail address released in response to a public records request, do not send electronic mail to this entity. Instead, contact this office by phone or in writing.

Copyright 2008 State of Florida | Privacy Statement

***Florida***

**Florida Governor Charlie Crist Celebrated the Cancellation of a Key Coal Plant Project.** Florida Governor Charlie Crist backed up the symbolism of his meeting on global climate change in Miami with a stern rebuke to the future of coal-powered energy plants in the state. After Florida's Public Service Commission turned down an application for a coal plant in Glades County, Crist said the future of coal plants in the state is "not looking good." Crist said followed with "We're moving in a different direction." [Sarasota Herald-Tribune, 7/4/07]

**Florida Governor Charlie Crist Said Utilities Must Stop Relying on Coal and Natural Gas Plants.** After the Public Service Commission denied Florida Power and Light Co.'s request to build a coal-fired plant in Glades County, Governor Charlie Crist hailed the decision and said that utilities must stop relying on coal and natural gas plants that generate carbon dioxide, a probable cause of global warming. [Palm Beach Post, 7/4/07]

*3) Discuss scheduling elections for 2009 and beyond and discuss a potential municipal election day in Alachua County each Spring.*

*4) Discuss the period between elections and Swearing-In*

*5) Election auditing*

*6. Any other election issues*

**Approved, as shown above (Motions)**

070134_20070618.pdf

**070184.** **Election Auditing Referral (NB)**

**RECOMMENDATION** *The City Commission refer the issue of election auditing to the Audit, Finance & Legislative Committee.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Braddy, that this matter be Referred to the Audit, Finance and Legislative Committee, due back on December 18, 2007. The motion carried by the following vote:**

Votes: Aye: Jack Donovan, Jeanna Mastrodicasa, Scherwin Henry, Craig Lowe, Edward Braddy, Rick Bryant and Pegeen Hanrahan

## RECESS - 8:56 PM

## RECONVENE - 9:04 PM

## GENERAL MANAGER FOR UTILITIES

**070135.** **Energy Supply Plan (B)**

*GRU General Manager for Utilities Karen Johnson, GRU Assistant General Manager for Strategic Planning Ed Regan, Utility Forester Patrick Wolf, GRU Assistant General Manager for Energy Supply Chip Allen and Assistant General Manager for Customer Support Kathy Viehe gave presentations.*

*Chair Hanrahan recognized Paula Stahmer, Ed Brown, Tom Cunilio, Elizabeth Francis, Karen Arrington, Dian Deevey, Joshua Dickinson, Sally Dickinson, Adrienne Burgess, David Harlos, Rob Brinkman, Harald Kegelmann, Amy Richard, Danielle Imenheiser and Mark Spiller who spoke to the matter.*

*WAIVER OF RULES: Commissioner Lowe moved and Commissioner Henry*

*seconded to waive the rules to extend the meeting to 11:30 PM.*
*(VOTE: 7-0, MOTION CARRIED)*

*MOTION: Commissioner Lowe moved and Commissioner Bryant seconded that with respect to the RFP for Biomass Energy Supply to: 1) Approve all woody biomass fuel types and municipal solid waste as fuels, (as listed on page 18 of the presentation) which includes: Forest Thinning, Logging Residue, Municipal Solid Waste (MSW), Pulpwood and Urban Waste Wood; 2) that the Municipal Solid Waste would be restricted to low emission technology; 3) that coal and petroleum coke would be totally eliminated as fuel sources, leaving methane as an acceptable back-up fuel source; 4) approve Deerhaven as a potential site for generation; and 4) refer the issue of forest certification stewardship to the Regional Utilities Committee (RUC).*
*(VOTE: 6-1, Commissioner Donovan, No - MOTION CARRIED)*

*NOTE: See following Referral Item #070181.*

**RECOMMENDATION** *The City Commission*
*1. Receive a presentation summarizing the status of the purchased power offer, integrated eco-industry system proposals, and biomass resource assessments;*
*2. Receive a presentation summarizing the pros and cons of joint participation with other utilities, locating facilities at Deerhaven, the use of various forms of fuel, and performance versus prescriptive forms of Requests for Proposal;*
*3. Provide policy guidance on the forms of fuel that will be eligible for consideration; and*
*4. Authorize staff to prepare and issue a Power Supply RFP soliciting binding proposals for economical base load electric generation capacity under the following frame work:*
*a. Proposals will be evaluated on delivered cost per MWH, reliability of fuel supply, and emission quality; b. Proposals including co-manufacturing and location of facilities on the Deerhaven site are acceptable; c. Proposals may be in the form of engineer, purchase and construct (EPC) contracts or purchased power agreements (PPA).*

**A motion was made by Commissioner Lowe, seconded by Mayor-Commissioner Pro Tem Bryant, that this matter be Approved as shown above (See Motion). The motion carried by the following vote:**

Votes: Aye: Jeanna Mastrodicasa, Scherwin Henry, Craig Lowe, Edward Braddy, Rick Bryant and Pegeen Hanrahan
Nay: Jack Donovan

070135_20070618.pdf
070135_REV_20070618.pdf

**070181. Forest Certification Stewardship Issues (NB)**

**RECOMMENDATION** *The City Commission refer the issue of forest certification stewardship issues to the Regional Utilities Committee.*

# City of Gainesville

*City Hall*
*200 East University Avenue*
*Gainesville, Florida 32601*

## Meeting Minutes

**Monday, June 18, 2007**

**6:00 PM**

**City Commission Special Meeting**

**City Hall Auditorium**

## City Commission

***Mayor Pegeen Hanrahan (At Large)***
***Mayor-Commissioner Pro Tem Rick Bryant (At Large)***
***Commissioner Jeanna Mastrodicasa (At Large)***
***Commissioner Scherwin Henry (District 1)***
***Commissioner Ed Braddy (District 2)***
***Commissioner Jack Donovan (District 3)***
***Commissioner Craig Lowe (District 4)***

***Persons with disabilities who require assistance to participate in this meeting are requested to notify the Office of Equal Opportunity at 334-5051 or call the TDD phone line at 334-2069 at least two business days in advance.***

## CALL TO ORDER - 6:06 PM

## ADOPTION OF THE AGENDA

*NOTE: Commissioner Henry entered the meeting room at 6:07 PM and Commissioner Braddy entered the meeting room at 6:08 PM.*

*MOTION: Commissioner Lowe moved and Commissioner Mastrodicasa seconded to adopt the agenda.*
*(VOTE: 7-0, MOTION CARRIED)*

*Chair Hanrahan recognized Dian Deevey, Paula Stahmer and Sally Dickinson who spoke to the adoption of the agenda.*

## ROLL CALL

Present: Edward Braddy, Pegeen Hanrahan, Rick Bryant, Craig Lowe, Jack Donovan, Jeanna Mastrodicasa and Scherwin Henry

## PLAN BOARD PETITION

**070089.** **Amend Section 30-346(d) of City of Gainesville Land Development Code (B)**

**Petition 51TCH-07 PB, City of Gainesville. Amend section 30-346(d) to clarify that the Standard Industrial Classification Manual (SIC) categories are not used in residential districts for classification purposes, and that non-conforming membership organizations in residential districts may be changed to a place of religious assembly, without a Special Use Permit.**

*City Litigation Attorney Elizabeth Waratuke and Planning Manager Ralph Hilliard gave presentations.*

*Chair Hanrahan recognized Barbara Sharpe, Robert Weaver, Arupa Freeman, Ron Barker, John Hermsdorfer, Walter Willard, Pat Malott, Bob Freeman, David Bassler, Pat Fitzpatrick, Mark Goldstein, Rob Brinkman, Jimmy Harnsberger, Susan Ward, Sara Poll and Barbara Ruth who spoke to the matter.*

**RECOMMENDATION** *City Plan Board to City Commission - The City Commission deny Petition 51TCH-07 PB. Plan Board vote 6-0.*

*Staff to Plan Board - Approve*

*Staff to City Commission - Approve*

**A motion was made by Commissioner Henry, seconded by Commissioner Lowe, that this matter be Approved (Petition). The motion carried by the following vote:**

Votes: Aye: Jack Donovan, Jeanna Mastrodicasa, Scherwin Henry, Craig Lowe, Edward Braddy, Rick Bryant and Pegeen Hanrahan

070089_200707091300.pdf
070089a_200707231300.pdf

## CLERK OF THE COMMISSION

**070134.** **Election Issues (B)**

*City Clerk of the Commission Kurt Lannon, Supervisor of Elections Pam Carpenter and Assistant City Attorney Charles Hauck gave presentations.*

*FIRST MOTION: Commissioner Lowe moved and Commissioner Donovan seconded to select January 29, 2008 and February 19, 2008 as the election dates and authorize the City Attorney to draft and Clerk to advertise the ordinance. (Rec. 1)*
*(VOTE: 7-0, MOTION CARRIED)*

*NOTE: Mayor Hanrahan and Commissioner Henry volunteered to be on the upcoming Canvassing Board.*

*SECOND MOTION: Commissioner Lowe moved and Commissioner Henry seconded to authorize changing Code section 9-6.5 d to allow the Supervisor of Elections more flexibility in accommodating early voting. (Rec. 2)*
*(VOTE: 7-0, MOTION CARRIED)*

*THIRD MOTION: Commissioner Lowe moved and Commissioner Donovan seconded to work with the other municipalities and the Supervisor of Elections to establish a municipal election day in Alachua County each Spring. (Rec. 3)*
*(VOTE: 6-1, Commissioner Bryant - No, MOTION CARRIED)*

*Chair Hanrahan recognized Alex Patton, Brian Harmon, Rob Brinkman and Vincent Lipsio who spoke to the matter.*

*FOURTH MOTION: Commissioner Lowe moved and Commissioner Braddy seconded to refer the issue of election auditing to the Audit, Finance & Legislative Committee. (Rec. 5) (See following referral item #070184).*
*(VOTE: 7-0, MOTION CARRIED)*

*Chair Hanrahan recognized Vincent Lipsio who spoke to the matter.*

**RECOMMENDATION** *The City Commission:*

*1) Select January 29, 2008 and February 19, 2008 as the election dates and authorize the City Attorney to draft and Clerk to advertise the ordinance.*

*2) Authorize changing Code section 9-6.5d to allow the Supervisor of Elections more flexibility in accommodating early voting.*

**A motion was made by Commissioner Lowe, seconded by Mayor-Commissioner Pro Tem Bryant, that this matter be Referred to the Regional Utilities Committee, due back on December 18, 2007. The motion carried by the following vote:**

Votes: Aye: Jeanna Mastrodicasa, Scherwin Henry, Craig Lowe, Edward Braddy, Rick Bryant and Pegeen Hanrahan
Nay: Jack Donovan

## WAIVER OF RULES

*The rules were waived by consensus to take General Citizen Comment.*

## CITIZEN COMMENT

*John Feldman - RTS Bus Issues*

## ADJOURNMENT - 11:27 PM

Kurt M. Lannon, Clerk of the Commission

# 7

# GRU/GREC LLC's Supplemental Response to Staff's Third Request for Production of Documents (No. 14, item 1 and 3-5)

14. **Please refer to GRU's response to Interrogatory 60 of Staff's Second Set of Interrogatories. Please provide any documents, slides, presentations, or other materials provided to GRU customers informing them of or educating them about the estimated bill impact of the proposed Gainesville Renewable Energy Center.**

**Response to Request No. 14**
Please refer to the enclosed CD, which presents the requested information

# City of Gainesville

*City Hall*
*200 East University Avenue*
*Gainesville, Florida 32601*

## Meeting Minutes

**Thursday, May 7, 2009**

**1:00 PM**

**City Hall Auditorium**

## City Commission

***Mayor Pegeen Hanrahan (At Large)***
***Mayor-Commissioner Pro Tem Scherwin Henry (District 1)***
***Commissioner Lauren Poe (District 2)***
***Commissioner Jack Donovan (District 3)***
***Commissioner Craig Lowe (District 4)***
***Commissioner Thomas Hawkins (At Large)***
***Commissioner Jeanna Mastrodicasa (At Large)***

***Persons with disabilities who require assistance to participate in this meeting are requested to notify the Office of Equal Opportunity at 334-5051 or call the TDD phone line at 334-2069 at least two business days in advance.***

## CALL TO ORDER - 1:26 PM

Play Video

## ROLL CALL

Present: Pegeen Hanrahan, Craig Lowe, Jack Donovan, Jeanna Mastrodicasa, Scherwin Henry, Lauren Poe and Thomas Hawkins

## INVOCATION

Play Video

*The City Commission observed a moment of silence.*

## CONSENT AGENDA

Play Video

*Commissioner Lowe moved and Mayor-Commissioner Pro Tem Henry seconded to adopt the Consent Agenda, as modified.*
*(VOTE: 7-0, MOTION CARRIED)*

*MODIFICATIONS:*

*1. File #080958 - ProjectDox Electronic Plan Review and Permitting - Sole Source - (New Recommendation).*

*2. File #081018 - Election Date 2010 - (Pull from the Consent Agenda and place on the Regular Agenda for discussion).*

*3. File #081039 - Advisory Board and Committee Appointments - (Pull from the Consent Agenda and place on the Regular Agenda for discussion).*

*4. File #080938 - City Commission Rules/Government Efficiency - (Pull from the Consent Agenda and place on the Regular Agenda for discussion).*

## CITY MANAGER, CONSENT AGENDA ITEMS

**080958.** **Declare ProjectDox Electronic Plan Review and Permitting as Sole Source (B)**

**This item involves a request for the City Commission to waive the competitive bid process and a request to authorize the Building Official to enter into contract negotiations with Avolve Software for the purchase of electronic plan review software.**

**RECOMMENDATION** *Recommended Motion: The City Commission: 1) waive the competitive bid process and declare the ProjectDox plan*

*review and electronic permitting software as a "sole source,"; 2) approve the purchase of ProjectDox software from Avolve Software for a not to exceed price of $400,000; and 3) authorize Staff to enter into contract negotiations with Avolve Software , and if successful, the City Manager will execute a contract, subject to the approval of the City Attorney as to form and legality.*

*Alternative Recommendation A: The City Commission: deny the waiver of the competitive bid process. There is no fiscal impact.*

*Alternative Recommendation B: The City Commission: require the competitive bid process for the purchase of this software with fiscal impact to be determined.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080958a_Avolve PPt_20090507.pdf
080958b_Staff PPt_20090507.pdf
080958c_Cost Chart_20090507.pdf

**080984.** **Evergreen Cemetery Fee Structure (NB)**

**This item involves a request to the City Commission to instruct the City Attorney to amend the Code of Ordinances Chapter 7, Sections 7-8 and 7-9, so that the entire Evergreen Cemetery fee structure is placed in Appendix A of the Code of Ordinances.**

**RECOMMENDATION** *The City Commission instruct the City Attorney to amend the Code of Ordinances Chapter 7, Sections 7-8 and 7-9, for the purpose of placing the entire Evergreen Cemetery fee structure in Appendix A.*

*Alternative Recommendation*
*The City Commission not instruct the City Attorney to amend the Code of Ordinances, Chapter 7, sections 7-8 and 7-9, for the purpose of placing the entire Evergreen Cemetery fee structure in Appendix A.*

**This Matter was Approved as Recommended on the Consent Agenda.**

**080990.** **Combined Communications Center Interlocal Agreement (B)**

**This item presents an amendment to the Interlocal Agreement between the City of Gainesville, the Alachua County Sheriff and Alachua County for the Combined Communications Center.**

RECOMMENDATION *The City Commission approve the Interlocal Agreement as amended.*

*Alternative Recommendation A:*
*The City Commission direct staff to communicate any concerns of the City Commission to the Executive Board and report back to the City Commission.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080990_CCC Interlocal Agreement_20090507.pdf
080990A_CCC Interlocal Agreement_20090507.pdf
080990_agreement_20090507.pdf

**080992.** **American Recovery and Reinvestment Act of 2009 Funded Projects (NB)**

**This item is a request to authorize the City Manager to award construction bids and to execute construction contracts and related documents.**

RECOMMENDATION *Recommended Motion: The City Commission authorize the City Manager to: 1) award the bids for the three American Recovery and Reinvestment Act of 2009 funded projects (the 6th Street Rail Trail, the Milling and Resurfacing of NE 8th Avenue, and the NW 34th Street sidewalk) to the lowest responsive, responsible bidder, provided the bid awards are within the approved and available funding for each project; and 2) execute the construction contracts and related documents, subject to approval by the City Attorney as to form and legality.*

*Alternative Recommendation: The City Commission deny the request and direct the City Manager to proceed with the three American Recovery and Reinvestment Act of 2009 funded projects (the 6th Street Rail Trail, the Milling and Resurfacing of NE 8th Avenue, and the NW 34th Street sidewalk) with the City Commission to approve the award of the construction bids.*

**This Matter was Approved as Recommended on the Consent Agenda.**

**080993.** **Purchase of Additional Laser Imaging Detection and Ranging (LiDAR) data from Program Data Solutions (B)**

**This item is a request for the purchase of additional LiDAR data from a Florida Division of Emergency Management contract in order to facilitate a number of water management program activities in Gainesville and its surrounding areas and is a contract for add-on services to a previously approved project.**

RECOMMENDATION *Recommended Motion: The City Commission: 1) approve the purchase of additional LiDAR data collection, processing and quality assurance from PDS; and 2) authorize the City Manager to issue a purchase order not to exceed $49,913, subject to review and approval by the City Attorney as to form and legality.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080993_MOU_20090507.PDF

**080995.** **FY09 General Government Debt Issue (NB)**

**This item describes the proposed process for FY09 General Government borrowing.**

RECOMMENDATION *The City Commission direct the City Manager to prepare and distribute an RFP for a bank loan for the FY09 debt issue and authorize the City Manager, Administrative Services Director, and Finance Director to retain the required professional services to implement this debt issue.*

**This Matter was Approved as Recommended on the Consent Agenda.**

**081014.** **Recovery Act: Edward Byrne Memorial Justice Assistance Grant Application (NB)**

**This item requests City Commission authorization to apply for and accept Recovery Act: Edward Byrne Memorial Justice Assistance Grant funds (Stimulus - General) in the amount of 158,000 for two full-time Intervention Specialists for the Reichert House ($97,000) and for 12 digital in-car cameras ($61,000) for use by patrol.**

RECOMMENDATION *The City commission authorize the City Manager to: 1) apply to the Recovery Act: Edward Byrne Memorial Justice Assistance Grant (Stimulus - General) program for $158,000 in grant funds; and 2) execute the grant application, grant award, and any other necessary documents, pending review by the City Attorney as to form and legality.*

*Alternate Recommendation:*
*The City Commission declines the opportunity to apply for and receive grant funds from the Recovery Act: Edward Byrne Memorial Justice Assistance (Stimulus - General) in the amount of $158,000.*

**This Matter was Approved as Recommended on the Consent Agenda.**



090451 Hearing Exhibits - 000467

**081015.** **Edward Byrne Memorial Justice Assistance Grant Application (NB)**

**This item requests City Commission authorization to apply for and accept Edward Byrne Memorial Justice Assistance Grant funds (General) in the amount of $30,000 for the Tutorial Assistance for At-Risk Youth, $24,000 for the Sexual Predator and Offender Tracking Program and $20,000 for the SAFE-T Kiosk.**

RECOMMENDATION *The City Commission authorize the City Manager to: 1) apply to the Edward Byrne Memorial Justice Assistance Grant program for $74,000 in grant funds; and 2) execute the grant application, grant award, and any other necessary documents, pending review by the City Attorney as to form and legality.*

*Alternate Recommendation*
*The City Commission declines the opportunity to apply for and receive grant funds from the Edward Byrne Memorial Justice Assistance Grant in the amount of $74,000.*

**This Matter was Approved as Recommended on the Consent Agenda.**

**081017.** **Second Amendment to the FY 2008-2009 CDBG and HOME Annual Action Plan (B)**

**This is a request for the City Commission to approve a second amendment to the FY 2008-09 CDBG and HOME Annual Action Plan to allow for the utilization of additional federal HUD program funds; all of the elements of the City's original FY 2008-09 Annual Action Plan are hereby incorporated into this supplemental document.**

RECOMMENDATION *The City Commission: 1) approve the second amendment to the FY 2008-2009 CDBG and HOME Program Annual Action Plan; and 2) authorize the City Manager or designee to prepare and submit the second amendment to the FY 2008-2009 Annual Action Plan, including all understandings and insurances contained, to the U.S. Department and Urban Development (HUD) for financial assistance under the Community Development Block Grant Recovery Program (CDBG-R) and Homelessness Prevention and Rapid Re-Housing Program (HPRP); and to act on behalf on the City of Gainesville in all matters pertaining to the CDBG-R and HPRP Programs; and 3) authorize the City Manager to execute the appropriate HUD documents for the receipt of the HPRP and CDBG-R funds.*



090451 Hearing Exhibits - 000468

**This Matter was Approved as Recommended on the Consent Agenda.**

081017_Second Amendment_20090507.pdf

**081019.** **Recovery Act: Edward Byrne Memorial Justice Assistance Grant (JAG) Program FY 2009 Formula Program: Local Solicitation (B)**

**The City Commission approve the use of $448,816 from the Recovery Act: Edward Byrne Memorial Justice Assistance Grant (JAG) funds and will authorize the grant application for these funds.**

RECOMMENDATION *The City commission authorize the City Manager to: 1) apply to the Recovery Act: Edward Byrne Memorial Competitive Grant Program for $448,816 in grant funds; and 2) execute the grant application, grant award, and any other necessary documents, pending review by the City Attorney as to form and legality.*

**This Matter was Approved as Recommended on the Consent Agenda.**

081019_ByrneStimPkgLoc_20090507.pdf

**081021.** **Recovery Act: Edward Byrne Memorial Competitive Grant (JAG) (NB)**

**This item requests City Commission authorization to apply for the Recovery Act: Edward Byrne Memorial Competitive Grant for a total amount of $344,426 for two years. One purpose of Recovery Act funding is to preserve and create jobs to promote economic recovery. The Gainesville Police Department has identified two proposals addressing this purpose to be submitted to the U.S. Department of Justice for consideration.**

RECOMMENDATION *The City commission authorize the City Manager to: 1) apply to the Recovery Act: Edward Byrne Memorial Competitive Grant Program for $344,426 in grant funds; and 2) execute the grant application, grant award, and any other necessary documents, pending review by the City Attorney as to form and legality.*

*Alternate Recommendation*
*The City Commission decline the opportunity to apply for and receive grant funds from the Recovery Act: Edward Byrne Memorial Competitive Grant Program in the amount of $344,426.*

**This Matter was Approved as Recommended on the Consent Agenda.**

**081041.** **Prioritization of the City of Gainesville's Projects submitted for the Federal**

**Transportation Reauthorization Bill Funding (NB)**

Play Video

RECOMMENDATION *The City Commission: 1) approve the prioritization of the City of Gainesville's federal transportation reauthorization appropriation requests as recommended by staff; and 2) authorize the Mayor to draft a letter to transmit the priority list to the federal delegation.*

*Alternative Recommendation*
*The City Commission: 1) reprioritize the attached list of federal transportation authorization appropriation requests and direct staff to utilize the revised list in the federal appropriation request process; and 2) authorize the Mayor to draft a letter to transmit the priority list to the federal delegation.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080517. **Public Waterways Designation Agreement for Potano Paddling Trail (B)**

**This item involves a request for the Mayor to execute a Public Waterways Designation Agreement for Potano Paddling Trail.**

RECOMMENDATION *Recommended Motion: The City Commission authorize the Mayor and Clerk of the Commission to execute the agreement, subject to approval of the City Attorney as to form and legality.*

*Alternative Recommendation: The City Commission not authorize the Mayor and Clerk of the Commission to execute the agreement.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080517_MAP_20081106.pdf
080517_RESOLUTION_20081106.PDF
080517_resolution_20081106.pdf
080517_Resolution_20090521.pdf
080517_Agreement_20090521.pdf
080517_agreement_20090507.pdf

## GENERAL MANAGER FOR UTILITIES, CONSENT AGENDA ITEMS

## CITY ATTORNEY, CONSENT AGENDA ITEMS

## CLERK OF THE COMMISSION, CONSENT AGENDA ITEMS

**080997.** **City Commission Minutes (B)**

RECOMMENDATION *The City Commission approve the minutes of April 13, 2009 (Workshop); and April 16, 2009 (Regular Meeting); as circulated.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080997_workshop_20090507.pdf
080997_reg_minutes_20090507.pdf

**081034.** **Budget Meeting Change Request (B)**

RECOMMENDATION *The City Commission cancel the meeting scheduled for Wednesday, July 29, 2009 (see attached e-mail) and add FY 2010-General Government Budget to meeting topics already scheduled for the Tuesday, July 28, 2009, meeting; allowing the meeting to continue through the afternoon and evening as requested.*

**This Matter was Approved as Recommended on the Consent Agenda.**

081034_request_20090507.pdf

**081038.** **Resignation of Gainesville Human Rights Board Member Horacio Sierra and Gainesville/Alachua County Cultural Affairs Board Member Vivian Filer (B)**

RECOMMENDATION *The City Commission accept the resignations of Gainesville Human Rights Board Member Horacio Sierra and Gainesville/Alachua County Cultural Affairs Board Member Vivian Filer effective immediately and extends its appreciation for their services.*

**This Matter was Approved as Recommended on the Consent Agenda.**

*081038_Resignations_Sierra and Filer.pdf*

## EQUAL OPPORTUNITY DIRECTOR, CONSENT AGENDA ITEMS

## COMMITTEE REPORTS, CONSENT AGENDA ITEMS

## EQUAL OPPORTUNITY COMMITTEE, CONSENT

**080788.** **Revision to Chapter 8 of the Gainesville Code of Ordinances (B)**

RECOMMENDATION *The City Commission: 1) authorize the City Attorney to draft*

*and the Clerk of the Commission to advertise revisions to Chapter 8 of the Gainesville Code of Ordinances relating to gender identity regarding public shared shower or dressing facilities as it relates to area businesses and community organizations; and 2) remove this item from the referral list.*

**This Matter was Approved as Recommended on the Consent Agenda.**

080788_Chapter 8_20090415.PDF
080788_draft ordinance_20090507.PDF

## COMMUNITY DEVELOPMENT COMMITTEE, CONSENT

**070980.** **Solar Panels vs. Removing Tree Canopy (B)**

**This item refers to existing City of Gainesville Land Development Code provisions which may conflict with the City Commission's desire to foster economic development opportunities related to the implementation of the Solar Feed in Tariff.**

RECOMMENDATION *Community Development Committee to the City Commission: direct staff to: 1) generate a petition to the Plan Board allowing the development of solar fields by right within areas of the City designated Agricultural with appropriate dimensional, environmental and life/safety/health requirements; 2) generate a related omnibus petition to the Plan Board at a future time to accommodate solar development relative to other pertinent provisions of the City of Gainesville Land Development Code and; 3) remove this referral item from the Community Development Committee referral list.*

**This Matter was Approved as Recommended on the Consent Agenda.**

070980A_Memo To CDC_20090226pdf.pdf
070980B_Regulation_20090226.pdf
070980a_CDC 2-26 Minutes_20090507.pdf
070980b_Memo_20090507.pdf
070980c_Energy Regulation_20090507.pdf

## REGIONAL UTILITIES COMMITTEE, CONSENT

**070360.** **GRU Rate Structure, Item #070360 (NB)**

RECOMMENDATION *The Regional Utilities Committee (RUC) recommends that the City Commission remove this item from the referral list.*

**This Matter was Approved as Recommended on the Consent Agenda.**

070360_20070827.pdf
070360A_20070827.pdf
RUC Rate Structure Presentation October 9 2007.pdf
Backup for GRU Rate Structure Item 070360 Oct 9.pdf

**080222.** **GRU Incentives for the Enterprise Zone Referral Item #080222 (NB)**

RECOMMENDATION *The City Commission approve removing this item from the referral list.*

**This Matter was Approved as Recommended on the Consent Agenda.**

Backup for #080222 Enterprise Zone 2 11 09.pdf

**080419.** **Review of GRU's 10-Year Plan - Referral Item #080419 (NB)**

RECOMMENDATION *The Regional Utilities Commission (RUC) recommends that the City Commission remove this item from the referral list.*

**This Matter was Approved as Recommended on the Consent Agenda.**

## Passed The Consent Agenda

**A motion was made by Commissioner Lowe, seconded by Mayor-Commissioner Pro Tem Henry, including all the preceding items marked as having been adopted on the Consent Agenda. The motion carried by the following vote:**

Votes: Aye: Jeanna Mastrodicasa, Thomas Hawkins, Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry and Pegeen Hanrahan

## AUDIT, FINANCE & LEGISLATIVE COMMITTEE, CONSENT

## COMMUNITY REDEVELOPMENT AGENCY, CONSENT ITEMS

## END OF CONSENT AGENDA

## ADOPTION OF THE REGULAR AGENDA

Play Video

*MOTION: Commissioner Lowe moved and Mayor-Commissioner Pro Tem Henry seconded to adopt the Regular Agenda, as modified.*
*(VOTE: 7-0, MOTION CARRIED)*

*MODIFICATIONS:*

*1. File #081036 - Evaluation of Biomass-Fueled Generation Facility Proposals (Revised ppt. submitted).*

*2. File #080701 - Summer Heat Wave 2008 Final Report Update - (Withdraw from the agenda).*

*3. New Item - File #090003 - Approval of Additional HOME Program Funds to Gainesville Community Ministry, Inc. to provide Emergency Relocation Assistance (Add to the agenda).*

*4. File #080748 - Urban Services Report for Tax Parcel Numbers 07176-020-000 and 07176-020-001 (Idylwild/Serenola Area) - (Continue this item to the June 18, 2009 City Commission Meeting).*

*5. Mayor's Committee Assignments - (Add to the Regular Agenda).*

## CHARTER OFFICER UPDATES

## GENERAL MANAGER FOR UTILITIES

Play Video

**081036.** **Evaluation of Biomass-Fueled Generation Facility Proposals (B)**

**On May 12, 2008 the City Commission authorized the General Manager to negotiate and execute a purchased power agreement (PPA) for the output of a nominally 100 mega-watt (MW) net power plant, fueled with biomass and located on the Deerhaven Power Plant site. Negotiations have been successfully concluded, but because of adjustments to the initial proposal to reflect changing fuel prices, demand for electricity, and power plant construction costs, the General Manager has decided to advise the City Commission of these negotiated changes, their economic implications and to submit the executed PPA to the Commission for final approval.**

Play Video

*General Manager for Utilities Bob Hunzinger, Assistant General Manager for Strategic Planning Ed Regan, and American Renewables Representative Jim Gordon*



090451 Hearing Exhibits - 000474

*gave presentations.*

*Chair Hanrahan recognized Rob Brinkman and Walter Willard who spoke to the matter.*

**RECOMMENDATION** *The City Commission 1) receive a presentation from the General Manager and staff regarding the Power Purchase Agreement (PPA) between the City and Gainesville Renewable Energy Center, LLC for power generated by the nominal 100MW biomass generating plant; 2) approve the executed PPA; and, 3) authorize the General Manager or his designee to execute such documents and take all steps as may be necessary to implement the terms of the PPA, including but not limited to filing of all required applications with jurisdictional governmental bodies and agencies; and, the lease of and easements over portions of the Deerhaven Generating Station site necessary for the construction and operation of the biomass generating plant.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Approved as Recommended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

081036_MOD_Revised_ Biomass_ppt_20090507.pdf

## RECESS - Approximately 2:45 PM

## RECONVENE - Approximately 2:47 PM

## CLERK OF THE COMMISSION

**081018.** **Election Date 2010 (NB)**

Play Video

*Continued to the next City Commission Meeting (May 21, 2009).*

**RECOMMENDATION** *The City Commission select April 13, 2010, for the 2010 City of Gainesville Election and authorize the City Attorney to draft and the Clerk of Commission to advertise an ordinance.*

**Continued**

081018_MOD_20090521.pdf
081018_draftordinance_20090604.pdf

## CITY MANAGER

Play Video

**080701.** **Summer HeatWave 2008 Final Report Update (NB)**

**RECOMMENDATION** *The City Commission receive the HeatWave update.*

**Withdrawn**

080701_MOD-PPT_20090115.PDF
080701_Contingency Request_20090507.PDF

**080897.** **Presentation of the Site Plan for GPD's Campus Concept (B)**

**This item involves an approval from the City Commission to proceed with development of the GPD Campus which includes the construction of a new Community Center and remodeling of an existing building into a Tactical Training Center**

Play Video

*GPD Lieutenant Art Adkins, Architect Ian Reeves and Police Chief Norm Botsford gave presentations.*

**RECOMMENDATION** *The City Commission: 1) hear a presentation from staff; 2) approve the new site plan for GPD's Campus Plan; and 3) authorize staff to continue development with the architect for the proposed services.*

**A motion was made by Commissioner Hawkins, seconded by Mayor-Commissioner Pro Tem Henry, that this matter be Approved as Recommended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

080897_GPDSitePlanDesign_041609.pdf

**080901.** **State of Florida Legislative Update (B)**

**The City Commission will be provided with an update of legislation filed during the Florida Legislature's 2009 Regular Session.**

Play Video

**RECOMMENDATION** *The City Commission: 1) receive the legislative update; and 2) determine if issues presented necessitate the support or opposition of the City Commission.*

**Heard**

080901_PowerPoint_20090319.pdf
080901_Report_20090319.pdf
080901_report_20090507.pdf

**090003.** **Approval of Additional HOME Program Funds to Gainesville Community Ministry, Inc. to provide Emergency Relocation Assistance (B)**

**This item requests approval from the City Commission to allocate additional HOME Program funds to Gainesville Community Ministry, Inc. to provide emergency relocation assistance to displaced tenant households to find suitable replacement housing.**

*Assistant City Manager Fred Murry gave a presentation.*

**RECOMMENDATION** *Recommended Motion: The City Commission: 1) approve the amendment to the current Gainesville Community Ministry, Inc. contract in the amount of $42,000, subject to approval by the City Attorney; 2) authorize the City Manager to execute the amended contract with Gainesville Community Ministry, Inc.; and 3) authorize the Housing & Community Development Division to reallocate funds within its FY 2008-2009 HOME Program budget to fund the contract amendment to provide these services.*

**A motion was made by Mayor-Commissioner Pro Tem Henry, seconded by Commissioner Lowe, that this matter be Approved as Recommended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

090003_MOD Amendment_20090507.pdf
090003_MOD Agreement_20090507.pdf

## GENERAL MANAGER FOR UTILITIES

Play Video

**081035.** **Community Relations Annual Report (B)**

**This item is to provide a report on GRU's community relations activities.**

Play Video

*GRU Community Relations Director Nona Jones gave a presentation.*

**RECOMMENDATION** *The City Commission hear a report from staff regarding community relations efforts for Gainesville Regional Utilities.*

**Heard**

081035_annualreport_20090507.pdf

**CITY ATTORNEY**

**CITY AUDITOR**

**EQUAL OPPORTUNITY DIRECTOR**

**COMMITTEE REPORTS (PULLED FROM CONSENT)**

**ADVISORY BOARDS/COMMITTEES (APPOINTMENTS/REPORTS)**

**OUTSIDE AGENCIES**

**MEMBERS OF THE CITY COMMISSION**

**COMMISSION COMMENTS (if time available)**

**RECESS - 4:53 PM**

Play Video

**RECONVENE - 5:42 PM**

Play Video

**PLEDGE OF ALLEGIANCE (5:30pm)**

Play Video

**PROCLAMATIONS/SPECIAL RECOGNITIONS**

Play Video

**081016.** **City of Gainesville's Citizens' Academy Spring 2009 Graduates (NB)**

Play Video

*Communications Manager Bob Woods and Citizen's Academy Graduate Daniel Blumberg gave presentations.*

**RECOMMENDATION** *The City Commission: 1) recognize accomplishments of*

*Gainesville 101: Spring 2009 City of Gainesville Citizens' Academy graduates; and 2) hear brief comments from the class speaker on what they have learned.*

**Heard**

**081029.** **International Internal Audit Awareness Week - May 24-30, 2009 (B)**

Play Video

**RECOMMENDATION** *North Central Florida Institute of Internal Auditors President John Byrd, Vice President Jeanne Covington, and Board Member Brent Godshalk to accept the proclamation.*

**Heard**

081029_Proc_20090507.pdf

**081030.** **Police Week - May 11-17, 2009 and Masonic Peace Officers' Memorial Day May 15, 2009 (B)**

Play Video

**RECOMMENDATION** *Gainesville Lodge #41 F&AM Ray M. Davis, Jr. to accept the proclamation.*

**Heard**

081030_Proc_20090507.pdf

**081031.** **National Water Safety Month - May 2009 (B)**

Play Video

**RECOMMENDATION** *UF Synchro Coach Betsy Caza, PK Coach Mike Davidson, Gainesville Gaviatas Andrea Cornelius, and Makos Perrin Foerster to accept the proclamation.*

**Heard**

081031_Proc_20090507.pdf

**081032.** **National Public Works Week - May 17-23, 2009 (B)**

Play Video

**RECOMMENDATION** *City of Gainesville Public Works Department Director Teresa Scott, P.E. to accept the proclamation.*

**Heard**

081032_Proc_20090507.pdf

## CITIZEN COMMENT (6:00pm) - Please sign on sign-up sheet

Play Video

### Kali Blount

*1. Alachua General Hospital (AGH).*
*2. Seminary Lane Apts.*

### Jerry Williamson

*GPD Issues.*

### Gabriel Hillel

*Butterfly City Project.*

### Phil Emmer

*1. Complimentary remarks regarding Assistant General Manager for Strategic Planning Ed Regan.*

*2. The Reform Institute - See following file #090039.*

**090039.** **Phil Emmer - Citizen Comment (B)**

**RECOMMENDATION** *The City Commission hear comments from Phil Emmer and place back-up submitted on file.*

**Placed on File**

090039_Phil Emmer_20090507.pdf

### Elizabeth Howard

*GPD and Prostitution Issues.*

### Kamili

*GPD Issues.*

### Walter Willard

*Various Issues.*

**Pat Fitzpatrick**

*Homeless Issues.*

## PUBLIC HEARINGS

## ORDINANCES, 1ST READING- ROLL CALL REQUIRED

Play Video

**080860.** **UTILITY SERVICE CHARGES (B)**

**Ordinance No. 0-09-11**
**AN ORDINANCE AMENDING APPENDIX A, SECTION UTILITIES (7) OF THE GAINESVILLE CODE OF ORDINANCES BY AMENDING CERTAIN SERVICE CHARGES AND DECREASING LATE FEE FOR COMBINED STATEMENT; PROVIDING A REPEALING CLAUSE; PROVIDING DIRECTIONS TO THE CODIFIER; PROVIDING A SEVERABILITY CLAUSE; AND, PROVIDING AN EFFECTIVE DATE IN ACCORDANCE WITH THE SCHEDULE PROVIDED HEREIN.**

Play Video

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Adopted on First Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan
Absent: Jack Donovan

080860_presentation_20090402.pdf
080860_ordinanceGRU_20090507.pdf
080860_ordinance_20090521.pdf

**080988.** **UTILITY SERVICE CHARGES (B)**

**Ordinance No. 0-09-12**
**AN ORDINANCE AMENDING APPENDIX A, SECTION UTILITIES (3) WATER, OF THE GAINESVILLE CODE OF ORDINANCES BY INCREASING THE REFUNDABLE DEPOSITS, THE INSTALLATION AND REMOVAL FEE, AND THE MONTHLY BASE CHARGE FOR TEMPORARY SERVICE ON WATER METERS AND FIRE HYDRANTS; PROVIDING FOR TIME LIMITS; PROVIDING LANGUAGE FOR DAMAGE AND TAMPERING CHARGES; PROVIDING A REPEALING CLAUSE;**

**PROVIDING DIRECTIONS TO THE CODIFIER; PROVIDING A SEVERABILITY CLAUSE; AND, PROVIDING AN EFFECTIVE DATE IN ACCORDANCE WITH THE SCHEDULE PROVIDED HEREIN.**

Play Video

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Adopted on First Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan
Absent: Jack Donovan

080988_ordinancehydrantfees_20090507.pdf
080988_ordinance_20090521.pdf

**080748.** **URBAN SERVICES REPORT FOR TAX PARCEL NUMBERS 07176-020-000 and 07176-020-001 (IDYLWILD/SERENOLA AREA) (B)**

**Ordinance 0-09-05**
**An Ordinance of the City of Gainesville, Florida; adopting an Urban Services Report which sets forth the plans to provide urban services to an area comprised of Tax Parcel Numbers 07176-020-000 and 07176-020-001, generally located south of Williston Road and the City Limits, west of SW 20th Terrace, north of SW 56th Avenue, and east of the City Limits; the area is proposed for annexation by the City of Gainesville pursuant to Chapter 90-496, Special Acts, Laws of Florida, as amended, known as the Alachua County Boundary Adjustment Act; providing directions to the City Manager, the City Attorney and the Clerk of the Commission; providing a repealing clause; providing a severability clause; and providing an immediate effective date.**

Play Video

*This item was continued to June 18, 2009.*

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Continued (1st Reading) for June 18, 2009. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan
Absent: Jack Donovan

080748_Petition_ 20090205.pdf
080748_MOD_Zahariev_Pet_20090205.PDF
080748_USR Ordinance_20090507.pdf
080748_USR Exhibit A_20090507.pdf
080748_MOD_STAFF MEMO_20090507.pdf



090451 Hearing Exhibits - 000482

080545. **LAND DEVELOPMENT CODE (B)**

**Ordinance No. 0-08-82; Petition No. 120TCH-08 PB**
**An ordinance of the City of Gainesville, Florida, correcting minor scrivener's errors throughout the Land Development Code, by amending subsection 30-41(a)(4) relating to MU-1 and MU-2 zoning districts; by amending Table 2 of section 30-52 relating to principal structures within the residential low density districts; by amending subsection 30-98(m)(9) relating to wireless communication facilities; by amending subsection 30-112(a)(2) relating to historic preservation/conservation; by amending subsection 30-160(d)(33) relating to preliminary development plans; by amending subsection 30-318(b)(4)b relating to I-75 corridor signs; amending subsection 30-353(d) relating to the City Plan Board; by amending Appendix A, Section 6, relating to the Special Area Plan for University Heights; by amending Appendix A, Section 7 relating to the Special Area Plan for S.W. 13th Street, providing directions to the codifier; providing a severability clause; providing a repealing clause; and providing an immediate effective date.**

Play Video

*Planning Manager Ralph Hilliard gave a presentation.*

RECOMMENDATION *The City Commission (1) approve Petition No. 120TCH-08 PB and (2) adopt the proposed ordinance.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Approved (Petition) and Adopted on First Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan
Absent: Jack Donovan

080545_staff report_20090507.pdf
080545_Scrivener's Errors LDC_20090507.pdf
080545_ordinance_20090521.pdf

## ORDINANCES, 2ND READING- ROLL CALL REQUIRED

Play Video

080753. **PLANNED DEVELOPMENT - ONE COLLEGE PARK (B)**

**Ordinance No. 0-09-03, Petition No. 133PDV-08PB**
**An Ordinance of the City of Gainesville, Florida; rezoning certain lands within the City, as more specifically described in this ordinance, and amending the Zoning Map Atlas from "UMU-1: Up to 75 units/acre urban mixed-use district" and "RMU: Up to 75 units/acre residential mixed use district" to "Planned Development District"; located in the vicinity of the 1700 block between NW 1st Avenue and NW 2nd Avenue; commonly known as "One College Park"; to allow**



090451 Hearing Exhibits - 000483

**construction of a mixed use development including apartment units, hotel, commercial uses, and parking garage; adopting a development plan report and development plan maps; providing conditions and restrictions; providing for enforcement and penalties; providing a severability clause; and providing an immediate effective date.**

Play Video

*Planning Manager Ralph Hilliard, Agent for the Petitioner David Coffey and Agent for the Petitioner Linda Portal gave presentations.*

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Mayor-Commissioner Pro Tem Henry, seconded by Commissioner Poe, that this matter be Adopted on Final Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

080753_petition_20090205.pdf
080753_layout map_20090205.pdf
080753_staff ppt_20090205.pdf
080753_petitioner ppt_20090205.PDF
080753_color elevations_20090205.pdf
080753_draft ordinance 20090416.pdf
080753_ordinance_20090507.pdf

080841. **LIFE SAFETY VIOLATIONS IN PLACES OF PUBLIC ASSEMBLY (B)**

**Ordinance No. 0-09-08**
**An ordinance of the City of Gainesville, Florida, amending Chapter 10 of the Code of Ordinances relating to Fire Prevention and Protection; changing the title of the fire department and the fire prevention bureau; adopting the Florida Fire Prevention Code and the Life Safety Code adopted by the State Fire Marshall; updating numerical references to the Florida Fire Prevention Code in Article II; creating and adding a new Article V, relating to assembly occupancy safety; providing for identification and training and responsibilities of crowd managers; requiring approved counting devices to ensure safe occupant loads; requiring an emergency evacuation alert network; providing for security of fire rescue connections; providing penalties; authorizing the name change of fire department to fire rescue department in the Code of Ordinances; providing directions to the codifier; providing a severability clause; providing a repealing clause; and providing an immediate effective date.**

Play Video

*Deputy Fire Chief Tim Hayes made comments.*

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Commissioner Poe, seconded by Commissioner Mastrodicasa, that this matter be Adopted on Final Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

080841_Public Assemblies_20090416.pdf
080841_ordinance_20090507.pdf

**080939.** **CLERK OF COMMISSION - CUSTODIAL RESPONSIBILITIES (B)**

**Ordinance No. 0-09-14**
**An Ordinance of the City of Gainesville, Florida amending Section 2-164 by changing the custodial responsibilities of the clerk of the commission and the fee charged for copying public records; providing a severability clause; providing a repealing clause; and providing an immediate effective date.**

Play Video

RECOMMENDATION *The City Commission adopt the proposed ordinance.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Poe, that this matter be Adopted on Final Reading (Ordinance). The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

080939_Public Records Ord_20090416.pdf
080939_ordinance_20090507.pdf

## RESOLUTIONS- ROLL CALL REQUIRED

Play Video

**081013.** **Acceptance of US Department of Transportation FAA - AIP Grant (No. 3-12-0028-29-2009) (B)**

**This item seeks the City of Gainesville acceptance of a 2009 US Department of Transportation FAA - AIP Grant to the Gainesville Regional Airport in the amount of $2,400,000.00 for an Apron Rehabilitation project at the Gainesville Regional Airport.**

Play Video

*Planning and Development Services Director Erik Bredfeldt gave a presentation.*

*Chair Hanrahan recognized Walter Willard who spoke to the matter.*

RECOMMENDATION *The City Commission: 1) hear a brief presentation from staff regarding this request; 2) adopt the proposed 2009 FAA - AIP Grant Resolution and authorize the Mayor and City Attorney*



090451 Hearing Exhibits - 000485

*to execute said Grant Agreement and the City Clerk to certify said Grant Agreement; and, 3) execute the Indemnification Agreement subject to City approval by the City attorney as to form and legality.*

**A motion was made by Commissioner Hawkins, seconded by Commissioner Poe, that this matter be Adopted (Resolution) and Approved the Recommendation. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

081013a_Resolution_20090507.pdf
081013b_Indemnification Agreemt_20090507.pdf
081013c_Letter from GACRAA_20090507.pdf
081013d_Federal Application_20090507.pdf
081013e_K Thomas Email_20090507.pdf
081013_resolution_20090507.pdf

## PLAN BOARD PETITIONS

## DEVELOPMENT REVIEW BOARD PETITIONS

## SCHEDULED EVENING AGENDA ITEMS

## UNFINISHED BUSINESS

Play Video

**080938.** ***City Commission Rules/Government Efficiency (B)***

Play Video

*Legislative and Grants Coordinator Chris Cooper gave a presentation.*

**RECOMMENDATION** *The City Commission: 1) approve amendments to the City Commission Rules as approved by the Audit, Finance and Legislative Committee; and 2) direct staff to draft a resolution implementing the amendments to be submitted for approval by the City Commission pending review by the City Attorney.*

**A motion was made by Commissioner Poe, seconded by Mayor-Commissioner Pro Tem Henry, that this matter be Approved as Recommended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan



090451 Hearing Exhibits - 000486

080938_revised rules_20090330.PDF
080938_Summary_20090330.PDF
080938_Commission Rules_20090507.pdf
080938_Rules Resolution_20090604.PDF

**081039.** **Appointments to City Commission Advisory Boards and Committees (B)**

Play Video

*MOTION AMENDMENT: Approve the recommendation waiving the probationary period for Douglas B. Nesbit who was appointed to the Development Review Board (DRB).*

**RECOMMENDATION** *The City Commission appoint the following:*
*William E. Baruch to the Bicycle-Pedestrian Advisory Board for a Term to expire December 31, 2009;*
*Alfredo E.Gonzalez to the Citizens Adv Comt for Community Development for a Vacancy to expire Nov. 1, 2010;*
*Theodore Stover to the Citizens Adv Comt for Community Development for a Term to expire Nov. 1, 2011;*
*Laurel Nesbit to the City Plan Board for a Vacancy to expire November 1, 2010;*
*Douglas B. Nesbit to the Development Review Board for a Term to expire November 1, 2011;*
*Colleen Rand to the Gainesville Code Enforcement Board for a Term to expire August 1, 2012;*
*William T. Hammond to the Gainesville Energy Advisory Committee for a Term to expire Sept. 30, 2011;*
*Erica J. Rodriguez Merrell to the Gainesville Human Rights Board for a Term to expire Feb. 22, 2012;*
*Shel E. Packer to the Gainesville Human Rights Board for a Term to expire Feb. 22, 2012;*
*Deborah L. Duffie to the Gvl/Alachua County Cultural Affairs Board for a Term to expire Sept. 30, 2012;*
*Charlie W. Pedersen to the Nature Centers Commission for a Vacancy to expire Nov. 1, 2010;*
*Jon Reiskind to the Nature Centers Commission for a Vacancy to expire Nov. 1, 2010;*
*Ivor Kincaide to the Tree Advisory Board for a Term to expire January 1, 2012;*
*Robert Simons to the Tree Advisory Board for a Term to expire January 1, 2012;*
*Robert Simons to the Tree Board of Appeals for a Term to expire January 1, 2012; and*
*Jon Reiskind to the Wild Spaces & Public Places Citizen Oversight Committee for a Term to expire May 7, 2012.*

**A motion was made by Commissioner Hawkins, seconded by Commissioner Lowe, that this matter be Approved as Amended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

081039_Appointments.pdf

## COMMISSION COMMENT

Play Video

*NOTE: Mayor Hanrahan left the meeting room and Mayor-Commissioner Pro Tem Henry assumed the gavel.*

### Commissioner Thomas Hawkins

*1. 100th Anniversary of the Thomas Center - February 9, 2010 - See following referral item #090023.*

**090023.** **Thomas Center - 100th Anniversary (NB)**

RECOMMENDATION *The City Commission refer the issue of recognizing the Thomas Center's 100th anniversary to the Recreation, Cultural Affairs and Public Works Committee.*

**A motion was made by Commissioner Hawkins, seconded by Commissioner Poe, that this matter be Referred to the Recreation, Cultural Affairs and Public Works Committee. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa and Thomas Hawkins
Absent: Pegeen Hanrahan

### Commissioner Lauren Poe

*1. Neighborhood Charrette for the Materials Storage Facility at the 39th Avenue Public Works Compound - See following referral item #090024.*

*2. Materials Storage Centers around the City - staff to provide analysis, cost of a feasibility study - GRU and General Government staff to bring back a presentation.*

**090024.** **Funding for Charrettes for the Public Works Compound Redevelopment, North Main Street and the Grove Street Neighborhood (NB)**

RECOMMENDATION *The City Commission request that the City Manager: 1) Include in the upcoming budget cycle the issue of funding up to $15,000 to $20,000 for a charrette to be held on the redevelopment of the Public Works materials storage site; and 2) also include another charrette for the North Main Street Area from NW 8th Ave to NW 16th Ave, including the Grove*

*Street Neighborhood.*

**A motion was made by Commissioner Poe, seconded by Commissioner Hawkins, that this matter be Referred to the City Manager, due back on November 7, 2009. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa and Thomas Hawkins
Absent: Pegeen Hanrahan

## RECONSIDERATION OF CONSENT ITEM #081041

*NOTE: Mayor Hanrahan re-entered the meeting room and assumed the gavel.*

*Commissioner Lowe moved and Commissioner Hawkins seconded to reconsider Consent item #081041 - See below.*
*(VOTE: 7-0, MOTION CARRIED)*

**081041.** **Prioritization of the City of Gainesville's Projects submitted for the Federal Transportation Reauthorization Bill Funding (NB)**

*AMENDMENT: Switched the priority of SW 62nd Blvd. from number one (1) to number two (2); making Depot Avenue number one (1) priority.*

RECOMMENDATION *The City Commission: 1) approve the prioritization of the City of Gainesville's federal transportation reauthorization appropriation requests as recommended by staff; and 2) authorize the Mayor to draft a letter to transmit the priority list to the federal delegation.*

*Alternative Recommendation*
*The City Commission: 1) reprioritize the attached list of federal transportation authorization appropriation requests and direct staff to utilize the revised list in the federal appropriation request process; and 2) authorize the Mayor to draft a letter to transmit the priority list to the federal delegation.*

**A motion was made by Commissioner Lowe, seconded by Mayor-Commissioner Pro Tem Henry, that this matter be Approved as Amended. The motion carried by the following vote:**

Votes: Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

## Commissioner Jack Donovan



090451 Hearing Exhibits - 000489

## Mayor Pegeen Hanrahan

*1. Committee Assignments - See following file #090022.*
*2. Shands at Alachua General Hospital closing.*

**090022.** **Mayor Pegeen Hanrahan - Committee Assignments (B)**

*AMENDMENT: Added Commissioner Hawkins and Commissioner Donovan as Canvassing Board members for the next election; and moved Commissioner Mastrodicasa from EDUCC to Recreation, Cultural Affairs and Public Works Committee. (Mayor's Committee Assignments Attached).*

**RECOMMENDATION** *The City Commission confirm the Mayor's committee assignments.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Hawkins, that this matter be Approved as Amended. The motion carried by the following vote:**

**Votes:** Aye: Craig Lowe, Jack Donovan, Lauren Poe, Scherwin Henry, Jeanna Mastrodicasa, Thomas Hawkins and Pegeen Hanrahan

*090022_COMMITTEES_20090507.pdf*

## CITIZEN COMMENT (If time available)

*There were no citizens who wished to speak during this time.*

## ADJOURNMENT - 8:42 PM

Play Video

Kurt M. Lannon, Clerk of the Commission

**30-YEAR CONTRACT**

MAY 8 - 2009

Placed Prefile

# Biomass plant gets approval from city

## HOW IT COULD AFFECT YOUR ELECTRIC BILL

In the first four years the plant is operational, GRU will likely pay more than other utilities purchasing natural gas-generated electricity. **However, beginning in 2019 the price of biomass will likely be lower than natural gas.** How much GRU customers will benefit from the switch to biomass is dependent on whether the federal government implements a tax on carbon emissions.

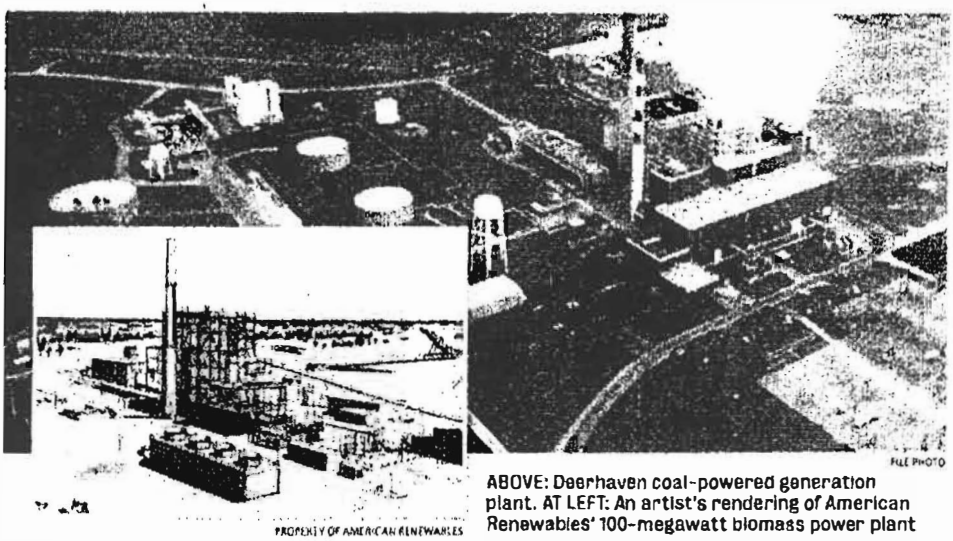
**INCREASE TO AVERAGE MONTHLY UTILITY BILLS W/ CARBON TAX:**

| | |
|---|---|
| **2014** | $6.10: a **4.3 percent increase** |
| **2019** | $.75: a **.5 percent increase** |

**WITHOUT CARBON TAX:**

| | |
|---|---|
| **2014** | $8.31: a **5.8 percent increase** |
| **2019** | $2.85: a **2.5 percent increase** |

NOTE: After 2019 GRU estimates that customers will be saving money on their bills as compared to if GRU were buying power from another generation option.



PROPERTY OF AMERICAN RENEWABLES

FILE PHOTO

ABOVE: Deerhaven coal-powered generation plant. AT LEFT: An artist's rendering of American Renewables' 100-megawatt biomass power plant

**By Megan Rolland**
Staff writer

The city entered a 30-year contract Thursday that will bring a wood-burning biomass power plant to Gainesville, promising a future energy supply that is renewable, less subject to the price volatility of fossil fuels and has cleaner emissions.

Already receiving national news media attention for a solar energy initiative, Gainesville Regional Utilities anticipates the biomass power plant will push Gainesville into compliance with even the strictest of regulations in the world regarding carbon emissions and renewable energy sources.

"This recommendation ... is probably one of the biggest decisions since Deerhaven II and will probably be one of the biggest decisions for years to come," said GRU general manager Bob Hunzinger before commissioners unanimously approved the contract with

**BIOMASS** *on Page 7A*

## ABOUT THE PLANT

**What:** A 100-megawatt biomass power plant.
**Where:** Near the existing city-owned Deerhaven plants.
**When:** Construction beginning at the end of 2010, operational by 2013.
**Fuel:** 1 million tons of green (wet) wood.
**Homes powered:** 65,000 homes using 1,000 kilowatt hours a month.
**Project cost:** $500 million.
**Direct jobs:** About 45.
**Indirect jobs (fuel supply related):** About 400.
**Local tax revenue:** $5 million.
**Traffic:** 40,000 truck loads a year or 130 trucks a day.
**Who's building it:** American Renewables, a Boston-based company — formerly known as Nacogdoche. For

## BIOMASS: Future regulations a big factor

*Continued from 1A*

**Other American**

tion for a solar energy initiative, Gainesville Regional Utilities anticipates the biomass power

Hunzinger before commissioners unanimously approved the contract with

**BIOMASS** *on Page 7A*

**Who's building it:** American Renewables, a Boston-based company — formerly known as Nacogdoche. For other projects they've built, **See 7A**

# BIOMASS: Future regulations a big factor

*Continued from 1A*

the Boston-based company American Renewables.

Hunzinger said the company, which will build, own and operate the plant, shares a common "passion for the environment and a diverse renewable energy source that *makes economic sense.*"

GRU will buy the full 100 megawatts of energy produced at the plant from American Renewables based on a fixed long-term price.

Gainesville will pay more for that green energy in the beginning.

Beginning when the power plant comes on line at the end of 2013, customers will likely see a 4.3 percent increase in monthly utility bills.

"While this project is going to be a little bit more expensive in the early years, it's going to be a *really good deal in the later* years," said Ed Regan, assistant general manager for strategic planing at GRU.

Over the 30-year life of the contract, Regan said the utility will be spending between $212 million and $492 million less than if the utility bought energy off the open market.

*For utility ratepayers, that will* start looking good in about the year 2019 when the utility bills will level off to a negligible increase and then offer a savings in future years, GRU officials say.

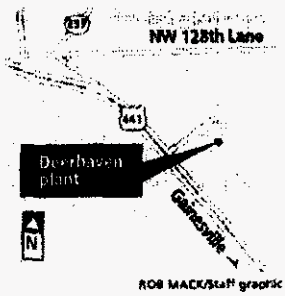
The big variable that will determine how much GRU customers and the city will pay *for future energy — and what* kind of profits American Renewables will make — are the future regulations and taxes placed on carbon emissions, at least partly in response to global warming concerns.

The larger any future tax on carbon emissions, the more GRU customers will reap *benefits from* using biomass produced energy.

"It's hard to believe that the world would let America get by without some sort of carbon constraint," Regan said.

This process actually began in *2003, when* GRU decided future energy needs would soon outstrip what the three city-owned power plants could produce.

Initially, the city entertained the idea of a large coal-fired *plant, but opposition by city*




ROB MACK/Staff graphic

commissioners led to a nationwide search for alternative options.

"It's easy to forget that that decision was made in a very different political context," Mayor Pegeen Hanrahan said, referring to the time when former President George Bush held office.

In association with the shift also came a shift in leadership at *GRU. Commissioners recog*nized that Hunzinger, who was hired a little more than a year ago, had opened up a door to renewable energy that likely wouldn't have been possible under previous leadership at GRU.

"I really think that the citizens of Gainesville, Alachua County *and Florida for that fact*, will look back to this era and your leadership," Commissioner Lauren Poe told commissioners and GRU leaders.

The 100 megawatt plant will be the largest biomass plant in Florida, Regan said.

Fuel for the plant will come mostly from waste wood in the *area's logging industry*. however, the plant will also burn urban yard and forest waste and some wood that is ordinarily used for paper production known as pulp wood.

About a million tons of green or "wet" wood will be burned in the plant, and the city has previously adopted strict forestry standards and substantial incentives to ensure that demand doesn't harm the areas forests and wildlife habitats.

American Renewables — formerly named Nacogdoches — responded to Gainesville's request for a company to construct a biomass power plant more than a year ago.

In a competitive process, American Renewables was selected, and negotiations began.

"This is all about transitioning to a more sustainable future," Jim Gordon, president of American Renewables said about his company's decision to invest millions into biomass projects, including Gainesville's.

No one is certain how much plant construction will cost — *likely somewhere* between $400 million and $500 million.

"The financial investment climate isn't so great with major banks collapsing, but we think with the economic stimulus and given the improvements in the market, we are very confident we will fund this project," Gordon said.

*The plant is hoping to receive* grant monies available for renewable energy projects in the American Recovery and Reinvestment Act.

That substantial benefit, however, comes with a tight deadline, and the plant must be operational by January 2014 to be eligible. The utility rates *agreed on by American Renew*ables and GRU are dependent on American Renewables making that deadline, and could increase if the grant money isn't received.

Construction on the plant will begin as soon as American Renewables receives the necessary permits from the *state — a process that should* take about a year.

Gordon emphasized his company's dedication to using local engineers and contractors for the construction of the plant, which could create as many as *350 temporary job*. The plant itself will employ 45 people permanently.

Additionally, the demand for fuel from area timber operations could support an estimated 500 forestry-related jobs.

*Megan Rolland can be reached at 338-3104 or megan.rolland@gvillesun.com*

## Other American Renewables projects

**Sacul, Texas:** Located in Nacogdoches County, this 100-megawatt wood-fired biomass plant will send *energy* to Austin Energy starting in late 2012.

**Hamilton County, Fla.:** Located along U.S. 41 between White Springs and Jasper, this 100-megawatt wood-fired biomass plant should be operational by late 2013.

GRU
More than Energy™

# GRU and American Renewables Partner to Bring Biomass Energy to Gainesville

## The new, 100-megawatt renewable-energy plant will begin operating in 2013

*May 7, 2009*

The Gainesville City Commission today approved a 30-year energy contract between Gainesville Regional Utilities (GRU) and Gainesville Renewable Energy Center, LLC (GREC), an American Renewables project company. Under the terms of the deal, GREC will build, own and operate a 100-megawatt (MW) biomass power plant in Gainesville. GRU will purchase and own 100 percent of the energy produced.

The plant will be fueled by forestry-waste material generated by north central Florida's principal agriculture industry – forestry for paper pulp, chip and saw timber – as well as urban wood waste. GRU General Manager Bob Hunzinger said the project is a good deal for customers because it will meet the community's future energy needs in a cost-effective and environmentally responsible manner.

"GRU is excited to partner with American Renewables to bring biomass energy to our community," Hunzinger said. "By using biomass materials, a local renewable resource, this facility will promote our energy independence, add diversity to our fuel supply and shield customers from anticipated increasing fossil-fuel prices. This plant also will allow Gainesville to achieve its carbon-reduction goals, which are based on the Kyoto Protocol."

Since GREC will build and own the plant, Hunzinger said there will be no impact on customer bills until it comes online in 2013. Then customers will see a small increase in the fuel adjustment, but early on in the contract the cost of producing the biomass energy is expected to become less expensive than fossil-fuel alternatives.

GREC's biomass power plant will be located on GRU's Deerhaven Generating Station property. To ensure that the facility is environmentally friendly, GRU and GREC have created strict sustainability standards for forest-produced biomass materials and developed a forest-stewardship incentive program to encourage suppliers to perform better than the minimum standards.

"With the signing of this contract, American Renewables has achieved a major milestone toward our goal of building a state-of-the-art biomass project that will deliver significant energy, environmental and sustainable economic development benefits to Gainesville," said Jim Gordon, President

of American Renewables. "We are thrilled to be working with GRU which has demonstrated itself to be a leader in encouraging the development of renewable energy."

The project will create up to 350 construction jobs, 45 new jobs at the GREC facility and will support nearly 500 permanent, forestry-industry jobs. It also will add more than $5.5 million per year to Gainesville's property-tax base.

In addition to this power-purchase contract, GRU and GREC will enter into a long-term lease for the parcel of land on the Deerhaven site. GREC is beginning the process of obtaining the necessary environmental and operational permits necessary for construction and operation of the facility. GREC anticipates breaking ground for construction of the biomass power plant in late 2010.

**About American Renewables, LLC**

American Renewables develops, builds and operates clean energy facilities that utilize biomass materials as fuel. American Renewables brings together the successful track records and project development, operations, energy investment and asset management expertise of its three partners: BayCorp Holdings, Energy Management, Inc. and Tyr Energy. In addition to the Gainesville Renewable Energy Center, American Renewables is developing the Nacogdoches Power project in Sacul, TX (scheduled to begin construction in September 2009 and operation in late 2012) and the Hamilton County Renewable Energy Center in Hamilton County, FL (anticipated to begin operation in late 2013). All three facilities are identical 100-MW biomass energy facilities.

**Related Links**

- Presentation to City Commission - May 7 (Power Point)
- Stewardship Incentive Plan for Biomass Fuel Procurement (pdf)
- GRU's other renewable energy projects

Subscribe to the GRU News Flash and get the latest information on changes to our prices, energy and water savings tips, copies of GRU news releases, new product and service information and more.

---

**© 2004 Copyright GRU. All Rights Reserved.**

the customer
answers & insights

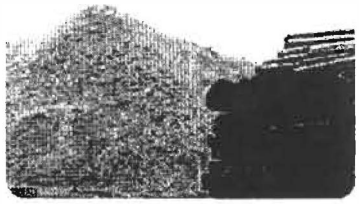
## Renewable Biomass Energy Coming to Gainesville

Innovation

With the unanimous approval of the Gainesville City Commission, GRU has entered into a 30-year contract to provide biomass-fueled energy to Gainesville. The Gainesville Renewable Energy Center (GREC), an American Renewables project company, will build, own and operate the 100-megawatt plant on GRU's Deerhaven property. GRU will purchase and own 100 percent of the energy produced.

*The Gainesville City Commission, representatives of American Renewables and involved citizens present at the approval of the contract.*

The biomass plant will burn waste wood from north central Florida's enormous timber industry, as well as urban tree-trimmings. GRU and GREC have created strict standards that suppliers must follow to protect the region's forests.



By using a local renewable energy source, the facility will add diversity to GRU's fuel supply and shield customers from anticipated increasing fossil-fuel prices.

Gainesville Mayor Pegeen Hanrahan said, "We are fighting climate change through the increased use of renewable energy sources, energy efficiency and the reduction of greenhouse gases. We have also strengthened our energy independence and are supporting hundreds of jobs in our region."

There will be no impact on customer bills until the plant comes online in 2013. Then customers will see a small increase in the fuel adjustment, but early in the contract the cost of producing biomass energy is expected to become less expensive than fossil-fuel alternatives.

The project will create up to 350 construction jobs, 45 facility jobs and nearly 500 forestry-related jobs. For more information, visit www.gru.com.

## Meeting Your Drinking Water Needs

Quality

Clean, safe drinking water is essential to a thriving community. GRU is wrapping up phase one of a two-phase project to expand the Murphree Water Treatment Plant, which supplies quality drinking water to all of Gainesville. The project, which will be completed in October, will increase the plant's filtering capacity by 20 million gallons per day - enough to meet customers' projected water needs through 2015.

GRU built two new water filters in this first phase and will soon begin work on refurbishing four existing filters. The $5.1 million investment will provide an additional layer of protection to the water-treatment process and increase the plant's reliability.

Once the enhancements are complete, GRU plans to apply to become rated to supply 60 to 68 million gallons per day.

Planning

## GRU to Present Proposed Budget to City Commission

In July, Gainesville's City Commission will consider GRU's budget for fiscal year 2010. If approved, it will include proposed utility rates that will take effect in October.

GRU has been working to cut costs and keep prices down. In March, the general manager announced a hiring freeze and plans to reduce budgets for fiscal years 2009 and 2010 totaling at least $8 million.

GRU will present the 2010 budget proposal at the July 20 and July 28 City Commission meetings. You can watch these meetings live on Community 12 TV or at www.cityofgainesville.org. Visit www.gru.com in mid-July to review the budget.

Savings

## No-cost Ideas to Lower Your Bill this Summer

- Setting your thermostat at 78 degrees or higher can provide significant savings. Each degree higher than 78 can decrease your bill 4 percent
- Using ceiling fans can deliver extra cooling comfort. But don't forget to turn them off when you leave the room. Fans cool people, not places

- If you have lamps or TV sets near your thermostat, move them. Heat from these appliances can cause your A/C to run longer than necessary

Visit www.gru.com for other money-saving tips and information on GRU rebates.

GRU℠
More than Energy

GRU Customer Service
352.334.3434
1.800.818.3436 *toll-free*
www.gru.com

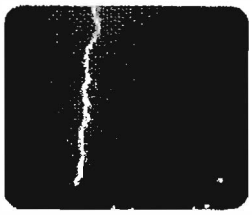
Safety

## Gearing up for Hurricane Season

Knowing what to do in case your utilities are affected and making early preparations on a continual year-round basis can ensure that you and your family are well prepared long before a hurricane approaches.

### Prepare for the Storm

- GRU regularly maintains trees growing near high-voltage power lines– lines that are not directly connected to your home. Let us know if you see trees that are endangering lines.
- Have a tree professional trim and maintain trees that may threaten your home.



### Before the Storm

- Monitor the news– GRU will provide important information related to your service.
- Turn off or disconnect all outside electric appliances, such as pool pumps.
- Gas services should be left on at the meter to maintain pressure in the gas piping.
- Store an adequate supply of drinking water and non-perishable food for your family.
- If you plan to evacuate, turn off the main switch in your circuit breaker panel. Do not remove your electric or natural gas meter.

### During the Storm

- Call us at 352-334-2871 if your power goes out. Do not hang up until you have provided all the requested information. An automated system will record your information and ensure a report is generated to have your service restored. GRU will dispatch repair crews to restore electricity to your house as soon as possible.
- If needed, GRU will announce boil water notices through all media outlets.
- Stay safe: If you smell natural gas (rotten egg smell), alert others and leave the area immediately. If possible, call 911 from outside. Do not use the phone until you are clear of the gas smell and safely away from the home. If you can't leave due to the severity of the storm, shut off the gas at the valve on the meter, ventilate the house (open windows and doors) and do not turn on or off lights or make a spark, such as lighting a match or using electronic appliances.

Power Outage/Downed Lines
352-334-2871

Natural Gas Leak
352-334-2550

Water/Wastewater Repair
352-334-2711

Customer Service
352-334-3434

### Portable Generator Safety

- Before using a portable electric generator, read the operating instructions carefully. Appliances should be plugged directly into a generator, using properly rated/sized extension cords if necessary. Hooking the generator to your household electric system is extremely dangerous to you, your neighbors, utility workers and the public.
- Place your generator outside of your house, away from the eaves, in a well-ventilated area to avoid carbon-monoxide poisoning.

### After the Storm

- Stay away from all downed wires. Avoid all standing water. It may be contaminated or energized by a downed power line.
- If your power is off, place breaker panel switches for major appliances in the OFF position. Call 352-334-2871 to report that your power is off.
- GRU's first priorities for service restoration include hospitals, law enforcement, power plants, water plants, wastewater plants, lift stations and fire stations. Our crews then work to fix problems that will benefit the most people.
- If needed, GRU will open public water stations and announce locations through local media.
- If your home has sustained structural damage, shut off your natural gas service at the meter and call GRU at 352-334-2550.
- In the event that you have power but your GRUCom, Gator.Net or GRU.Net service is not working, call 352-334-3000 for assistance.
- If you see a broken pipe with running water, avoid contact with the water and report it to GRU at 352-334-2711.

PSAs Public Service Announcements

### "Free Fridays" Concert Series

njoy a free downtown Gainesville
Community
every Friday
Special features include
Black d an
uly 4.
Ca
www.gvl

The

Gainesville
Office of Equal

352-374-5275

The Health

Community

### GRU Golf Tournament for Williams Ele itary

Tou
Elementary lay,
August 22 se.

r perso
shotgu
en, fee
unch.

per twosome (will be grouped into foursomes), $575 per foursome with hole sponsorship, and $350 for hole sponsorship alone. -393-1211 for e is limited and ed by August

Printed on

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 8
COMPANY GRU/GREC LLC (Direct)
WITNESS Edward J. Regan (EJR-1)
DATE 12/16/09

**ED REGAN, P.E.**
**Assistant General Manager for Strategic Planning**
**Gainesville Regional Utilities**
P.O. Box 147117, Station A136
Gainesville, Florida 32614-7117
Phone: 352/393-1272 Fax: 352/334-3151
e-mail: reganej@gru.com

**QUALIFICATIONS**

-Senior executive experienced in managing a customer focused, financially strong, and environmentally sensitive electric, water, wastewater, natural gas, and telecommunications municipal utility system, with over 878 employees and $420,000,000 per year in gross revenues, which is prepared for deregulated and carbon constrained power markets and operated by a diverse group of employees with aligned interests and objectives.

-Nearly thirty (30) years of progressive responsibility related to an extremely broad range of electric, water, wastewater, natural gas, and telecommunication issues for a municipal utility system that consistently earns a "Double A" bond rating from both Moody's and Standard and Poor's' investor services.

-Knowledgeable about: FERC, NERC, USEPA and Public Service Commission regulations, standards, and policies; electric generation planning; bulk power and transmission operations; wholesale power contracts; rate design; forecasting; corporate modeling; demand side management; rail and pipeline fuel transportation; ecosystem analysis; groundwater modeling; and water and wastewater distribution, collection, treatment, and disposal.

-Proven leadership in developing demand and supply side programs to promote the efficient use of utility services and to reduce the carbon footprint of utility operations, including consumer rebate programs and the development of landfill gas, solar, and biomass resources as well as: 1) introducing the first European-style Solar Feed in Tariff to be offered by a utility in the USA; 2) the construction of the first combined power, steam, and chilled water facility to serve a major hospital complex in Florida; and 3) negotiating the contracts for the largest biomass fueled power plant in Florida.

-Sensitive to community planning, economic development, and other special interest concerns. Able to listen carefully and communicate effectively with employees, elected officials, regulators, customers, and other individuals with a diverse range of expertise, backgrounds and interests.

-Successful at introducing innovative new products and services based on cross-departmental core competencies and customer needs.

-Adept at collaborative efforts to assure favorable bond ratings, issue bonds, and manage financial and commodity risk. Experienced with the use of financial tools such as NYMEX market options and contracts to hedge fuel costs, and the potential for strategic alliances with other utilities to protect financial strength.

**EMPLOYMENT HISTORY**

Gainesville Regional Utilities in North Central Florida
(unless stated otherwise)

**2002 to Present**

**Assistant General Manager for Strategic Planning**
-Electric, Water, Wastewater, and Natural Gas System Planning
a. Power supply planning, including demand side management

b. Load and Revenue Forecasting
c. Cost of Service and Rate Design
d. Permitting and Regulatory Compliance
e. Financial Planning
f. Community, Legislative, and Regulatory Affairs

-Generation Dispatch Operations
-Retail Telecommunications Networks and Services P&L (through 2005)
-Operations and Settlement Committee, The Energy Authority™ (TEA)
-GRU's Risk Oversight Committee
-Combined heat and power services

**1990-2002** **Strategic Planning Director**
-Retail Telecommunications Networks and Services (GRUCom)
-Electric, Water, Wastewater, and Natural Gas System Planning (see above)

**1987-1990** **Senior Utility Engineer**
-Major Facilities Design and Permitting
-Process Design and Network Analysis
-Community Outreach
-Reclaimed Water Services Start-Up

**1984-1987** **Utility Engineer II**
-Water/Wastewater Master Planning

**1981-1984** **Utility Analyst**
-Integrated Resource Planning
-Demand Side Program Design
-Small Area Forecasting and GIS
-Commercial Lighting Services Start-Up

**1979-1981** **Technical Energy Management Coordinator**
-Energy Conservation Program Creation, Training and Delivery

**1977-1979** **Regional Environmental Planner**
-North Central Florida Regional Planning Council
-Water and Wastewater Supply and Treatment Plans
-Surface Hydrology, Soils, Flood Maps
-Land Management and Conservation

**EDUCATION, CERTIFICATIONS, TRAINING**

-**Bachelor's of Behavioral Psychology**, UF, Gainesville, Florida. 1974
-**Master's of Environmental Sciences**, UF, Gainesville, Florida 1977
-**Registered Professional Engineer**, Florida License 41166
-Certified Energy Auditor
-Word processors, spreadsheets, SAS, SPSS, Fortran IV, PL1
-Engineering Simulation Systems
-Self directed work teams, Balanced Scorecard

**ASSOCIATIONS**

President Florida Municipal Electric Association
Board Member TEA Settlement and Operating Committee
Prior Board Member Florida Reliability Coordinating Council
Prior Board Member Florida Municipal Electric Agency

| DSM Programs Offered to Residential Consumers in 2009 | |
|---|---|
| 1 | High Efficiency Central Air Conditioning (Rebates) |
| 2 | High Efficiency Room Air Conditioning (Rebates) |
| 3 | Central Air Conditioner Maintenance (Rebates) |
| 4 | Reflect Roof Coating for Mobile Homes (Rebates) |
| 5 | Solar Water Heating (Rebates) |
| 6 | Solar Photovoltaic (Rebates with Net Metering) |
| 7 | Natural Gas Appliance (Rebates) |
| 8 | Home Performance with the Federal Energy Star Program (Rebates) |
| 9 | Energy Star Building Practices of the EPA (Incentives) |
| 10 | Green Building Practices (Incentives) |
| 11 | Heating/Cooling Duct Repair (Rebates) |
| 12 | Variable Speed Pool Pumps (Rebates) |
| 13 | Energy Efficiency for Low-Income Households (Grants) |
| 14 | Attic and Raised-Floor Insulation (Rebates) |
| 15 | Refrigerator Buy Back (Rebates) |
| 16 | Compact Fluorescent Light Bulbs (Giveaways) |
| 17 | Energy Efficiency Low-Interest Loans (Interest Buy Down) |

| DSM Programs Offered to Non-Residential Customers in 2009 | |
|---|---|
| 1 | Solar Water Heating (Rebates) |
| 2 | Solar Photovoltaic (Net Metering) |
| 3 | Natural Gas for Water Heating and Space Heating (Rebates) |
| 4 | Vending Machine Motion Sensors (Giveaways) |
| 5 | Efficient Exit Lighting (Rebates) |
| 6 | Custom Business Rebates for Energy Efficiency Retrofits (Rebates) |

## Gainesville Regional Utilities History of Retail Electric Rate Structures, Base Rate Prices, and Fuel Adjustment

| Rate Class/Billing Element/Tier | Effective Date And Fiscal Year | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10/1/1996 1997 | 10/1/1997 1998 | 10/1/1998 1999 | 10/1/1999 2000 | 10/1/2000 2001 | 10/1/2001 2002 | 6/1/2002 2002 | 10/1/2002 2003 | 10/1/2003 2004 | 10/1/2004 2005 | 10/1/2005 2006 | 10/1/2006 2007 | 10/1/2007 2008 | 10/1/2008 2009 | 10/1/2009 2010 |
| ***Residential Service*** | | | | | | | | | | | | | | | |
| Customer Charge per month | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.89 | $ 5.17 | $ 5.54 | $ 7.60 | $ 8.45 |
| Energy Charge per kWh | | | | | | | | | | | | | | | |
| 0-250 kWh | $ 0.05020 | $ 0.04980 | $ 0.04980 | $ 0.04980 | $ 0.04980 | $0.05020 | $ 0.04731 | $ 0.04613 | $ 0.04613 | $ 0.04613 | $ 0.04613 | $ 0.04982 | $ 0.025 | $ 0.026 | $ 0.028 |
| 251-750 kWh | $ 0.05020 | $ 0.04980 | $ 0.04980 | $ 0.04980 | $ 0.04980 | $0.05020 | $ 0.04731 | $ 0.04613 | $ 0.04613 | $ 0.04613 | $ 0.04613 | $ 0.04982 | $ 0.065 | $ 0.066 | $ 0.067 |
| over 750 kWh | $ 0.05440 | $ 0.05440 | $ 0.05440 | $ 0.05440 | $ 0.05440 | $0.05440 | $ 0.05576 | $ 0.05576 | $ 0.05576 | $ 0.05576 | $ 0.05966 | $ 0.07398 | $ 0.095 | $ 0.098 | $ 0.102 |
| ***Residential Service - Time of Use*** | | | | | | | | | | | | | | | |
| Customer Charge per month | $ 8.27 | $ 8.27 | $ 8.27 | $ 8.27 | $ 8.27 | $ 8.27 | $ 7.86 | $ 7.86 | $ 7.86 | $ 7.86 | $ 8.25 | $ 8.75 | $ 9.36 | $ 17.60 | $ 17.60 |
| Energy Charge per kWh | | | | | | | | | | | | | | | |
| On-Peak | $ 0.1052 | $ 0.1047 | $ 0.1047 | $ 0.1047 | $ 0.1047 | $ 0.1052 | $ 0.09880 | $ 0.09880 | $ 0.09880 | $ 0.09880 | $ 0.09880 | $ 0.12251 | $ 0.1100 | $ 0.1390 | $ 0.1390 |
| Off-Peak | $ 0.0307 | $ 0.0305 | $ 0.0305 | $ 0.0305 | $ 0.0305 | $ 0.0307 | $ 0.02900 | $ 0.02900 | $ 0.02900 | $ 0.02900 | $ 0.03100 | $ 0.03351 | $ 0.0325 | $ 0.0350 | $ 0.0350 |
| ***General Service Non-Demand & Demand < 50 kW*** | | | | | | | | | | | | | | | |
| Customer Charge per month | $ 9.13 | $ 9.13 | $ 9.13 | $ 9.13 | $ 9.13 | $ 9.13 | $ 8.37 | $ 8.37 | $ 8.37 | $ 8.37 | $ 8.79 | $ 15.18 | $ 16.00 | $ 16.00 | $ 25.50 |
| Energy Charge per kWh | | | | | | | | | | | | | | | |
| 0-1500 kWh | $ 0.05550 | $ 0.05550 | $ 0.05550 | $ 0.05550 | $ 0.05550 | $0.05550 | $ 0.05090 | $ 0.05090 | $ 0.05090 | $ 0.05090 | $ 0.05090 | $ 0.05548 | $ 0.0620 | $ 0.0680 | $ 0.0700 |
| over 1500 kWh | $ 0.05550 | $ 0.05550 | $ 0.05550 | $ 0.05550 | $ 0.05550 | $0.05550 | $ 0.05770 | $ 0.05770 | $ 0.05770 | $ 0.05770 | $ 0.06087 | $ 0.07183 | $ 0.0800 | $ 0.0950 | $ 0.1030 |
| Business Partner Discount Rate | | | | | | | | 7% | 7% | 7% | 7% | 7% | 7% | 7% | 7% |
| ***General Service Demand - 50kW < Demand < 1000 kW*** | | | | | | | | | | | | | | | |
| Customer Charge per month | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 15.82 | $ 16.61 | $ 30.92 | $ 33.00 | $ 45.00 | $ 45.00 |
| Demand Charge per kW | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.66 | $ 5.35 | $ 5.75 | $ 5.75 | $ 5.75 | $ 6.33 | $ 7.56 | $ 9.00 | $ 9.20 | $ 9.25 |
| Energy Charge per kWh | $ 0.03400 | $ 0.03400 | $ 0.03400 | $ 0.03400 | $ 0.03400 | $0.03400 | $ 0.02800 | $ 0.02400 | $ 0.02400 | $ 0.02400 | $ 0.02400 | $ 0.02633 | $ 0.0290 | $ 0.0320 | $ 0.0420 |
| Business Partner Discount Rate | | | | | | | | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% |
| ***Large Power Service - Demand > 1000 kW*** | | | | | | | | | | | | | | | |
| Customer Charge per month | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 60.84 | $ 63.88 | $ 245.05 | $ 265.00 | $ 300.00 | $ 300.00 |
| Demand Charge per kW | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.00 | $ 5.25 | $ 5.25 | $ 5.25 | $ 5.25 | $ 5.85 | $ 7.08 | $ 9.00 | $ 9.20 | $ 9.25 |
| Energy Charge per kWh | $ 0.02710 | $ 0.02710 | $ 0.02710 | $ 0.02710 | $ 0.02710 | $0.02710 | $ 0.02350 | $ 0.02350 | $ 0.02350 | $ 0.02350 | $ 0.02350 | $ 0.02597 | $ 0.027 | $ 0.031 | $ 0.039 |
| Business Partner Discount Rate | | | | | | | | 13% | 13% | 13% | 13% | 13% | 13% | 13% | 13% |
| ***Annual Average Fuel Adjustment - Applied Uniformly to All Retail Kilowatt-Hours*** | | | | | | | | | | | | | | | |
| per kWh | 0.02031 | 0.01858 | 0.01839 | 0.02104 | 0.02903 | 0.02158 | 0.02158 | 0.02916 | 0.03017 | 0.03550 | 0.04950 | 0.05000 | 0.05000 | 0.06000 | 0.05700 |

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 10
COMPANY GRU/GREC LLC (Direct)
WITNESS Edward J. Regan (EJR-3)
DATE 12/16/09

# TODD KAMHOOT

(352) 393-1280 · 301 SE 4th Avenue, Gainesville, FL 32601 · kamhootnt@gru.com

Utility Work Experience
Lead Utility Analyst, January 2005 to present
Utility Analyst II, June 1990 - January 2005
Utility Analyst I, March 1987 - June 1990
Senior Engineering Assistant, July 1985 - March 1987
Gainesville Regional Utilities - Strategic Planning Department, Gainesville, Florida

Responsibilities and Duties
Annual and periodic development of customer, sales, demand, and revenue forecasts for electric, natural gas, water, and wastewater systems. Present results to executive staff, City Commission, and industry organizations.

Provide rate design support and pricing maintenance for SAP billing system software. Provide training and support for use of Customer Relationship Management and Business Information Warehouse within Strategic Planning Department.

Prepare fuel price forecast for fuels used by power systems and the natural gas system.

Develop monthly billing summary. Maintain billing history databases used for forecasting and a wide variety of research to facilitate management decision making.

Provide statistical consultation to projects including customer satisfaction surveys, electric field inventory, load research surveys, and coal pile inventory.

Provide analytical support for projects conducted in conjunction with General Government including Affirmative Action Plan development and annexation analyses.

Conducted a cost of service and rate design study for the Cross Creek water treatment and distribution system.

Coordinate annual preparation of Ten Year Site Plan. Present conclusions to Florida Public Service Commission and Florida Reliability Coordinating Council.

Submit data requests to government and industry associations including: U.S. Department of Energy – Energy Information Administration; Florida Public Service Commission; and Florida Reliability Coordinating Council.

Actively participate in Florida Reliability Coordinating Council - Load Forecast Working Group from 1987 to present. Served as Chairman in 1992.

Member of Electric Utility Forecaster's Forum.

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 11
COMPANY GRU/GREC LLC (Direct)
WITNESS Todd Kamhoot (TK-1)
DATE 12/16/09

Continuing Education and Training
Emergency Management Institute, IS-100, IS-200, IS-700, IS-800, 2009
Demographic Analysis Using the 2000 U.S. Census, 2008
Mutual Gains/Interest Based Bargaining, 2001
Leading and Facilitating Teams at GRU, 1998
Business Partner's Sales Training, 1997
Retail Rate Design, American Public Power Association, 1994
Legal Issues in Litigation, 1991
Model-Netics, 1991
Demand Forecasting for Electric Power & Energy, Center for Professional Advancement, 1987

Non-Utility Professional Work Experience
Labor Market Analyst, State of Florida, 1984 - 1985
Employment Interviewer, State of Florida, 1985

Education
Bachelor of Science, Statistics, University of Florida, April, 1984

Software Proficiency
SAS (Statistical Analysis System)
SAP Billing Software:
- Industry Solutions for Utilities for rate configuration;
- Customer Relationship Management customer accounts interface;
- Business Information Warehouse data query tool.

Microsoft Office (Excel, Word, Power Point, Outlook).

Other
Served as staff liaison to Gainesville Energy Advisory Committee from 1990 - 1995.

| GRU Forecast Net Energy for Load (GWh) | | | | | |
|---|---|---|---|---|---|
| Year | Lower (95% CI) | Lower (68% CI) | Base | Upper (68% CI) | Upper (95% CI) |
| 2009 | 1,903 | 1,985 | 2,045 | 2,106 | 2,187 |
| 2010 | 1,897 | 1,978 | 2,044 | 2,109 | 2,190 |
| 2011 | 1,908 | 1,990 | 2,061 | 2,133 | 2,214 |
| 2012 | 1,925 | 2,008 | 2,085 | 2,162 | 2,245 |
| 2013 | 1,943 | 2,026 | 2,110 | 2,193 | 2,277 |
| 2014 | 1,961 | 2,045 | 2,135 | 2,224 | 2,309 |
| 2015 | 1,979 | 2,064 | 2,160 | 2,256 | 2,342 |
| 2016 | 1,994 | 2,081 | 2,183 | 2,285 | 2,372 |
| 2017 | 2,009 | 2,097 | 2,205 | 2,314 | 2,401 |
| 2018 | 2,025 | 2,113 | 2,228 | 2,344 | 2,432 |
| 2019 | 2,038 | 2,127 | 2,249 | 2,370 | 2,459 |
| 2020 | 2,047 | 2,137 | 2,265 | 2,394 | 2,483 |
| 2021 | 2,055 | 2,146 | 2,280 | 2,415 | 2,505 |
| 2022 | 2,063 | 2,154 | 2,295 | 2,436 | 2,527 |
| 2023 | 2,071 | 2,162 | 2,310 | 2,457 | 2,549 |
| 2024 | 2,078 | 2,170 | 2,325 | 2,479 | 2,571 |
| 2025 | 2,087 | 2,180 | 2,341 | 2,502 | 2,594 |
| 2026 | 2,095 | 2,188 | 2,356 | 2,524 | 2,617 |
| 2027 | 2,103 | 2,197 | 2,372 | 2,546 | 2,640 |
| 2028 | 2,111 | 2,205 | 2,387 | 2,569 | 2,663 |
| 2029 | 2,118 | 2,213 | 2,402 | 2,591 | 2,686 |
| 2030 | 2,125 | 2,221 | 2,417 | 2,612 | 2,708 |
| 2031 | 2,132 | 2,229 | 2,431 | 2,634 | 2,731 |
| 2032 | 2,139 | 2,236 | 2,446 | 2,656 | 2,753 |
| 2033 | 2,146 | 2,243 | 2,460 | 2,678 | 2,775 |
| 2034 | 2,152 | 2,250 | 2,475 | 2,700 | 2,798 |
| 2035 | 2,158 | 2,257 | 2,489 | 2,721 | 2,820 |
| 2036 | 2,165 | 2,264 | 2,503 | 2,743 | 2,842 |
| 2037 | 2,171 | 2,271 | 2,518 | 2,765 | 2,865 |
| 2038 | 2,178 | 2,279 | 2,533 | 2,788 | 2,889 |
| 2039 | 2,184 | 2,285 | 2,547 | 2,810 | 2,911 |
| 2040 | 2,190 | 2,291 | 2,561 | 2,831 | 2,933 |
| 2041 | 2,196 | 2,298 | 2,576 | 2,854 | 2,956 |
| 2042 | 2,202 | 2,305 | 2,590 | 2,876 | 2,979 |
| 2043 | 2,208 | 2,311 | 2,605 | 2,899 | 3,002 |
| 2044 | 2,215 | 2,318 | 2,620 | 2,922 | 3,026 |

| GRU Forecast Summer Peak Demand (MW) | | | | | |
|---|---|---|---|---|---|
| Year | Lower (95% CI) | Lower (68% CI) | Base | Upper (68% CI) | Upper (95% CI) |
| 2009 | 406 | 425 | 441 | 458 | 477 |
| 2010 | 403 | 422 | 439 | 456 | 475 |
| 2011 | 403 | 422 | 441 | 459 | 478 |
| 2012 | 404 | 424 | 443 | 462 | 482 |
| 2013 | 405 | 425 | 445 | 466 | 485 |
| 2014 | 407 | 426 | 448 | 469 | 489 |
| 2015 | 408 | 427 | 450 | 473 | 492 |
| 2016 | 410 | 430 | 453 | 477 | 497 |
| 2017 | 412 | 432 | 457 | 482 | 502 |
| 2018 | 414 | 434 | 460 | 486 | 506 |
| 2019 | 415 | 435 | 463 | 490 | 510 |
| 2020 | 416 | 436 | 465 | 493 | 514 |
| 2021 | 416 | 437 | 466 | 496 | 517 |
| 2022 | 416 | 437 | 468 | 499 | 519 |
| 2023 | 417 | 437 | 469 | 502 | 522 |
| 2024 | 417 | 438 | 471 | 504 | 525 |
| 2025 | 418 | 438 | 473 | 507 | 528 |
| 2026 | 418 | 439 | 475 | 510 | 531 |
| 2027 | 419 | 439 | 476 | 513 | 534 |
| 2028 | 419 | 440 | 478 | 516 | 537 |
| 2029 | 419 | 440 | 480 | 519 | 540 |
| 2030 | 420 | 441 | 481 | 522 | 543 |
| 2031 | 420 | 441 | 483 | 524 | 546 |
| 2032 | 420 | 441 | 484 | 527 | 549 |
| 2033 | 420 | 442 | 486 | 530 | 551 |
| 2034 | 421 | 442 | 487 | 533 | 554 |
| 2035 | 421 | 442 | 489 | 535 | 557 |
| 2036 | 421 | 442 | 490 | 538 | 560 |
| 2037 | 421 | 443 | 492 | 541 | 563 |
| 2038 | 421 | 443 | 493 | 544 | 566 |
| 2039 | 421 | 443 | 495 | 547 | 568 |
| 2040 | 422 | 443 | 496 | 549 | 571 |
| 2041 | 422 | 444 | 498 | 552 | 574 |
| 2042 | 422 | 444 | 499 | 555 | 577 |
| 2043 | 422 | 444 | 501 | 558 | 580 |
| 2044 | 422 | 444 | 503 | 561 | 583 |

**Richard D. Bachmeier**
301 S.E. 4th Avenue, Gainesville, FL 32610
Office: (352) 393-1284 Email: bachmeierrd@gru.com

## EXPERTISE

- Utility Resource Planning
- Environmental Economics and Policy
- Risk Management
- Utility Regulation, Policy, and Ratemaking
- Financial Modeling and Analysis
- Product Development and Pricing

## EXPERIENCE

### GAINESVILLE REGIONAL UTILITIES (GRU). GAINESVILLE, FLORIDA. 2007 – PRESENT

**Electric System Planning Director, GRU Strategic Planning**

- Responsibilities include:
  - Planning and execution of GRU's long-term electric supply strategy
  - Oversight of GRU's long-range production cost projections
  - Structuring and pricing long-term wholesale power contracts
  - Coordinating GRU's NERC Reliability Compliance program
- Authored Request for Proposals (RFP) and developed evaluation methodology for biomass generation project.
- Participated in successful contract negotiations for the Gainesville Renewable Energy Center biomass facility.

### ORLANDO UTILITIES COMMISSION (OUC). ORLANDO, FLORIDA. 2003 – 2007

**Planning Analyst, OUC Power Marketing – 2005 to 2007**

- Developed electricity production cost projections for OUC's long-term supply planning, retail fuel rates, and wholesale power contracts.
- Implemented OUC's long-term planning version of GenTrader, a utility planning optimization model developed by Power Costs, Inc.
- Developed OUC's Standard Offer Contract for capacity and energy purchases from Renewable Energy Facilities.
- Member of the Florida Municipal Power Pool Planning Committee.

**Senior Retail Pricing Coordinator, OUC Customer Connection, Commercial Markets – 2003 to 2005**

- Developed electric cost-of-service studies and rate design for OUC's regulated retail customers.
- Developed pricing and business plans for new competitive retail products and business ventures.
- Performed financial analyses and contributed to business plan for OUC's Retail Renewable Energy product.

### TXU ENERGY. DALLAS, TEXAS. 2002 – 2003

**Manager of Product Structuring, Retail Commodity Management**

- Facilitated transactions among TXU Energy's marketing, sales, and trading groups.
- Produced financial and market analyses for out-of-territory customer acquisitions.
- Developed competitive retail energy products consistent with TXU Energy's risk profile.

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 13
COMPANY GRU/GREC LLC (Direct)
WITNESS Richard D. Bachmeier (RDB-1)
DATE 12/16/09

**ENRON CORPORATION. HOUSTON, TEXAS.** 1997 – 2001

**Director, Utility Risk Management**

- Supervised teams responsible for managing risk in energy markets throughout the United States.
- Developed and implemented hedging strategies for fuel, commodity, and regulated elements of the Enron retail energy portfolio.
- Created and implemented a system for producing Enron's daily retail electric position reports.
- Developed models to generate and manage forward price curves for utility tariffs.
- Represented Enron in electric deregulation proceedings in Texas, New York, Nevada, and Arizona.

**PUBLIC UTILITY COMMISSION OF TEXAS. AUSTIN, TEXAS.** 1985 – 1997

**Assistant Director, Competitive Issues Division**

- Supervised Commission staff in the areas of utility load forecasting and resource planning, environmental issues, and energy and telecommunications pricing and policy.
- Testified as an expert witness in proceedings before the Commission and the Texas State Legislature.
- Headed task force that developed the Commission's Integrated Resource Planning policy on the valuation of environmental externalities for power plant certification and operation; authored report on findings and recommendations.
- Reviewed and provided recommendations on energy industry legislation proposed by the Texas State Legislature.
- Authored research reports and working papers on energy forecasting, conservation, and environmental policy.

**UNIVERSITY OF TEXAS AT AUSTIN. AUSTIN, TEXAS.** 1982 – 1985

**Instructor, Department of Economics**

- Instructor of university level microeconomics and macroeconomics courses.
- Developed and administered lectures and examinations; assigned final grades.

## EDUCATION

***PH.D. CANDIDATE (ABD) - ECONOMICS***

***University of Texas at Austin. Austin, Texas.***

- Completed all coursework and examination requirements for the Ph.D.
- Coursework included graduate level microeconomics, macroeconomics, and econometrics.

***MASTER OF APPLIED GEOGRAPHY***

***Texas State University - San Marcos (formerly Southwest Texas State University). San Marcos, Texas.***

- Major: Resource and Environmental Studies
- Directed Research: "Spatial Variation in Electric Utility Customer Valuation of Environmental Externalities in Texas."
- Coursework included environmental planning and regulation, quantitative methods and research design, air quality management, land use planning, computer cartography, and Geographic Information Systems (GIS).

***BACHELOR OF ARTS - ECONOMICS***

***University of North Dakota. Grand Forks, North Dakota.***

***BACHELOR OF SCIENCE - MATHEMATICS***

***University of North Dakota. Grand Forks, North Dakota.***

## EXPERT WITNESS TESTIMONY

***Filed In Regulatory Proceedings at the Public Utility Commission of Texas:***

- Docket No. 14965, SOAH Docket No. 473-95-1563, Application of Central Power and Light Company for Authority to Change Rates, May and August 1996.
- Docket No. 14435, SOAH Docket No. 473-95-1206, Application of Southwestern Electric Power Company for Approval of Agreement for Electric Service to Eastman Chemical Company, November 1995.
- Docket No. 13575, Application of Texas Utilities Electric Company for Approval of Notices of Intent, February 1995.
- Docket No. 12820, Petition of the General Counsel for an Inquiry into the Reasonableness of the Rates and Services of Central Power and Light Company, October 1994.
- Docket No. 12700, Application of El Paso Electric Company for Authority to Change Rates and of Central and South West Corporation and El Paso Electric for Approval of Acquisition, June 1994.
- Docket No. 12138, Notice of Intent of Houston Lighting & Power Company for a Certificate of Convenience and Necessity for Advanced Gas Turbine Projects, September 1993.
- Docket No. 11735, Application of Texas Utilities Electric Company for Authority to Change Rates, July 1993.
- Docket No. 11520, Petition of the General Counsel for an Inquiry into the Reasonableness of the Rates and Services of Southwestern Public Service Company, July 1993.
- Docket No. 11292, Application of Entergy Corporation and Gulf States Utilities Company for Sale, Transfer, or Merger, January 1993.
- Docket No. 11000, Application of Houston Lighting & Power Company for a Certificate of Convenience and Necessity for the DuPont Project, October 1992.
- Docket No. 10894, Application of Gulf States Utilities Company to Reconcile Fuel Costs, Establish New Fixed Fuel Factor and Recover Its Under-Recovered Fuel Expense, August 1992.
- Docket No. 10883, Application of Brazos Electric Power Cooperative, Inc. for a Certificate of Convenience and Necessity for Proposed Generating Facilities, July 1992.
- Docket No. 10400, Application of Texas Utilities Electric Company for Approval of Its Notice of Intent, August 1991.
- Docket No. 10059, Notice of Intent by Brazos Electric Power Cooperative, Inc. to Apply for Certificate of Convenience and Necessity for Proposed Generating Facilities, May 1991.
- Docket No. 9850, Application of Houston Lighting and Power Company for Authority to Change Rates, February 1991.
- Docket No. 9491, Application of Texas-New Mexico Power Company for Authority to Change Rates, July 1990.
- Docket No. 9165, Application of El Paso Electric Company for Authority to Change Rates, February 1990.
- Docket No. 9119, Appeal of the Office of Public Utility Counsel of the City of Kerrville Municipal Utility Rate Action, August 1990.
- Docket No. 8868, Application of Brazos Electric Power Cooperative, Inc. to Change (Reduce) Rates, September 1989.
- Docket No. 8702, Application of Gulf States Utilities for Authority to Change Rates, July 1989.
- Docket No. 8425, Application of Houston Lighting and Power Company for Authority to Change Rates, May 1989.

***Testimony Before the Texas Legislature:***

- Testified as a resource witness before the Texas State House of Representatives Energy Resources Interim Committee on Environmental Externalities, February 21, 1996.

## RESEARCH PAPERS AND PUBLICATIONS

- "Spatial Variation in Electric Utility Customer Valuation of Environmental Externalities in Texas." Directed Research for completion of Master's degree, Texas State University-San Marcos, December 1996.
- "Public Participation as an Alternative to Monetization of Environmental Externalities in Electric Utility Resource Selection." Public Utility Commission of Texas Working Paper, September 1995.
- "Report of the Integrated Resource Planning Team on Externalities." Team leader and principal author of Public Utility Commission of Texas Report, January 1994.
- "A Conditional Demand Analysis of Residential Appliance Use in the Southwest U.S.," with Michael D. Robinson. Public Utility Commission of Texas Working Paper, February 1988. Presented for the program of the Southwestern Society of Economists, March 2-5, 1988 in San Antonio, TX.
- "Impacts of Texas-New Mexico Power's Conservation Information Programs," with Michael D. Robinson and Jeffrey I. Rosenblum. Published in EPRI EM-5452, *Proceedings Third National Conference on Utility Demand-Side Management Programs: Strategies in Transition*, June 16-18, 1987 in Houston, TX.
- "A Texas Study of the Effects of the National Appliance Energy Conservation Act of 1987." Public Utility Commission of Texas Working Paper, November 1986. Also published in the proceedings of *The Fourth Annual Symposium on Improving Energy Efficiency in Hot and Humid Climates*, September 15-16, 1987 in Houston, TX.
- "An Eight-Zone REEPS Model of the State of Texas with Conservation Analysis." Public Utility Commission of Texas Working Paper, April 1986.

| Initial GRU Evaluation Staff Recommendations and Final Gainesville City Commission Approved Factor Weights for Binding Responses to GRU Biomass RFP | | |
|---|---|---|
| | **Weighted Percentage** | |
| **Criteria / Factor** | **Initial GRU Recommendation** | **Final City Commission Approved** |
| **(1) Environmental: Environmental Attributes Consistent with the Gainesville Community** | **31.00** | **30.00** |
| Environmental Emissions | 10.00 | 10.00 |
| Project Commitment to Sustainable Forest Resource Management | 8.00 | 7.00 |
| By-product/Waste Production and Disposition | 8.00 | 8.00 |
| Project Site Requirements | 5.00 | 5.00 |
| **(2) Economics: Cost Effective Renewable Capacity and/or Energy Benefits** | **34.00** | **37.00** |
| Project All-in Production Cost | 25.00 | 25.00 |
| Project Variable Production Costs (Scored in the Final City Commission Approved version as a function of the proposed facility's Full Load Heat Rate) | 0.00 | 5.00 |
| Anticipated Project In-Service Date and/or Energy Delivery | 4.00 | 4.00 |
| Local Economic Impact | 5.00 | 3.00 |
| **(3) Risk & Reliability: Enhanced and Reliable Energy Supply** | **35.00** | **33.00** |
| Proposed Contractual Terms and Conditions | 10.00 | 10.00 |
| Technology Readiness and Project Reliability | 5.00 | 5.00 |
| Fuel Requirements and Sources | 5.00 | 3.00 |
| Project Size and Design | 5.00 | 5.00 |
| Experience and Resources of Project Developer/Sponsor | 5.00 | 5.00 |
| Proposer's Financial Strength | 5.00 | 5.00 |
| **Grand Total** | **100.00** | **100.00** |
| Note: Each of the above Factors was given a raw numerical score from 1 - 5. | | |

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 14
COMPANY GRU/GREC LLC (Direct)
WITNESS Richard D. Bachmeier (RDB-2)
DATE 12/16/09

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 15
COMPANY GRU/GREC LLC (Direct)
WITNESS Richard D. Bachmeier (RDB-3)
DATE 12/16/09

FLORIDA RELIABILITY COORDINATING COUNCIL, INC.
1408 N. WESTSHORE BLVD., SUITE 1002
TAMPA, FLORIDA 33607-4512
PHONE 813.289.5644 • FAX 813.289.5646
WWW.FRCC.COM

September 11, 2009

Mr. Robert E. Hunzinger
General Manager
Gainesville Regional Utility
P.O. BOX 147117
Gainesville, Florida 32614-7117

Re: FRCC Review of the Gainesville Renewable Energy Center proposed interconnection and integration

Mr. Robert E. Hunzinger:

Florida Reliability Coordinating Council's (FRCC) Transmission Working Group (TWG) and Stability Working Group (SWG) have evaluated the proposed interconnection and integration of the Gainesville Renewable Energy Center (GREC) to serve Gainesville Regional Utilities' (GRU) native load. Based upon the information provided by GRU, the TWG and SWG have determined that the proposed interconnection and integration of the GREC is reliable, adequate and does not adversely impact the transmission system within the FRCC.

GREC is a woody waste biomass fuelled facility with a net output of 116 MW located on the site of GRU's existing Deerhaven plant in Alachua County, Florida. GREC will be interconnected to GRU's 138kV looped transmission system and is scheduled to be in-service by July 1, 2013.

The TWG reviewed the results of the steady state single contingency analysis. The results did not identify any single (Category B) contingency event potentially causing limitations within the FRCC.

In addition to the steady state analysis, the SWG reviewed the dynamic simulations showing a stable response at peak load levels for normally cleared and delayed cleared three-phase faults in the vicinity of GREC. The results indicate that there are no grid stability concerns with the addition of the GREC.

A review of the short circuit analysis has shown that there are no short circuit concerns with the addition of the GREC.

Based upon the above review and analysis conducted by the TWG and SWG, the FRCC Planning Committee has determined that the proposed interconnection and

integration of the GREC to serve GRU's native load is reliable, adequate and does not adversely impact the reliability of FRCC transmission system.

Sincerely,

Vicente Ordax

Vicente Ordax, Jr., P.E.
Manager of Planning

# JOSHUA H. LEVINE

75 Arlington Street, Fifth Floor
Boston, MA 02116

617.482.6150, x117
jlevine@amrenewables.com

## EXPERIENCE

2008-Present **AMERICAN RENEWABLES, LLC. (AR)** **Boston, MA**

***Director of Project Development***

- Oversee all AR biomass project developments in FL.
- Project manager and primary developer on 100 MW biomass development project in Gainesville, FL; responsibilities include negotiating with utility offtaker and potential biomass fuel suppliers, overseeing permitting efforts, managing community relations, conducting analysis of fuel supply and developing fuel procurement strategy.
- Develop and maintain financial pro forma models to assess project viability and return potential.
- Involved in business development activities for AR ranging from identifying new project opportunities to partnership development and acquisition identification.

2005-2008 **TAMARACK ENERGY, INC. (TEI)** **Essex, CT / Manchester, NH**

***Project Developer***

- Created business plan and prepared initial financial projections for TEI; presented company concept to Haley & Aldrich Board of Directors.
- Constructed financial pro forma models to assess project viability and return potential for solar and biomass energy development projects; refined existing pro forma for wind energy projects.
- Served as project manager and primary developer on 70 MW biomass development opportunity in Northern NH; responsibilities included identifying strategic site location, negotiating with land owners, managing community relations, conducting analysis of fuel supply, electrical transmission and permitting requirements.
- Managed project finance activities for 30 MW biomass project in CT, 70 MW biomass project in FL and 50 MW biomass project in MA; responsibilities include creating/managing financial model, working with project equity sponsors, developing relationships with potential debt providers, participating in power purchase agreement negotiations.
- Assisted in developing wind energy projects in Upstate NY and Northern New England

2003-2005 **HALEY & ALDRICH, INC.** **East Hartford, CT**

***Energy Analyst*** *– Energy & Utilities practice area*

2005

- Conducted market analysis on renewable energy sector which ultimately served as basis for formation of Tamarack Energy, a start-up renewable energy development company.

***Environmental Management Consultant*** *– Infrastructure /Industrial Environmental practice areas*

Summer 2004

- Researched new business opportunities in U.S. Energy Sector; developed and presented a business plan to CEO and SVP of Marketing identifying specialty niches for future investments.
- Drafted successful proposal of $1-3MM contract to conduct Federal Energy Regulatory Commission (FERC) permitting and environmental support of client's 83-mile natural gas pipeline in NY.

Summer 2003

- Reviewed and edited private client's Environmental Impact Assessment (EIA) for proposed $650MM liquid natural gas re-gasification facility in Bahamas and associated pipeline to Broward County, FL.
- Developed responses for Bahamas Environment Science and Technology Commission to resolve issues raised during review of EIA.
- Coordinated and participated in town meetings held in Bahamas with Government Ministries, Affected Parties, and Energy Project Developers

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 16
COMPANY GRU/GREC LLC (Direct)
WITNESS Joshua H. Levine (JHL-1)
DATE 12/16/09

## JOSHUA H. LEVINE (CONTINUED)

### EXPERIENCE (CONTINUED)

1998-2002 **INDUSTRIAL ECONOMICS, INC. (IEc)** **Cambridge, MA**

***Research Analyst*** *- Natural Resource Damage Assessment and Litigation Support practice areas*

- Analyzed natural resource damages for National Oceanic & Atmospheric Administration; provided litigation support to U.S. Department of Justice (DOJ).
- Provided UNCC secretariat with evaluations on technical appropriateness and cost reasonableness of over 30 environmental damage claims seeking over $300MM from Iraq's invasion and occupation of Kuwait.
- Analyzed defense expert's scientific reports related to fate and transport of DDT/PCB in sediments, leading to awarding of $73MM (largest payment for natural resource damages since Exxon Valdez case).
- Developed timber usage models and analyzed expert witness reports for a $1B contract litigation case against the United States by long-term timber contract holder.

### EDUCATION

**YALE UNIVERSITY, School of Management** **New Haven, CT**

Master of Business Administration (MBA), 2005.

- Focus in Strategy and Economics; Academic Distinction (Top 10%) in six classes.

**YALE UNIVERSITY, School of Forestry and Environmental Studies** **New Haven, CT**

Master of Environmental Management (MEM), 2005.

- Concentration in Policy, Economics, and Law.

**CONNECTICUT COLLEGE** **New London, CT**

Bachelor of Arts (BA), Cum Laude, Economics, 1995.

- Distinction in Economics; National Political Science Honor Society.
- London School of Economics (Study Abroad – Spring 1994)

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 17
COMPANY GRU/GREC LLC (Direct)
WITNESS Bradley E. Kushner (BEK-1)
DATE 12/16/09

**Manager**

*Utility System Planning, Production Costing, Economic Analysis, and Demand-Side Management*

**Education**
B.S., Mechanical Engineering, University of Missouri – Columbia, 2000

**Experience**
9 Years

**Joined Black & Veatch**
2000

# Resume of Bradley E. Kushner Black & Veatch

Mr. Kushner is responsible for production costing associated with utility system expansion planning, as well as feasibility studies and economic analysis. He also provides demand-side management evaluation. Mr. Kushner has been involved in the issuance and evaluation of requests for proposals (RFPs) and portfolio evaluations. Mr. Kushner has also presented expert testimony and prepared other experts for testimony related to determination of need proceedings and has also testified under cross examination by intervening parties.

## Representative Project Experience

***Numeric Conservation Goals Filing, Florida Public Utilities Company, JEA, and Orlando Utilities Commission, Fla.***
***2009***

Mr. Kushner was responsible for coordinating the demand-side management (DSM) cost-effectiveness analysis performed by a third party consultant for Florida Public utilities Company (FPUC), JEA, and Orlando Utilities Commission (OUC). Results of the DSM cost-effectiveness analysis were used as the basis for the proposed numeric conservation goals for each of the three utilities, which were filed with the Florida Public Service Commission (FPSC) as part of a statewide DSM collaborative effort in line with the requirements of Section 366.82, Florida Statutes. My Kushner provided expert direct and rebuttal testimony on behalf of each of the three utilities and was responsible for coordinating responses to nearly 300 discovery (interrogatory and production of documents) requests from the FPSC and intervening parties.

***Federal Loan Guarantee Application Support, Confidential Client***
***2009***
Serving in the role of Study Manager, Mr. Kushner provided support to facilitate completion of Part II of the Application to the US Department of Energy's Federal Loan Guarantee Program Office. The Part II Application submittal was structured to be consistent with the requirements set forth in the US Department of Energy solicitation number DE-FOA-0000008. The Part II Application consisted of a detailed project description, technical information related to the proposed project, the proposed project's business plan, and the proposed project's financial plan. Mr. Kushner's responsibilities included interfacing directly with the client and other consultants, working to coordinate the day-to-day activities of other Black & Veatch experts providing inputs for the Application, and drafting various sections of the submittal.

***Siting and Capacity Expansion Planning Study, Western Farmers Electric Cooperative, Anadarko, Okla.***
***2008-2009***
Serving in the role of Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion of the

Western Farmers Electric Cooperative (WFEC) Siting and Capacity Expansion Planning Study. The Study considered construction of three different combined cycle technologies at various sites as well as construction of coal fired capacity or purchase of nuclear power. The findings of the Study were presented to WFEC staff and will be presented to the WFEC Board of Directors in March 2009.

***Greenland Energy Center Combined Cycle Conversion Need for Power Application, JEA, Jacksonville, Fla.***
***2008-2009***
As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Greenland Energy Center Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC) as well as responding to interrogatories and production of documents requests throughout the discovery process. The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements. The analysis considered self-build and purchase-power alternatives, including renewable energy technologies, and demand-side management. The project received approval from the FPSC in February 2009.

***Supply-Side Technologies Characterization, Tampa Electric Company, Tampa, Fla.***
***2007-2009***
As Study Manager, Mr. Kushner provided cost and performance estimates for various renewable, conventional and other generating technologies for client consideration in support of its determination of need filing. Technologies considered included approximately 20 renewable technologies, such as biomass, biogas, waste-to-energy, wind, solar, geothermal, hydroelectric and ocean energy; numerous conventional technologies, including simple and combined cycles; and two emerging technologies, both nuclear. Mr. Kushner also considered advanced, energy storage and distributed generation technologies.

***Cane Island 4 Need for Power Application, Florida Municipal Power Agency, Orlando, Fla.***
***2007-2008***
As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Cane Island 4 Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC) as well as responding to interrogatories and production of documents requests throughout the discovery process. The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements. The analysis considered self-build and purchase-power alternatives, including renewable energy technologies, and demand-side management. The FPSC approved the Cane Island 4 NFP in August 2008.

***Valuation of Generating Unit Portfolio, Confidential Client***
***2008***
As Study Manager, Mr. Kushner provided oversight on modeling and evaluation of purchase power contracts related to the Client's portfolio of generation assets throughout North America. The purchase power contracts were modeled to assess a monetary value to be used as guidance for valuation of the overall generation portfolio.

The portfolio of assets and associated purchase power contracts includes more than 50 models. Mr. Kushner was involved in the modeling of the contracts and quality assurance/quality control related to the entire portfolio prior to delivering evaluations to the Client.

***Characterization and Selection of Nuclear Generating Technologies, AmerenUE, Missouri***
***2007-2008***
As Project Analysis Engineer, Mr. Kushner provided assistance in the characterization and screening of various nuclear generating technologies for consideration by AmerenUE. The nuclear technology selected for further evaluation will be evaluated as part of the Client's Integrated Resource Plan (IRP) study.

The characterization included consideration of provisions of the Energy Policy Act of 2005 related to new qualifying nuclear plant capacity as well as relative comparisons of competing nuclear generating technologies. Client deliverables included two separate presentations to AmerenUE's Stakeholders.

***Power Supply Study, Western Farmers Electric Cooperative, Anadarko, Okla.***
***2007***
Serving in the role of Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion of the Western Farmers Electric Cooperative (WFEC) Power Supply Study. The WFEC Power Supply Study was an update to previous capacity planning studies

that evaluated the economics of various supply-side alternatives to satisfy forecast capacity requirements.

***Integrated Resource Plan, Village of Rockville Centre, N.Y.***
***2007***
As Study Manager, Mr. Kushner provided analysis and preparation related to the Village of Rockville Centre (RVC) Integrated Resource Plan (IRP). The IRP included consideration of RVC's existing generating system and strategic planning to satisfy forecasted system requirements. The strategic planning process included consideration of conventional supply-side options, interaction with the purchase power market, demand-side management measures, renewable supply-side alternatives and possible future environmental impacts.

***Taylor Energy Center Need for Power Application, Various Clients, Florida***
***2005-2006***
As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Taylor Energy Center (TEC) Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC). The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements for the four separate utilities participating in the project. The analysis considered self-build and purchase-power alternatives.

***Integrated Resource Plan, City of Tallahassee, Tallahassee, Fla.***
***2005-2008***
Serving as Study Manager, Mr. Kushner provided analysis and preparation related to the City of Tallahassee's (the City's) Integrated Resource Plan (IRP). The IRP included consideration of the City's existing generating system and strategic planning to satisfy forecasted system requirements. The strategic planning process included consideration of conventional supply-side options, demand-side management measures, renewable supply-side alternatives and possible future environmental impacts.

***Integrated Resource Plan, Brazos Electric Power Cooperative, Texas***
***2006***
Mr. Kushner, Project Analysis Engineer, provided assistance to Brazos Electric Power Cooperative (Brazos) in developing its Integrated Resource Plan (IRP). His work on this project included drafting a request for power supply proposals (RFP), analysis of responses to the RFP, review of Brazos production costing analysis and documentation of the final report. The IRP will provide strategic direction to Brazos, which is currently experiencing and is forecasted to continue to experience robust system growth.

***Stanton Energy Center Unit B Need for Power Application, Orlando Utilities Commission, Orlando, Fla.***
***2005***
As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion and filing of the Stanton

Energy Center Unit B (Stanton B) Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC).

The NFP provided a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements for the Orlando Utilities Commission. The FPSC approved the Stanton B NFP Application in May 2006, which represents the first coal-fired power plant approved in the State of Florida since 1991.

***RFP Issuance and Evaluation, Western Farmers Electric Cooperative, Anadarko, Okla.***
***2005***
As Project Analysis Engineer, Mr. Kushner coordinated with Western Farmers Electric Cooperative (WFEC) to draft, issue and evaluate a capacity solicitation (RFP) to secure forecast capacity requirements in the most cost-effective and reliable manner. The RFP process was undertaken through coordination with Rural Utilities Services (RUS) in an effort to obtain low-cost RUS project financing. This involved evaluation of numerous conventional as well as renewable technology proposals and culminated in the issuance of a short list and presentation to the WFEC Board of Directors.

***Saint Johns River Power Park Annual Review, JEA, Jacksonville, Fla.***
***Annually 2003 - Present***
As Engineering Manager, Mr. Kushner was responsible for the preparation of the annual report, which documented the previous year's operations of the St. Johns River Power Park. This included a summary of the findings of field activities, staff interviews, observations and document review associated with the Power Park.

***10-Year Site Plan, FRCC Forms, EIA-860 and Annual Conservation Report Filings, Orlando Utilities Commission, Orlando, Fla.***
***Annually 2000 - Present***
As Engineering Manager, Mr. Kushner was responsible for production costing and the economic analysis necessary to complete the Orlando Utilities Commission's 2006 10-Year Site Plan, which was submitted to the Florida Public Service Commission (FPSC).

Related to the 10-Year Site Plan were the Florida Reliability Coordinating Council (FRCC) filings, which were submitted to the FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by the FRCC. The EIA-860 collects data related to the specific utility's existing and planned generating units. The Annual Conservation Report was prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

***RFP Issuance and Evaluation, City of Columbia, Water & Light Department, Columbia, Mo.***
***2005***
Serving as Study Manager, Mr. Kushner coordinated with the City of Columbia, Water & Light Department (the City) to draft, issue and evaluate a capacity solicitation (RFP) to secure forecast capacity requirements in the most cost-effective and reliable manner. This involved evaluation of numerous conventional capacity options under consideration by the City, as well as options proposed by respondents to the RFP. Mr. Kushner provided continuous communication with City staff as well as presentations to the City's planning committee.

***Treasure Coast Energy Center Need for Power Application, Florida Municipal Power Agency, Orlando, Fla.***
***2005***
In the capacity of Project Analysis Engineer, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion and filing of the Florida Municipal Power Agency's (FMPA) Need for Power Application (NFP). He also provided testimony related to the project to the Florida Public Service Commission (FPSC).

The NFP provided a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements. The analysis performed for FMPA considered self-build and purchase-power alternatives. The NFP Application was approved by the FPSC in July 2005, representing a critical step in the permitting and licensing process in the state of Florida.

***Stock Island Combustion Turbine Evaluation, Florida Municipal Power Agency, Orlando, Fla.***
***2004***
Serving in the role of Project Analysis Engineer, Mr. Kushner performed production costing and economic analysis to determine the most cost-effective capacity additions to be located at the Stock Island site. The analysis considered two different generating units from specific manufacturers who responded to FMPA's request for bids.

***Generation Expansion Study, Oman***
***2004***
As Project Analysis Engineer, Mr. Kushner performed production costing and economic analysis to determine the most cost-effective capacity additions to satisfy forecast capacity requirements in the country of Oman. The analysis considered seven different generating technologies.

***Integrated Resource Plan, Golden Valley Electric Association, Fairbanks, Alaska***
***2004***
As Project Analysis Engineer, Mr. Kushner provided economic analysis in support of the Golden Valley Electric Association's (GVEA) Integrated Resource

Plan (IRP). The IRP provided GVEA with recommendations of capacity additions that would satisfy forecasted capacity requirements in the most cost-effective manner.

***10-Year Site Plan and FRCC Forms, Florida Municipal Power Agency, Orlando, Fla.***
***2005***
Serving as Engineering Manager, Mr. Kushner provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2005 10-Year Site Plan and subsequent submission to the Florida Public Service Commission (FPSC). Related to the 10-Year Site Plan were the Florida Reliability Coordinating Council (FRCC) filings, which were submitted to the FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by the FRCC.

***Due Diligence and Economic Analysis, Dairyland Power Cooperative, La Crosse, Wis.***
***2003***
Serving as the Project Analysis Engineer, Mr. Kushner performed a due diligence review of the power supply planning efforts undertaken by Dairyland Power Cooperative (DPC). His work included development of numerous capacity expansion plans and associated system production costing.

The analysis was done in compliance with the requirements of the Rural Utilities Services (RUS) to potentially obtain low-cost RUS project financing. This project also included a presentation of the study's findings to the DPC Board of Directors. Following the issuance of a request for proposals (RFP) for capacity supplies, Black & Veatch was released to perform additional production costing and evaluations of the bids and self-build options were completed. The results were then presented to DPC project personnel as well as RUS staff.

***Numeric Conservation Goals Filing, JEA, Jacksonville, Fla.***
***2004***
Serving in the role of Project Analysis Engineer, Mr. Kushner provided analysis related to and preparation of the JEA 2004 Petition for Approval of Numeric Conservation Goals, as required by the Florida Public Service Commission (FPSC).

The submittal included analysis of numerous demand-side management (DSM) measures to be considered by JEA in order to determine their cost-effectiveness. The process was required to be completed by JEA every five years, culminating in the eventual determination by the FPSC of the conservation goals JEA must satisfy each year.

***Numeric Conservation Goals Filing, Orlando Utilities Commission, Orlando, Fla.***
***2004***
As Project Analysis Engineer, Mr. Kushner was responsible for analysis related to and preparation of the Orlando Utilities Commission's (OUC) 2004 Petition

for Approval of Numeric Conservation Goals, as required by the Florida Public Service Commission (FPSC).

The submittal included analysis of numerous demand-side management (DSM) measures to be considered by OUC in order to determine their cost-effectiveness. The process was required to be completed by OUC every five years, culminating in the eventual determination by the FPSC of the conservation goals OUC must satisfy each year.

***Site Selection Study, Florida Municipal Power Agency, Orlando, Fla.***
***2003***
As Project Analysis Engineer, Mr. Kushner coordinated and prepared a site selection study related to the potential construction of a new combined-cycle unit to be installed by the Florida Municipal Power Agency.

***10-Year Site Plan, Florida Municipal Power Agency, Orlando, Fla.***
***2004***
Serving as Engineering Manager, Mr. Kushner provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2004 10-Year Site Plan and subsequent submission to the Florida Public Service Commission (FPSC).

***Due Diligence, City Utilities, Springfield, Mo.***
***2003***
As Project Analysis Engineer, Mr. Kushner provided due diligence and economic analysis to determine the most cost-effective capacity additions to satisfy forecasted system requirements for City Utilities – Springfield. Two options were considered, which consisted of constructing a second unit at an existing site and an independent developer's proposed construction of a unit at a new site.

***Participation Agreement, Kissimmee Utility Authority, Orlando, Fla.***
***2002***
In the role of Engineering Manager, Mr. Kushner led the development of a Participation Agreement between client (KUA) and another Florida utility governing ownership, construction and operation of a new generating unit at a KUA site. Mr. Kushner was active in meetings, coordinated with clients and incorporated various requirements to sufficiently complete the Agreement.

***Capacity Planning Study, Western Farmers Electric Cooperative, Anadarko, Okla.***
***2002***
Serving as the Project Analysis Engineer, Mr. Kushner handled the production costing and economic analysis to determine WFEC's most cost-effective expansion options to meet forecast capacity requirements. The capacity planning study was performed in support of the RFP issuance described above.

***Feasibility Study, Kissimmee Utility Authority, Kissimmee, Fla.***
***2002***
In the role of Engineering Manager, Mr. Kushner assisted in the coordination and preparation of a preliminary study to evaluate the feasibility of constructing a new generating unit at an existing Kissimmee Utility Authority site.

***Capacity Planning Study, Braintree Electric Light Department, Braintree, Mass.***
***2002***
Serving as the Project Analysis Engineer, Mr. Kushner provided the production costing and economic analysis to determine Braintree Electric Light Department's most cost-effective expansion options to meet forecast capacity requirements.

***Integrated Resource Plan, City of Tallahassee, Tallahassee, Fla.***
***2001***
As Project Analysis Engineer, Mr. Kushner assisted in the completion of the City of Tallahassee's Integrated Resource Plan (IRP), including evaluation of the City's demand-side management program alternatives.

***Capacity Planning Study, Basin Electric Power Cooperative, Bismarck, N.D.***
***2001***
Serving in the role of Project Analysis Engineer, Mr. Kushner managed the production costing and economic analysis necessary to provide Basin Electric Power Cooperative with recommendations as to which capacity additions would be most cost-effective to satisfy system requirements.

***10-Year Site Plan, Lakeland Electric, Lakeland, Fla.***
***2001***
As Project Analysis Engineer, Mr. Kushner assisted in the completion of Lakeland Electric's 2001 10-Year Site Plan, including consideration of Lakeland's capacity addition options.

***Stanton Energy Center A Need for Power Application, Various Clients, Florida***
***2000***
As Project Analysis Engineer, Mr. Kushner provided the production costing and economic analysis required in support of the determination of the most cost-effective expansion options to meet the individual needs of the Orlando Utilities Commission, Kissimmee Utility Authority and Florida Municipal Power Agency. His work also included preparation of a corresponding application to be presented to the Florida Public Service Commission, as well as written testimony in support of the application.

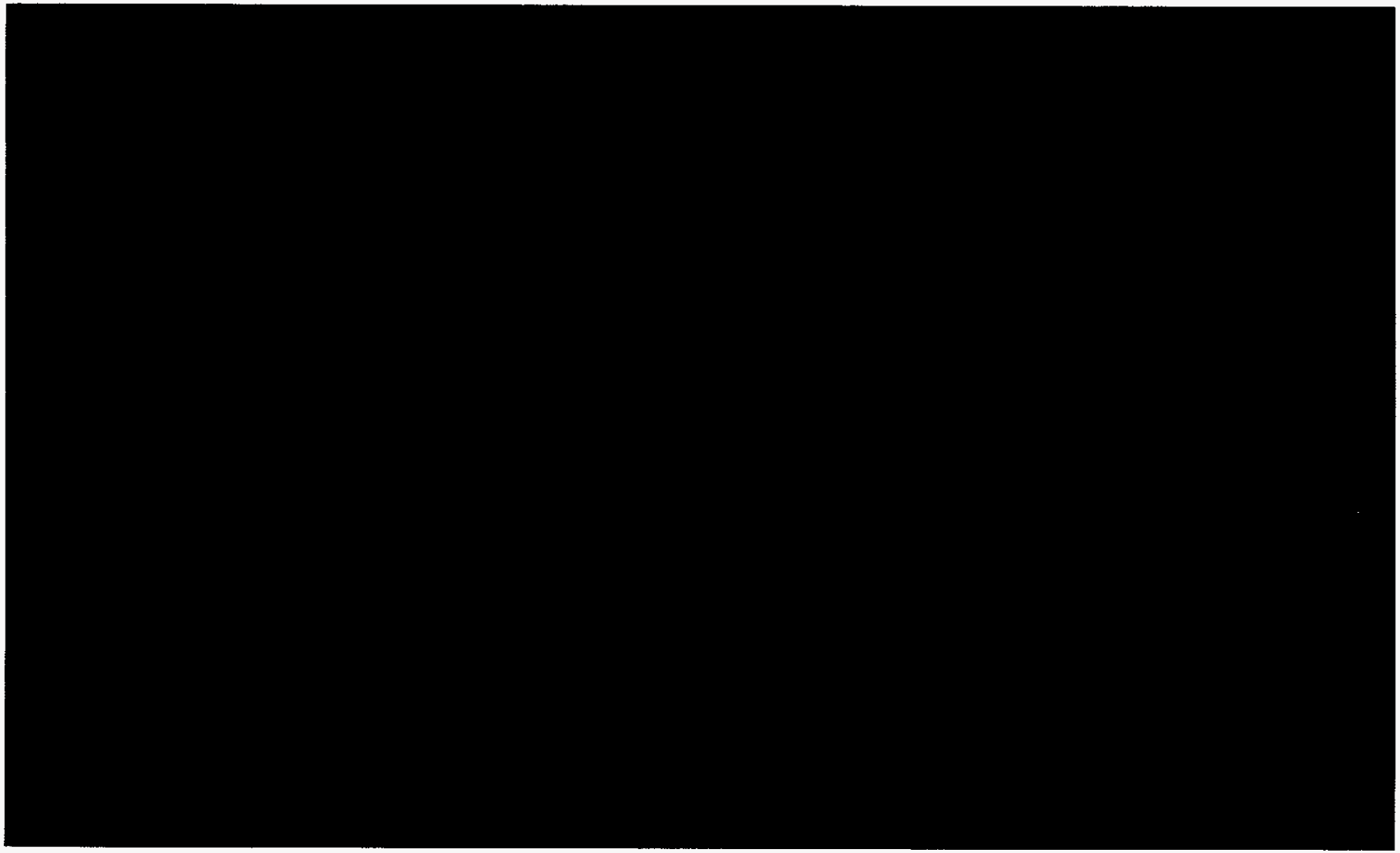
| Table 1<br>30 Year LCOE Matrix<br>(cents/kWh) | | | | | |
|---|---|---|---|---|---|
| | Generating Unit Alternative | | | | |
| Case | GREC LLC PPA | Simple Cycle LMS100 | 1x1 7EA Combined Cycle | Pulverized Coal (No CCS) | Pulverized Coal (with CCS) |
| No $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 Basic $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 High $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

| Table 2<br>30 Year LCOE Matrix<br>(Percent Differences) | | | | | |
|---|---|---|---|---|---|
| | Generating Unit Alternative | | | | |
| Case | GREC LLC PPA | Simple Cycle LMS100 | 1x1 7EA Combined Cycle | Pulverized Coal (No CCS) | Pulverized Coal (with CCS) |
| No $CO_2$ | Base | 103% | 11% | -14% | 48% |
| No $CO_2$ – High Fuel Price | Base | 108% | 16% | -14% | 49% |
| No $CO_2$ – Low Fuel Price | Base | 96% | 5% | -15% | 47% |
| No $CO_2$ – High Capital Cost | Base | 118% | 15% | -6% | 66% |
| No $CO_2$ – Low Capital Cost | Base | 88% | 8% | -22% | 31% |
| HB 2454 Basic $CO_2$ | Base | 125% | 31% | 56% | 81% |
| HB 2454 High $CO_2$ | Base | 210% | 103% | 196% | 104% |

| Table 1<br>30 Year LCOE Matrix<br>(cents/kWh) | | | | | |
|---|---|---|---|---|---|
| | Generating Unit Alternative (all alternatives at 90% capacity factor) | | | | |
| Case | GREC LLC PPA | Simple Cycle LMS100 | 1x1 7EA Combined Cycle | Pulverized Coal (No CCS) | Pulverized Coal (with CCS) |
| No $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 Basic $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 High $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 19
COMPANY GRU/GREC LLC (Direct)
WITNESS Bradley E. Kushner (BEK-3)
DATE 12/16/09

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 20
COMPANY GRU/GREC LLC (Direct)
WITNESS Bradley E. Kushner (BEK-4)
DATE 12/16/09



| Table 1<br>15 Year LCOE Matrix<br>(cents/kWh) | | | | | |
|---|---|---|---|---|---|
| Case | Generating Unit Alternative | | | | |
| | GREC LLC PPA | Simple Cycle LMS100 | 1x1 7EA Combined Cycle | Pulverized Coal (No CCS) | Pulverized Coal (with CCS) |
| No $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Fuel Price | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – High Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| No $CO_2$ – Low Capital Cost | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 Basic $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| HB 2454 High $CO_2$ | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 21
COMPANY GRU/GREC LLC (Direct)
WITNESS Bradley E. Kushner (BEK-5)
DATE 12/16/09

**ALL PAGES OF CONFIDENTIAL EXHIBIT NO. __ [BEK-6] ARE REDACTED**

# The Ratepayer Case

We the Ratepayers need to be represented in these proceedings.

We know that you are by law committed to make sure that the utility provides "safe, affordable and reliable" service. The GRU proposal fails on all three of these criteria.

**A. This proposed plan is *neither* affordable nor cost-effective based on GRU's own calculations.**

The proposal is experimental and costly.

GRU does not offer evidence that the proposed service will be affordable.

GRU concedes that from the beginning, this proposed plant would be more costly than even Combined Cycle Natural Gas.

GRU ***hopes*** that it will ***become*** more cost effective (in time), due to energy market changes.

The evidence is absent.

**B. GRU's projection of FUTURE POWER NEEDS is flawed.**

There is insufficient evidence to justify a need for this the power.

GRU's future energy use projection is merely conjecture. It represents a hope that energy use will expand. They have presented no valid evidence to support that claim.

The data reveal that conservation, the most affordable source of power, is advancing in Gainesville.

GRU ignored the potential for retro-refitting Combustion Turbines (CT's) at Deerhaven.

As CC-NG units, these would reclaim additional power from fuel we already used in the CT.

- **ASK: Why doesn't GRU maximize these existing units at Deerhaven ?**

**C. GRU's projection of FUTURE NATURAL GAS PRICES is flawed.**

**Shale Gas** has drastically altered projections about price and supply of natural gas, expanding estimates of recoverable supplies. **GRU has not included this information in their model**.

- **ASK: Why has GRU not included this new information on Shale Gas in their model ?**

**D. GRU's projection of WOOD FUEL COSTS is flawed.**

GRU claims it has everything covered, except the unknown FUEL COSTS.

FUEL COSTS are key to analyzing this proposal, and yet that topic is REDACTED OUT of the public version of the contract

Yet it is the ratepayers who will have to pay for 100 mW of power that we don't need, at an unknown and non-competitive price, for 30 years.

The Petitioners ignored natural competitive demand for limited feedstock.



FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 23
COMPANY Florida Public Service Comm. Staff
WITNESS Composite, Tom Bussing
DATE 12/16/09

Wood chip prices will be driven up by demand, including even shipment of wood to Europe.

Fully 8½ pages of 32 are BLACKED OUT. Terms of the critical "buyout," and even "Definitions" are absent from the presentation.

The public interest can not be served by secrecy over these critical aspects of the "deal" between GRU and a contractor.

**"Redaction" eliminates of the public's ability to grasp critical aspects of the document. This conceals its impact on the cost and availability of power, and contractual arrangements that can threaten the future of our utility.**

## E. GRU MISCHARACTERIZES THIS PROPOSAL AS "GREEN" AND "SUSTAINABLE."

The Scale (100 MW) is too big for what is described as a "waste wood" harvest.

The entire "sustainable" "waste wood" presentation is not factual and is misleading.

This plant is designed to cause a massive, historic and continuous tree harvest.

Testimony from the Forest Industry speaks to the reality of **fuel plantations**.

In addition, we do not know what will be burned in this plant. With a need to keep moisture content below 40%, most existing operations fill in with drier waste, e.g. Construction and Demolition waste (C&D), to keep the boiler fires going.

- **ASK: How do we know what will be burned in this plant?**

## F. LOSS OF LOCAL CONTROL

This plan will eliminate local control over utility operations.

This is readily seen already, in the heavy "Redaction", or "Blackout", of the contract itself.

This proposal will put local ratepayers, not private investment interests, at risk.

## G. THE MERCHANT PLANT

GRU doesn't forecast a need for this capacity before 2023.

Furthermore, GRU's plan is to sell 50% of the new output on the interchange.

Ratepayers know this cannot work when the wood-fueled power is more expensive.

- **ASK: How can GRU sell 50% of the plant's output, when Combined Cycle Natural Gas electricity is more affordable?**

The plain fact is that GRU needs to cover losses from the outset. They admit this power will *not* be competitive on the market. GRU is asking the PSC to endorse a gamble that they (GRU) can find special customers who will pay the premium for a "green tag" product.

- **ASK: Why does GRU plan to sell the green power on the interchange?**

Why not sell some of the other existing capacity, and GO GREEN locally?

The answer is, because it's not a native load project, an investment in our future.

THIS IS A MERCHANT PLANT !!

GRU has built a low return on power generation into its billing structure. This was achieved by "unbundling" GRU rates (on paper) into separate "generation" and "distribution" areas.

In reaction to the threat of utility deregulation in the 1990's, GRU "unbundled" their customer rates, shifting its billing so that "transmission & distribution" became the major profit center rather than power generation , to remain competitive with adjacent, outside utilities

Even if non-GRU external power was cheaper than GRU's, competitors would have to pay GRU to "wheel" it in to the customers.

This allowed GRU to weather the threat of competition.

GRU now seeks your permission to gamble by contracting for this Merchant Plant as an outside revenue source, as they hope to sell the power for a "green tag" mark-up. It is obviously not profitable to sell it for the local (native) load, which has been discounted in GRU's "unbundled" rate structure. But it might be lucrative on the tight "green energy" market. But that requires you to abandon your sworn duty of providing affordable and reliable power.

To explain the notable discrepancies, what you are actually considering is a Merchant Plant.

**ASK: About the impact of the "unbundled rate structure" on revenues of this Merchant Plant.**

**Rather than validate this gamble, in order to protect the Public you will *not* approve this Siting Petition as offered.**

## H. MERCHANT PLANT WITH A FLAWED BUSINESS PLAN

The business model is flawed as evidenced by the **Fuel Supply, Shale Gas, etc.**

GRU is risking more than the ratepayers' costs, it is risking the entire pubic utility. The public owners and ratepayers can not afford to bail GRU out if the Merchant experiment fails for any one of the many reasons, some of which the public are prevented from viewing.

It is reasonable to assume that ratepayers will have to pay for 100 mW of power that are not needed, at an unknown price, for 30 years.

- **ASK: What happens to the Ratepayers if the costs of wood goes up, or the cost of Natural Gas goes down ?**

## I. THE CART BEFORE THE HORSE

The petitioners say that the project needs rapid approval, in order to qualify for subsidies and tax credits. GRU says it wants to build now because the market is down, "prices are better."

Not only is this great rush unseemly, but it shows that the cart has gotten ahead of the horse.

Those are issues pertaining to private investor profits, ***not*** the Public Interest.

## J. THE GAINESVILLE CITY COMMISSION IS BETTING THE FUTURE OF ITS PUBILC UTILITY ON A COSTLY MISADVENTURE

Just 3 years ago, the Gainesville City Commission was planning to build a 450 mW coal-fired plant, despite public opposition that it was not needed and would be a source of pollution.

The City Commission is a generally good institution, but in this case has failed to adequately present and disclose the actual costs and dangers of this contractual obligation.

As can sometimes occur, a major misstep, no matter how well intentioned, can severely damage the interests of a public utility and its owners, the citizens of Gainesville.

The City Commission has been largely uninvolved in GRU issues and has, of late, been visibly intimidated by complex utility issues.

As an example, they have misunderstood Demand Side Management (DSM) -- which has publicly resulted in a puzzling but obvious contradiction, suggesting that you can expand capacity, while asking people to conserve.

To protect the public, the PSC must see that the dollar costs of DSM expenditures are justified ONLY by crossing off an expensive capital project, like the proposed "wood incinerator."

The City Commission's approval of this enterprise, this Merchant Plant, does not comply with the requirements for PSC approval.

Our local government, although well intentioned has failed to scrutinize this project.

We must turn to our State Public Service Commission to remedy this unfortunate situation.

## K. THE BLACKOUT

GRU's claim of an "Open & Transparent" process came to an abrupt end at the Contract with Nacogdoches ("American Renewables").

The Contract Blackout inhibits Ratepayers from preparing a case, through an illegal abuse of the "Trade Secret" loophole, to keep vital information from the Public.

Pricing, operations, buy-out, forest stewardship – even the terms for a GRU buyout –
– are all blacked out. Even definitions are blacked out.

- **ASK: For the Contract to be opened to the public.**

## IN CONCLUSION

Please require that the Contract be opened for the Public to see.

Then please remand this proposal for improvements, including full disclosure; accuracy in forecasting fuel costs and pricing of alternatives; and a valid assessment of the need for power in our utility system.

**ASK: Why doesn't GRU maximize these existing units at Deerhaven ?**

- **ASK: Why has GRU not included this new information on Shale Gas in their model ?**
- **ASK: How do we know what will be burned in this plant?**
- **ASK: How can GRU sell 50% of the plant's output, when Combined Cycle Natural Gas electricity is more affordable?**
- **ASK: Why does GRU plan to sell the green power on the interchange?**
- **ASK: About the impact of the "unbundled rate structure" on revenues of this Merchant Plant.**
- **ASK: What happens to the Ratepayers if the costs of wood goes up, or the cost of Natural Gas goes down ?**
- **ASK: For the Contract to be opened to the public.**

**Rather than validate this gamble, in order to protect the Public you will *not* approve this Siting Petition as offered.**

EXHIBIT NO. _____

DOCKET NO: 090451-EM

WITNESS: VARIOUS

PARTY: GRU/GREC LLC

DESCRIPTION: STAFF'S STIPULATED COMPOSITE EXHIBIT - _____

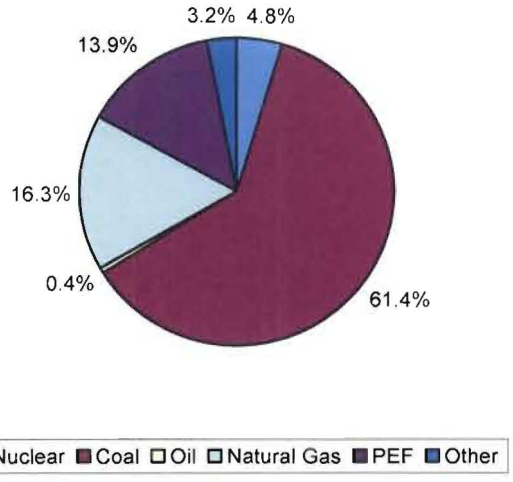
DOCUMENTS: Staff's Summary Package of GRU's testimony and exhibits

PROFFERED BY: STAFF

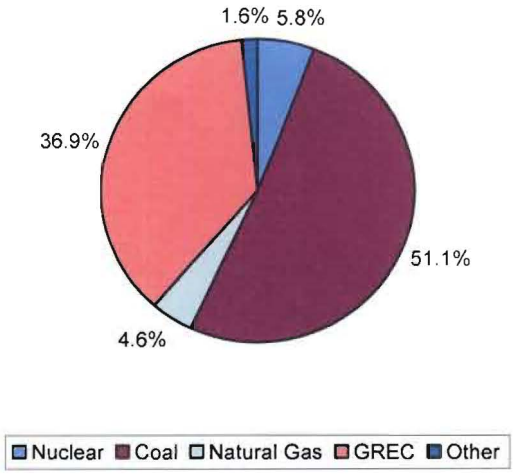
FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 24
COMPANY Florida Public Service Comm. Staff
WITNESS Staff's Summary Package of GRU's Testimony and Exhibits
DATE 12/16/09

| GRU Fuel Mix Projections | | | | | | |
|---|---|---|---|---|---|---|
| | GREC without Resale | | | GREC with Resale | | |
| Fuel Type | 2008 | 2014 | Difference | 2008 | 2014 | Difference |
| Nuclear | 4.8% | 5.8% | 1.0% | 4.8% | 5.8% | 1.0% |
| Coal | 61.4% | 51.1% | -10.3% | 61.4% | 62.5% | 1.1% |
| Oil | 0.4% | 0.0% | -0.4% | 0.4% | 0.0% | -0.4% |
| Natural Gas | 16.3% | 4.6% | -11.7% | 16.3% | 11.6% | -4.7% |
| Purchased Power | - | - | - | - | - | - |
| PEF | 13.9% | 0.0% | -13.9% | 13.9% | 0.0% | -13.9% |
| GREC | 0.0% | 36.9% | 36.9% | 0.0% | 18.5% | 18.5% |
| Other | 3.2% | 1.6% | -1.5% | 3.2% | 1.6% | -1.5% |
| Total Purchased | 17.1% | 38.5% | 21.5% | 17.1% | 20.1% | 3.0% |
| Total | 100.0% | 100.0% | - | 100.0% | 100.0% | - |
| Source: Interrogatory #16 (Richard Bachmeier) | | | | | | |

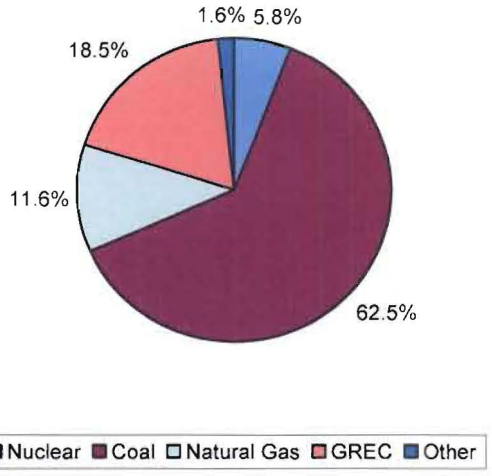
2008 - Actual




2014 - Without Resale




2014 - With Resale



| Summer Reserve Margin Calculation with No New Construction Until 2023 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | GRU Installed Capacity | Renewable PPAs | | | Other PPAs | Total Available | Summer Peak Demand | Reserve Margin | | Surplus / (Deficit) Capacity |
| | | Solar PPAs | LFG PPA | GREC PPA | | | | | | |
| | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (%) | (MW) |
| 2009 | 608 | 1 | 3 | 0 | 98 | 710 | 441 | 269 | 61.0 | 203 |
| 2010 | 608 | 3 | 4 | 0 | 98 | 713 | 439 | 274 | 62.4 | 208 |
| 2011 | 608 | 4 | 4 | 0 | 49 | 665 | 441 | 224 | 50.8 | 158 |
| 2012 | 620 | 6 | 4 | 0 | 49 | 678 | 443 | 235 | 53.0 | 169 |
| 2013 | 620 | 7 | 4 | 0 | 49 | 679 | 445 | 234 | 52.6 | 167 |
| 2014 | 597 | 8 | 4 | 0 | 0 | 609 | 448 | 161 | 35.9 | 94 |
| 2015 | 597 | 10 | 4 | 0 | 0 | 610 | 450 | 160 | 35.6 | 93 |
| 2016 | 597 | 11 | 4 | 0 | 0 | 611 | 453 | 158 | 34.9 | 90 |
| 2017 | 597 | 12 | 4 | 0 | 0 | 612 | 457 | 155 | 33.9 | 86 |
| 2018 | 583 | 13 | 4 | 0 | 0 | 599 | 460 | 139 | 30.2 | 70 |
| 2019 | 555 | 13 | 4 | 0 | 0 | 572 | 463 | 109 | 23.5 | 40 |
| 2020 | 555 | 14 | 4 | 0 | 0 | 572 | 465 | 107 | 23.0 | 37 |
| 2021 | 555 | 15 | 4 | 0 | 0 | 573 | 466 | 107 | 23.0 | 37 |
| 2022 | 555 | 15 | 4 | 0 | 0 | 574 | 468 | 106 | 22.6 | 36 |
| 2023 | 472 | 16 | 4 | 0 | 0 | 491 | 469 | 22 | 4.7 | (48) |
| 2024 | 472 | 17 | 4 | 0 | 0 | 492 | 471 | 21 | 4.5 | (50) |
| 2025 | 472 | 18 | 4 | 0 | 0 | 493 | 473 | 20 | 4.2 | (51) |
| 2026 | 472 | 18 | 4 | 0 | 0 | 493 | 475 | 18 | 3.8 | (53) |
| 2027 | 437 | 19 | 4 | 0 | 0 | 459 | 476 | -17 | (3.6) | (88) |
| 2028 | 437 | 20 | 4 | 0 | 0 | 460 | 478 | -18 | (3.8) | (90) |
| 2029 | 437 | 20 | 0 | 0 | 0 | 456 | 480 | -24 | (5.0) | (96) |
| 2030 | 437 | 20 | 0 | 0 | 0 | 456 | 481 | -25 | (5.2) | (97) |
| 2031 | 437 | 20 | 0 | 0 | 0 | 456 | 483 | -27 | (5.6) | (99) |
| 2032 | 205 | 20 | 0 | 0 | 0 | 225 | 484 | -259 | (53.5) | (332) |
| 2033 | 205 | 20 | 0 | 0 | 0 | 225 | 486 | -261 | (53.7) | (334) |
| 2034 | 205 | 20 | 0 | 0 | 0 | 225 | 487 | -262 | (53.8) | (335) |
| 2035 | 205 | 20 | 0 | 0 | 0 | 225 | 489 | -264 | (54.0) | (337) |
| 2036 | 205 | 20 | 0 | 0 | 0 | 225 | 490 | -265 | (54.1) | (339) |
| 2037 | 191 | 20 | 0 | 0 | 0 | 211 | 492 | -281 | (57.1) | (355) |
| 2038 | 191 | 20 | 0 | 0 | 0 | 211 | 493 | -282 | (57.2) | (356) |
| 2039 | 191 | 20 | 0 | 0 | 0 | 211 | 495 | -284 | (57.4) | (358) |
| 2040 | 191 | 20 | 0 | 0 | 0 | 211 | 496 | -285 | (57.5) | (359) |
| 2041 | 191 | 20 | 0 | 0 | 0 | 211 | 498 | -287 | (57.6) | (362) |
| 2042 | 191 | 20 | 0 | 0 | 0 | 211 | 499 | -288 | (57.7) | (363) |
| 2043 | 191 | 20 | 0 | 0 | 0 | 211 | 501 | -290 | (57.9) | (365) |
| Source: Table 5-1 (Page 5-2 of GREC Need for Power Application) | | | | | | | | | | |

| Summer Reserve Margin Calculation with Resale of GREC Facility | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | GRU Installed Capacity | Renewable PPAs | | | Other PPAs | Total Available | Summer Peak Demand | Reserve Margin | | Surplus / (Deficit) Capacity |
| | | Solar PPAs | LFG PPA | GREC PPA | | | | | | |
| | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (MW) | (%) | (MW) |
| 2009 | 608 | 1 | 3 | 0 | 98 | 710 | 441 | 269 | 61.0 | 203 |
| 2010 | 608 | 3 | 4 | 0 | 98 | 713 | 439 | 274 | 62.4 | 208 |
| 2011 | 608 | 4 | 4 | 0 | 49 | 665 | 441 | 224 | 50.8 | 158 |
| 2012 | 620 | 6 | 4 | 0 | 49 | 678 | 443 | 235 | 53.0 | 169 |
| 2013 | 620 | 7 | 4 | 0 | 49 | 679 | 445 | 234 | 52.6 | 167 |
| 2014 | 597 | 8 | 4 | 50 | 0 | 659 | 448 | 211 | 47.1 | 144 |
| 2015 | 597 | 10 | 4 | 50 | 0 | 660 | 450 | 210 | 46.7 | 143 |
| 2016 | 597 | 11 | 4 | 50 | 0 | 661 | 453 | 208 | 45.9 | 140 |
| 2017 | 597 | 12 | 4 | 50 | 0 | 662 | 457 | 205 | 44.9 | 136 |
| 2018 | 583 | 13 | 4 | 50 | 0 | 649 | 460 | 189 | 41.1 | 120 |
| 2019 | 555 | 13 | 4 | 50 | 0 | 622 | 463 | 159 | 34.3 | 90 |
| 2020 | 555 | 14 | 4 | 50 | 0 | 622 | 465 | 157 | 33.8 | 87 |
| 2021 | 555 | 15 | 4 | 50 | 0 | 623 | 466 | 157 | 33.7 | 87 |
| 2022 | 555 | 15 | 4 | 50 | 0 | 624 | 468 | 156 | 33.3 | 86 |
| 2023 | 472 | 16 | 4 | 50 | 0 | 541 | 469 | 72 | 15.4 | 2 |
| 2024 | 472 | 17 | 4 | 100 | 0 | 592 | 471 | 121 | 25.7 | 50 |
| 2025 | 472 | 18 | 4 | 100 | 0 | 593 | 473 | 120 | 25.4 | 49 |
| 2026 | 472 | 18 | 4 | 100 | 0 | 593 | 475 | 118 | 24.8 | 47 |
| 2027 | 437 | 19 | 4 | 100 | 0 | 559 | 476 | 83 | 17.4 | 12 |
| 2028 | 437 | 20 | 4 | 100 | 0 | 560 | 478 | 82 | 17.2 | 10 |
| 2029 | 437 | 20 | 0 | 100 | 0 | 556 | 480 | 76 | 15.8 | 4 |
| 2030 | 437 | 20 | 0 | 100 | 0 | 556 | 481 | 75 | 15.6 | 3 |
| 2031 | 437 | 20 | 0 | 100 | 0 | 556 | 483 | 73 | 15.1 | 1 |
| 2032 | 205 | 20 | 0 | 100 | 0 | 325 | 484 | -159 | (32.9) | (232) |
| 2033 | 205 | 20 | 0 | 100 | 0 | 325 | 486 | -161 | (33.1) | (234) |
| 2034 | 205 | 20 | 0 | 100 | 0 | 325 | 487 | -162 | (33.3) | (235) |
| 2035 | 205 | 20 | 0 | 100 | 0 | 325 | 489 | -164 | (33.5) | (237) |
| 2036 | 205 | 20 | 0 | 100 | 0 | 325 | 490 | -165 | (33.7) | (239) |
| 2037 | 191 | 20 | 0 | 100 | 0 | 311 | 492 | -181 | (36.8) | (255) |
| 2038 | 191 | 20 | 0 | 100 | 0 | 311 | 493 | -182 | (36.9) | (256) |
| 2039 | 191 | 20 | 0 | 100 | 0 | 311 | 495 | -184 | (37.2) | (258) |
| 2040 | 191 | 20 | 0 | 100 | 0 | 311 | 496 | -185 | (37.3) | (259) |
| 2041 | 191 | 20 | 0 | 100 | 0 | 311 | 498 | -187 | (37.6) | (262) |
| 2042 | 191 | 20 | 0 | 100 | 0 | 311 | 499 | -188 | (37.7) | (263) |
| 2043 | 191 | 20 | 0 | 100 | 0 | 311 | 501 | -190 | (37.9) | (265) |
| Source: Table 5-2 (Page 5-3 of GREC Need for Power Application) | | | | | | | | | | |

| Cumulative Total Cost Analysis | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Cumulative Present Worth Cost of System | | | | | | Difference from No Construction | | | |
| | Base | | | Regulated CO2 | | | Base | | Regulated CO2 | |
| | Resale | No Resale | No Constr. | Resale | No Resale | No Constr. | Resale | No Resale | Resale | No Resale |
| 2014 | 225,615 | 249,419 | 210,277 | 254,363 | 272,631 | 245,720 | (15,338) | (39,142) | (8,643) | (26,911) |
| 2015 | 447,154 | 493,217 | 418,374 | 506,871 | 541,313 | 491,157 | (28,780) | (74,843) | (15,714) | (50,156) |
| 2016 | 658,700 | 725,985 | 617,506 | 751,317 | 800,394 | 729,870 | (41,194) | (108,479) | (21,447) | (70,524) |
| 2017 | 874,448 | 961,177 | 822,571 | 1,002,391 | 1,064,059 | 977,228 | (51,877) | (138,606) | (25,163) | (86,831) |
| 2018 | 1,087,041 | 1,191,626 | 1,024,575 | 1,252,253 | 1,324,910 | 1,224,755 | (62,466) | (167,051) | (27,498) | (100,155) |
| 2019 | 1,299,181 | 1,419,515 | 1,226,846 | 1,504,670 | 1,585,626 | 1,475,088 | (72,335) | (192,669) | (29,582) | (110,538) |
| 2020 | 1,507,821 | 1,643,533 | 1,427,078 | 1,755,852 | 1,844,222 | 1,726,035 | (80,743) | (216,455) | (29,817) | (118,187) |
| 2021 | 1,714,795 | 1,864,329 | 1,626,671 | 2,008,509 | 2,102,114 | 1,979,511 | (88,124) | (237,658) | (28,998) | (122,603) |
| 2022 | 1,918,481 | 2,080,924 | 1,823,632 | 2,260,778 | 2,358,073 | 2,233,849 | (94,849) | (257,292) | (26,929) | (124,224) |
| 2023 | 2,131,543 | 2,293,987 | 2,019,515 | 2,516,202 | 2,613,497 | 2,491,209 | (112,028) | (274,472) | (24,993) | (122,288) |
| 2024 | 2,332,619 | 2,495,062 | 2,200,234 | 2,762,439 | 2,859,734 | 2,737,138 | (132,385) | (294,828) | (25,301) | (122,596) |
| 2025 | 2,540,357 | 2,702,800 | 2,397,773 | 3,018,945 | 3,116,239 | 3,004,465 | (142,584) | (305,027) | (14,480) | (111,774) |
| 2026 | 2,744,346 | 2,906,790 | 2,592,088 | 3,274,337 | 3,371,632 | 3,271,091 | (152,258) | (314,702) | (3,246) | (100,541) |
| 2027 | 2,946,006 | 3,108,449 | 2,785,677 | 3,531,132 | 3,628,427 | 3,542,131 | (160,329) | (322,772) | 10,999 | (86,296) |
| 2028 | 3,145,018 | 3,307,461 | 2,978,373 | 3,788,453 | 3,885,747 | 3,816,512 | (166,645) | (329,088) | 28,059 | (69,235) |
| 2029 | 3,341,705 | 3,504,149 | 3,170,842 | 4,047,554 | 4,144,848 | 4,096,163 | (170,863) | (333,307) | 48,609 | (48,685) |
| 2030 | 3,535,256 | 3,697,700 | 3,362,262 | 4,307,153 | 4,404,448 | 4,379,485 | (172,994) | (335,438) | 72,332 | (24,963) |
| 2031 | 3,785,318 | 3,947,761 | 3,623,910 | 4,599,890 | 4,697,185 | 4,694,437 | (161,408) | (323,851) | 94,547 | (2,748) |
| 2032 | 4,045,281 | 4,207,724 | 3,895,331 | 4,901,270 | 4,998,564 | 5,014,856 | (149,950) | (312,393) | 113,586 | 16,292 |
| 2033 | 4,303,615 | 4,466,058 | 4,166,433 | 5,202,285 | 5,299,580 | 5,335,587 | (137,182) | (299,625) | 133,302 | 36,007 |
| 2034 | 4,561,100 | 4,723,544 | 4,437,796 | 5,506,381 | 5,603,675 | 5,661,561 | (123,304) | (285,748) | 155,180 | 57,886 |
| 2035 | 4,818,216 | 4,980,659 | 4,710,453 | 5,811,647 | 5,908,941 | 5,989,642 | (107,763) | (270,206) | 177,995 | 80,701 |
| 2036 | 5,074,557 | 5,237,000 | 4,983,556 | 6,120,574 | 6,217,869 | 6,323,915 | (91,001) | (253,444) | 203,341 | 106,046 |
| 2037 | 5,331,943 | 5,494,387 | 5,259,220 | 6,432,401 | 6,529,695 | 6,661,599 | (72,723) | (235,167) | 229,198 | 131,904 |
| 2038 | 5,595,578 | 5,758,021 | 5,542,396 | 6,757,441 | 6,854,736 | 7,013,423 | (53,182) | (215,625) | 255,982 | 158,687 |
| 2039 | 5,858,575 | 6,021,018 | 5,826,192 | 7,083,278 | 7,180,572 | 7,366,674 | (32,383) | (194,826) | 283,396 | 186,102 |
| 2040 | 6,122,102 | 6,284,546 | 6,111,804 | 7,415,803 | 7,513,097 | 7,729,098 | (10,298) | (172,742) | 313,295 | 216,001 |
| 2041 | 6,385,028 | 6,547,472 | 6,397,999 | 7,749,306 | 7,846,600 | 8,092,888 | 12,971 | (149,473) | 343,582 | 246,288 |
| 2042 | 6,648,812 | 6,811,256 | 6,686,174 | 8,090,631 | 8,187,925 | 8,466,696 | 37,362 | (125,082) | 376,065 | 278,771 |
| 2043 | 6,912,163 | 7,074,606 | 6,975,080 | 8,433,232 | 8,530,527 | 8,842,251 | 62,917 | (99,526) | 409,019 | 311,724 |

Source: Interrogatory #57 (Richard Bachmeier)

## Capacity Factors (%) by Unit
## (Base Case Only - Regulated CO2 Not Shown)

### GREC with Resale

| Facility | Unit # | Unit | Fuel | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deerhaven | 2 | ST | BIT | 71.2 | 72.3 | 72.8 | 73.8 | 73.7 | 74.0 | 74.4 | 75.4 | 75.2 | 63.8 | 63.5 | 64.5 | 64.5 | 65.4 | 65.2 | 66.1 | 66.2 | 12.2 | |
| Deerhaven | 1 | ST | NG | 11.7 | 12.7 | 13.9 | 13.6 | 13.4 | 11.6 | 12.5 | 13.8 | 13.7 | 0.0 | | | | | | | | | |
| Crystal River | 3 | ST | NUC | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 |
| J. R. Kelly | 7 | ST | NG | | | | | | | | | | | | | | | | | | | |
| J. R. Kelly | CC1 | CC | NG | 13.0 | 14.1 | 13.1 | 14.1 | 15.0 | 19.3 | 19.0 | 18.7 | 19.0 | 10.3 | 16.3 | 17.5 | 19.2 | 19.9 | 19.2 | 20.2 | 19.9 | 62.6 | 80.1 |
| Deerhaven | CT1 | CT | NG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 1.3 | 4.4 | 4.7 | 0.0 | | | | | | |
| Deerhaven | CT2 | CT | NG | 0.1 | 0.2 | 0.3 | 0.1 | 1.6 | 2.4 | 0.9 | 1.2 | 1.0 | 1.9 | 5.2 | 5.6 | 0.0 | | | | | | |
| Deerhaven | CT3 | CT | NG | 0.0 | 0.0 | 0.0 | 1.6 | 1.9 | 2.5 | 1.6 | 2.1 | 2.4 | 1.5 | 6.6 | 6.2 | 6.6 | 7.1 | 8.5 | 8.6 | 9.1 | 63.5 | 76.3 |
| J. R. Kelly | CT1 | CT | NG | 3.3 | 3.7 | 3.5 | 4.0 | 3.3 | | | | | | | | | | | | | | |
| J. R. Kelly | CT2 | CT | NG | 1.5 | 1.9 | 2.0 | 2.0 | 1.5 | | | | | | | | | | | | | | |
| J. R. Kelly | CT3 | CT | NG | 0.3 | 0.5 | 0.5 | 0.5 | 0.4 | 0.0 | | | | | | | | | | | | | |
| SEC | - | COG | NG | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

### GREC without Resale

| Facility | Unit # | Unit | Fuel | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deerhaven | 2 | ST | BIT | 58.2 | 59.1 | 59.6 | 60.7 | 61.0 | 61.9 | 61.9 | 62.9 | 62.8 | 63.8 | 63.5 | 64.5 | 64.5 | 65.4 | 65.2 | 66.1 | 66.2 | 12.2 | |
| Deerhaven | 1 | ST | NG | 7.3 | 9.0 | 9.3 | 8.5 | 9.2 | 8.8 | 8.8 | 8.3 | 8.8 | 0.0 | | | | | | | | | |
| Crystal River | 3 | ST | NUC | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 |
| J. R. Kelly | 7 | ST | NG | | | | | | | | | | | | | | | | | | | |
| J. R. Kelly | CC1 | CC | NG | 3.7 | 4.4 | 4.2 | 6.3 | 6.4 | 8.3 | 8.9 | 10.1 | 9.7 | 10.3 | 16.3 | 17.5 | 19.2 | 19.9 | 19.2 | 20.2 | 19.9 | 62.6 | 80.1 |
| Deerhaven | CT1 | CT | NG | 2.8 | 3.2 | 2.2 | 2.1 | 1.0 | 1.0 | 0.8 | 1.0 | 1.1 | 1.3 | 4.4 | 4.7 | 0.0 | | | | | | |
| Deerhaven | CT2 | CT | NG | 4.1 | 4.6 | 4.6 | 2.3 | 1.4 | 1.8 | 2.7 | 1.5 | 1.5 | 1.9 | 5.2 | 5.6 | 0.0 | | | | | | |
| Deerhaven | CT3 | CT | NG | 2.0 | 1.1 | 1.4 | 1.4 | 1.5 | 1.9 | 1.0 | 1.2 | 1.4 | 1.5 | 6.6 | 6.2 | 6.6 | 7.1 | 8.5 | 8.6 | 9.1 | 63.5 | 76.3 |
| J. R. Kelly | CT1 | CT | NG | 2.1 | 2.3 | 2.1 | 2.0 | 1.9 | | | | | | | | | | | | | | |
| J. R. Kelly | CT2 | CT | NG | 0.9 | 1.1 | 1.0 | 1.0 | 0.9 | | | | | | | | | | | | | | |
| J. R. Kelly | CT3 | CT | NG | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.0 | | | | | | | | | | | | | |
| SEC | - | COG | NG | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

### No New Construction Until 2023

| Facility | Unit # | Unit | Fuel | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deerhaven | 2 | ST | BIT | 83.2 | 83.6 | 83.9 | 84.2 | 84.5 | 84.9 | 85.0 | 85.7 | 85.5 | 85.5 | 84.0 | 84.3 | 83.1 | 84.5 | 83.8 | 84.6 | 84.1 | 16.9 | |
| Deerhaven | 1 | ST | NG | 20.2 | 21.2 | 22.6 | 22.1 | 24.6 | 23.4 | 24.0 | 25.9 | 25.5 | 0.0 | | | | | | | | | |
| Crystal River | 3 | ST | NUC | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 | 89.0 | 100 |
| J. R. Kelly | 7 | ST | NG | | | | | | | | | | | | | | | | | | | |
| J. R. Kelly | CC1 | CC | NG | 22.4 | 24.3 | 24.0 | 27.2 | 25.5 | 28.0 | 27.5 | 27.3 | 27.7 | 31.4 | 42.6 | 44.7 | 48.8 | 46.2 | 49.3 | 47.9 | 50.5 | 77.6 | 97.7 |
| Deerhaven | CT1 | CT | NG | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.7 | 0.9 | 0.9 | 0.7 | 0.8 | 9.5 | 9.9 | 0.0 | | | | | | |
| Deerhaven | CT2 | CT | NG | 2.0 | 1.6 | 0.0 | 1.9 | 4.0 | 2.0 | 2.9 | 2.9 | 2.9 | 3.5 | 12.1 | 13.8 | 0.0 | | | | | | |
| Deerhaven | CT3 | CT | NG | 0.5 | 1.2 | 1.5 | 1.7 | 1.7 | 5.2 | 5.1 | 5.9 | 6.2 | 7.9 | 21.2 | 21.3 | 21.0 | 25.1 | 22.3 | 26.0 | 23.8 | 79.4 | 96.3 |
| J. R. Kelly | CT1 | CT | NG | 6.2 | 6.5 | 5.8 | 5.5 | 5.0 | | | | | | | | | | | | | | |
| J. R. Kelly | CT2 | CT | NG | 3.2 | 3.5 | 3.0 | 2.7 | 2.4 | | | | | | | | | | | | | | |
| J. R. Kelly | CT3 | CT | NG | 1.0 | 1.0 | 0.8 | 0.9 | 0.7 | 0.0 | | | | | | | | | | | | | |
| SEC | - | COG | NG | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Interrogatory #19 (Richard Bachmeier)

| Monthly Residential Bill Estimates ($/1200-kWh) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Base Case** | | | | | | | | | | |
| **Total Bill** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| No New Construction | 135.25 | 139.10 | 141.96 | 144.68 | 145.21 | 147.97 | 145.99 | 155.07 | 157.53 | 162.88 |
| GREC with Resale | 135.25 | 139.10 | 141.96 | 144.68 | 155.80 | 157.53 | 155.09 | 163.15 | 165.79 | 170.83 |
| GREC Delayed | 135.25 | 139.10 | 141.96 | 144.68 | 157.59 | 159.31 | 156.85 | 164.88 | 167.50 | 172.53 |
| GREC without Resale | 135.25 | 139.10 | 141.96 | 144.68 | 172.24 | 173.36 | 170.65 | 177.85 | 179.71 | 183.51 |
| **Bill Impact Compared to No New Construction** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| GREC with Resale | | | | | 10.59 | 9.56 | 9.10 | 8.08 | 8.26 | 7.95 |
| GREC Delayed | | | | | 12.38 | 11.34 | 10.86 | 9.81 | 9.97 | 9.65 |
| GREC without Resale | | | | | 27.03 | 25.39 | 24.66 | 22.78 | 22.18 | 20.63 |

| Regulated CO2 Case | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Bill** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| No New Construction | 135.25 | 139.10 | 160.58 | 165.10 | 169.68 | 174.53 | 175.01 | 187.05 | 193.03 | 201.58 |
| GREC with Resale | 135.25 | 139.10 | 160.58 | 165.10 | 175.65 | 179.55 | 179.21 | 189.86 | 194.85 | 203.26 |
| GREC Delayed | 135.25 | 139.10 | 160.58 | 165.10 | 177.45 | 181.33 | 180.97 | 191.60 | 196.57 | 204.96 |
| GREC without Resale | 135.25 | 139.10 | 160.58 | 165.10 | 188.27 | 191.05 | 189.94 | 199.38 | 203.42 | 209.94 |
| **Bill Impact Compared to No New Construction** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| GREC with Resale | | | | | 5.97 | 5.02 | 4.20 | 2.81 | 1.82 | 1.68 |
| GREC Delayed | | | | | 7.77 | 6.80 | 5.96 | 4.55 | 3.54 | 3.38 |
| GREC without Resale | | | | | 18.59 | 16.52 | 14.93 | 12.33 | 10.39 | 8.36 |

Source: Interrogatory #60 (Richard Bachmeier)

| Price Differential from No New Construction till 2023 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Residential Price Increase ($/1200 kWh) | | | | System Avg Cost of Electricity (c/kWh) | | | |
| | Base | | Regulated CO2 | | Base | | Regulated CO2 | |
| | Resale | No Resale | Resale | No Resale | Resale | No Resale | Resale | No Resale |
| 2014 | 10.59 | 27.03 | 5.97 | 18.58 | 0.88 | 2.25 | 0.50 | 1.55 |
| 2015 | 9.56 | 25.39 | 5.03 | 16.53 | 0.80 | 2.12 | 0.42 | 1.38 |
| 2016 | 9.10 | 24.66 | 4.20 | 14.93 | 0.76 | 2.05 | 0.35 | 1.24 |
| 2017 | 8.08 | 22.78 | 2.81 | 12.33 | 0.67 | 1.90 | 0.23 | 1.03 |
| 2018 | 8.26 | 22.18 | 1.82 | 10.39 | 0.69 | 1.85 | 0.15 | 0.87 |
| 2019 | 7.95 | 20.63 | 1.68 | 8.36 | 0.66 | 1.72 | 0.14 | 0.70 |
| 2020 | 7.00 | 19.81 | 0.20 | 6.37 | 0.58 | 1.65 | 0.02 | 0.53 |
| 2021 | 6.36 | 18.28 | (0.71) | 3.81 | 0.53 | 1.52 | (0.06) | 0.32 |
| 2022 | 6.00 | 17.53 | (1.85) | 1.45 | 0.50 | 1.46 | (0.15) | 0.12 |
| 2023 | 15.88 | 15.88 | (1.79) | (1.79) | 1.32 | 1.32 | (0.15) | (0.15) |
| 2024 | 19.48 | 19.48 | 0.29 | 0.29 | 1.62 | 1.62 | 0.02 | 0.02 |
| 2025 | 10.10 | 10.10 | (10.72) | (10.72) | 0.84 | 0.84 | (0.89) | (0.89) |
| 2026 | 9.92 | 9.92 | (11.52) | (11.52) | 0.83 | 0.83 | (0.96) | (0.96) |
| 2027 | 8.56 | 8.56 | (15.11) | (15.11) | 0.71 | 0.71 | (1.26) | (1.26) |
| 2028 | 6.94 | 6.94 | (18.74) | (18.74) | 0.58 | 0.58 | (1.56) | (1.56) |
| 2029 | 4.80 | 4.80 | (23.37) | (23.37) | 0.40 | 0.40 | (1.95) | (1.95) |
| 2030 | 2.51 | 2.51 | (27.93) | (27.93) | 0.21 | 0.21 | (2.33) | (2.33) |
| 2031 | (14.13) | (14.13) | (27.08) | (27.08) | (1.18) | (1.18) | (2.26) | (2.26) |
| 2032 | (14.46) | (14.46) | (24.03) | (24.03) | (1.21) | (1.21) | (2.00) | (2.00) |
| 2033 | (16.69) | (16.69) | (25.77) | (25.77) | (1.39) | (1.39) | (2.15) | (2.15) |
| 2034 | (18.77) | (18.77) | (29.60) | (29.60) | (1.56) | (1.56) | (2.47) | (2.47) |
| 2035 | (21.77) | (21.77) | (31.96) | (31.96) | (1.81) | (1.81) | (2.66) | (2.66) |
| 2036 | (24.31) | (24.31) | (36.76) | (36.76) | (2.03) | (2.03) | (3.06) | (3.06) |
| 2037 | (27.44) | (27.44) | (38.82) | (38.82) | (2.29) | (2.29) | (3.24) | (3.24) |
| 2038 | (30.38) | (30.38) | (41.63) | (41.63) | (2.53) | (2.53) | (3.47) | (3.47) |
| 2039 | (33.47) | (33.47) | (44.12) | (44.12) | (2.79) | (2.79) | (3.68) | (3.68) |
| 2040 | (36.80) | (36.80) | (49.82) | (49.82) | (3.07) | (3.07) | (4.15) | (4.15) |
| 2041 | (40.14) | (40.14) | (52.25) | (52.25) | (3.35) | (3.35) | (4.35) | (4.35) |
| 2042 | (43.56) | (43.56) | (58.02) | (58.02) | (3.63) | (3.63) | (4.83) | (4.83) |
| 2043 | (47.26) | (47.26) | (60.94) | (60.94) | (3.94) | (3.94) | (5.08) | (5.08) |

Source: Interrogatory #54 (Richard Bachmeier)

| Fuel Price Assumptions (Nominal Values) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Base Case | | | | Regulated CO2 Case | | | |
| | Natural Gas ($/MMBTU) | Coal ($/MMBTU) | CO2 ($/Ton) | Biomass ($/MWh) | Natural Gas ($/MMBTU) | Coal ($/MMBTU) | CO2 ($/Ton) | Biomass ($/MWh) |
| 2014 | 8.38 | 3.17 | | Confidential Values | 8.63 | 3.13 | 22.31 | Confidential Values |
| 2015 | 8.82 | 3.25 | | | 9.11 | 3.21 | 24.56 | |
| 2016 | 9.30 | 3.34 | | | 9.57 | 3.29 | 27.04 | |
| 2017 | 9.69 | 3.39 | | | 9.85 | 3.33 | 29.76 | |
| 2018 | 10.16 | 3.41 | | | 10.14 | 3.36 | 32.76 | |
| 2019 | 10.73 | 3.51 | | | 10.45 | 3.47 | 36.07 | |
| 2020 | 11.27 | 3.60 | | | 10.69 | 3.58 | 39.70 | |
| 2021 | 11.90 | 3.68 | | | 10.73 | 3.67 | 43.71 | |
| 2022 | 12.37 | 3.76 | | | 10.90 | 3.77 | 48.12 | |
| 2023 | 12.43 | 3.86 | | | 11.15 | 3.87 | 52.97 | |
| 2024 | 12.78 | 3.97 | | | 11.45 | 3.98 | 58.31 | |
| 2025 | 12.75 | 4.10 | | | 11.37 | 4.08 | 64.19 | |
| 2026 | 13.24 | 4.23 | | | 11.72 | 4.19 | 70.67 | |
| 2027 | 13.82 | 4.36 | | | 11.94 | 4.30 | 77.79 | |
| 2028 | 14.69 | 4.47 | | | 12.52 | 4.40 | 85.64 | |
| 2029 | 15.40 | 4.58 | | | 13.11 | 4.47 | 94.27 | |
| 2030 | 16.22 | 4.71 | | | 13.63 | 4.54 | 103.78 | |
| 2031 | 17.06 | 4.84 | | | 14.16 | 4.64 | 114.25 | |
| 2032 | 17.95 | 4.98 | | | 14.70 | 4.73 | 125.77 | |
| 2033 | 18.88 | 5.11 | | | 15.27 | 4.83 | 138.45 | |
| 2034 | 19.87 | 5.25 | | | 15.86 | 4.93 | 152.42 | |
| 2035 | 20.90 | 5.39 | | | 16.47 | 5.03 | 167.79 | |
| 2036 | 21.99 | 5.54 | | | 17.10 | 5.14 | 184.71 | |
| 2037 | 23.13 | 5.69 | | | 17.76 | 5.24 | 203.34 | |
| 2038 | 24.34 | 5.85 | | | 18.45 | 5.35 | 223.84 | |
| 2039 | 25.61 | 6.01 | | | 19.16 | 5.46 | 246.42 | |
| 2040 | 26.94 | 6.17 | | | 19.90 | 5.57 | 271.27 | |
| 2041 | 28.34 | 6.34 | | | 20.66 | 5.69 | 298.63 | |
| 2042 | 29.82 | 6.51 | | | 21.46 | 5.81 | 328.74 | |
| 2043 | 31.37 | 6.69 | | | 22.29 | 5.93 | 361.90 | |
| Source: Table 11-1 (Page 11-3 from GREC's Need for Power Application) | | | | | | | | |

EXHIBIT NO. _____

DOCKET NO: 090451-EM

WITNESS: VARIOUS

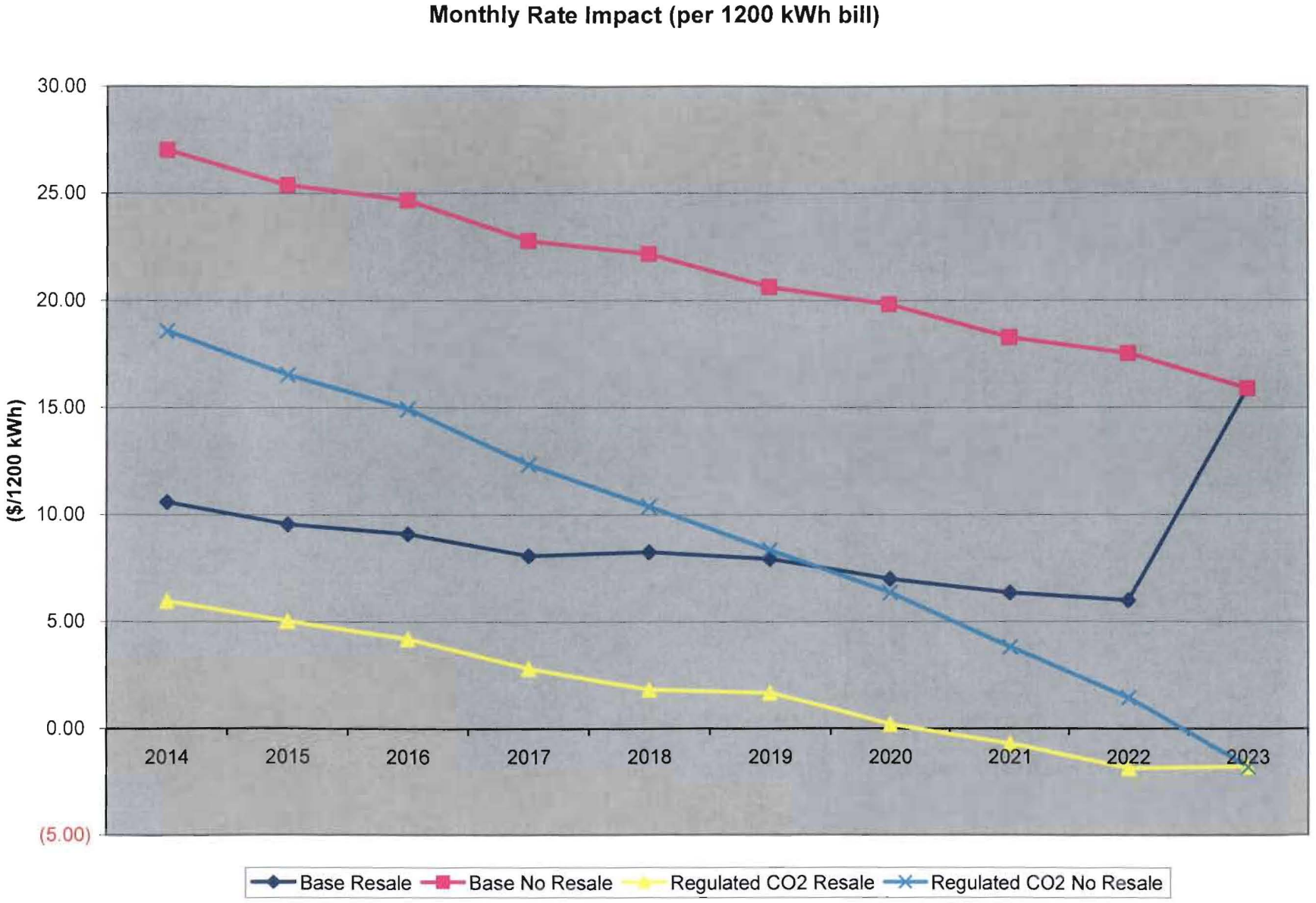
PARTY: GRU/GREC LLC

DESCRIPTION: STAFF'S RATE IMPACT CHART

DOCUMENT: Staff's Rate Impact Chart - Source: Interrogatory #54 (Richard Bachmeier)

PROFFERED BY: STAFF

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 25
COMPANY Florida Public Service Comm. Staff
WITNESS Staff's Rate Impact Chart
DATE 12/16/09




Source: Interrogatory #54 (Richard Bachmeier)

| Errata for Discovery Responses Sponsored by Richard D. Bachmeier | | |
|---|---|---|
| Interrogatory No. | Table | Correction |
| 54 | All | Replace all tables originally presented in response to Interrogatory No. 54 with the revised tables on the following pages [1] |
| 56 | All | Replace table originally presented in response to Interrogatory No. 56 with the revised table on the following pages [1] |
| 57 | All | Replace all tables originally presented in response to Interrogatory No. 57 with the revised tables on the following pages [1] |
| 60 | All | Replace table originally presented in response to Interrogatory No. 60 with the revised table on the following pages [1] |

[1] The fuel costs reported in the "Regulated CO2" scenarios were miscalculated in the original responses. Also, the "GREC with Resale" scenarios in the original responses omitted two benefits that will accrue to GRU: (a) Wheeling revenue to be received from selling 50 MW of the GREC facility to a 3rd party, and (b) property tax revenue that will accrue to the City of Gainesville from selling 50 MW of GREC to a 3rd party.

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 26
COMPANY GRU/GREC LLC
WITNESS Corrected Interrogatory Responses
DATE 12/16/09

## Revised Responses to Interrogatory No. 54

| Scenario Combinations | |
|---|---|
| **Scenario A** | **Scenario B** |
| GREC with Resale | GREC without Resale |
| GREC with Resale | No New Construction until 2023 |
| GREC without Resale | No New Construction until 2023 |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.

Please refer to the following six (6) revised tables.

| | GREC with Resale vs. GREC without Resale | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 277 | 306 | (29) | 2,135 | (1.37) | (16.44) |
| 2015 | 284 | 312 | (28) | 2,160 | (1.32) | (15.83) |
| 2016 | 282 | 310 | (28) | 2,183 | (1.30) | (15.56) |
| 2017 | 300 | 327 | (27) | 2,205 | (1.23) | (14.70) |
| 2018 | 308 | 334 | (26) | 2,228 | (1.16) | (13.92) |
| 2019 | 320 | 344 | (24) | 2,249 | (1.06) | (12.68) |
| 2020 | 328 | 352 | (24) | 2,265 | (1.07) | (12.81) |
| 2021 | 339 | 362 | (23) | 2,280 | (0.99) | (11.92) |
| 2022 | 348 | 370 | (22) | 2,294 | (0.96) | (11.53) |
| 2023 | 379 | 379 | - | 2,310 | - | - |
| 2024 | 373 | 373 | - | 2,324 | - | - |
| 2025 | 401 | 401 | - | 2,341 | - | - |
| 2026 | 411 | 411 | - | 2,356 | - | - |
| 2027 | 423 | 423 | - | 2,372 | - | - |
| 2028 | 435 | 435 | - | 2,387 | - | - |
| 2029 | 448 | 448 | - | 2,402 | - | - |
| 2030 | 459 | 459 | - | 2,418 | - | - |
| 2031 | 618 | 618 | - | 2,433 | - | - |
| 2032 | 670 | 670 | - | 2,449 | - | - |
| 2033 | 693 | 693 | - | 2,465 | - | - |
| 2034 | 720 | 720 | - | 2,481 | - | - |
| 2035 | 749 | 749 | - | 2,497 | - | - |
| 2036 | 778 | 778 | - | 2,513 | - | - |
| 2037 | 814 | 814 | - | 2,529 | - | - |
| 2038 | 869 | 869 | - | 2,545 | - | - |
| 2039 | 904 | 904 | - | 2,562 | - | - |
| 2040 | 943 | 943 | - | 2,578 | - | - |
| 2041 | 981 | 981 | - | 2,595 | - | - |
| 2042 | 1,025 | 1,025 | - | 2,612 | - | - |
| 2043 | 1,067 | 1,067 | - | 2,628 | - | - |

| | CREC with Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 277 | 258 | 19 | 2,135 | 0.88 | 10.59 |
| 2015 | 284 | 266 | 17 | 2,160 | 0.80 | 9.56 |
| 2016 | 282 | 266 | 17 | 2,183 | 0.76 | 9.10 |
| 2017 | 300 | 285 | 15 | 2,205 | 0.67 | 8.08 |
| 2018 | 308 | 293 | 15 | 2,228 | 0.69 | 8.26 |
| 2019 | 320 | 305 | 15 | 2,249 | 0.66 | 7.95 |
| 2020 | 328 | 315 | 13 | 2,265 | 0.58 | 7.00 |
| 2021 | 339 | 327 | 12 | 2,280 | 0.53 | 6.36 |
| 2022 | 348 | 336 | 11 | 2,294 | 0.50 | 6.00 |
| 2023 | 379 | 348 | 31 | 2,310 | 1.32 | 15.88 |
| 2024 | 373 | 335 | 38 | 2,324 | 1.62 | 19.48 |
| 2025 | 401 | 382 | 20 | 2,341 | 0.84 | 10.10 |
| 2026 | 411 | 391 | 19 | 2,356 | 0.83 | 9.92 |
| 2027 | 423 | 406 | 17 | 2,372 | 0.71 | 8.56 |
| 2028 | 435 | 421 | 14 | 2,387 | 0.58 | 6.94 |
| 2029 | 448 | 438 | 10 | 2,402 | 0.40 | 4.80 |
| 2030 | 459 | 454 | 5 | 2,418 | 0.21 | 2.51 |
| 2031 | 618 | 647 | (29) | 2,433 | (1.18) | (14.13) |
| 2032 | 670 | 699 | (30) | 2,449 | (1.21) | (14.46) |
| 2033 | 693 | 728 | (34) | 2,465 | (1.39) | (16.69) |
| 2034 | 720 | 759 | (39) | 2,481 | (1.56) | (18.77) |
| 2035 | 749 | 795 | (45) | 2,497 | (1.81) | (21.77) |
| 2036 | 778 | 829 | (51) | 2,513 | (2.03) | (24.31) |
| 2037 | 814 | 872 | (58) | 2,529 | (2.29) | (27.44) |
| 2038 | 869 | 934 | (64) | 2,545 | (2.53) | (30.38) |
| 2039 | 904 | 975 | (71) | 2,562 | (2.79) | (33.47) |
| 2040 | 943 | 1,023 | (79) | 2,578 | (3.07) | (36.80) |
| 2041 | 981 | 1,068 | (87) | 2,595 | (3.35) | (40.14) |
| 2042 | 1,025 | 1,120 | (95) | 2,612 | (3.63) | (43.56) |
| 2043 | 1,067 | 1,170 | (104) | 2,628 | (3.94) | (47.26) |

| | CREC without Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Base | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 254 | 254 | - | 2,110 | - | - |
| 2014 | 306 | 258 | 48 | 2,135 | 2.25 | 27.03 |
| 2015 | 312 | 266 | 46 | 2,160 | 2.12 | 25.39 |
| 2016 | 310 | 266 | 45 | 2,183 | 2.05 | 24.66 |
| 2017 | 327 | 285 | 42 | 2,205 | 1.90 | 22.78 |
| 2018 | 334 | 293 | 41 | 2,228 | 1.85 | 22.18 |
| 2019 | 344 | 305 | 39 | 2,249 | 1.72 | 20.63 |
| 2020 | 352 | 315 | 37 | 2,265 | 1.65 | 19.81 |
| 2021 | 362 | 327 | 35 | 2,280 | 1.52 | 18.28 |
| 2022 | 370 | 336 | 34 | 2,294 | 1.46 | 17.53 |
| 2023 | 379 | 348 | 31 | 2,310 | 1.32 | 15.88 |
| 2024 | 373 | 335 | 38 | 2,324 | 1.62 | 19.48 |
| 2025 | 401 | 382 | 20 | 2,341 | 0.84 | 10.10 |
| 2026 | 411 | 391 | 19 | 2,356 | 0.83 | 9.92 |
| 2027 | 423 | 406 | 17 | 2,372 | 0.71 | 8.56 |
| 2028 | 435 | 421 | 14 | 2,387 | 0.58 | 6.94 |
| 2029 | 448 | 438 | 10 | 2,402 | 0.40 | 4.80 |
| 2030 | 459 | 454 | 5 | 2,418 | 0.21 | 2.51 |
| 2031 | 618 | 647 | (29) | 2,433 | (1.18) | (14.13) |
| 2032 | 670 | 699 | (30) | 2,449 | (1.21) | (14.46) |
| 2033 | 693 | 728 | (34) | 2,465 | (1.39) | (16.69) |
| 2034 | 720 | 759 | (39) | 2,481 | (1.56) | (18.77) |
| 2035 | 749 | 795 | (45) | 2,497 | (1.81) | (21.77) |
| 2036 | 778 | 829 | (51) | 2,513 | (2.03) | (24.31) |
| 2037 | 814 | 872 | (58) | 2,529 | (2.29) | (27.44) |
| 2038 | 869 | 934 | (64) | 2,545 | (2.53) | (30.38) |
| 2039 | 904 | 975 | (71) | 2,562 | (2.79) | (33.47) |
| 2040 | 943 | 1,023 | (79) | 2,578 | (3.07) | (36.80) |
| 2041 | 981 | 1,068 | (87) | 2,595 | (3.35) | (40.14) |
| 2042 | 1,025 | 1,120 | (95) | 2,612 | (3.63) | (43.56) |
| 2043 | 1,067 | 1,170 | (104) | 2,628 | (3.94) | (47.26) |

| | GREC with Resale vs. GREC without Resale | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 290 | 290 | - | 2,110 | - | - |
| 2014 | 312 | 335 | (22) | 2,135 | (1.05) | (12.61) |
| 2015 | 323 | 344 | (21) | 2,160 | (0.96) | (11.50) |
| 2016 | 326 | 346 | (20) | 2,183 | (0.89) | (10.73) |
| 2017 | 349 | 366 | (17) | 2,205 | (0.79) | (9.52) |
| 2018 | 362 | 378 | (16) | 2,228 | (0.71) | (8.57) |
| 2019 | 381 | 393 | (13) | 2,249 | (0.56) | (6.68) |
| 2020 | 395 | 407 | (12) | 2,265 | (0.51) | (6.18) |
| 2021 | 414 | 423 | (9) | 2,280 | (0.38) | (4.51) |
| 2022 | 431 | 437 | (6) | 2,294 | (0.27) | (3.29) |
| 2023 | 454 | 454 | - | 2,310 | - | - |
| 2024 | 456 | 456 | - | 2,324 | - | - |
| 2025 | 495 | 495 | - | 2,341 | - | - |
| 2026 | 514 | 514 | - | 2,356 | - | - |
| 2027 | 539 | 539 | - | 2,372 | - | - |
| 2028 | 562 | 562 | - | 2,387 | - | - |
| 2029 | 590 | 590 | - | 2,402 | - | - |
| 2030 | 616 | 616 | - | 2,418 | - | - |
| 2031 | 724 | 724 | - | 2,433 | - | - |
| 2032 | 776 | 776 | - | 2,449 | - | - |
| 2033 | 808 | 808 | - | 2,465 | - | - |
| 2034 | 851 | 851 | - | 2,481 | - | - |
| 2035 | 890 | 890 | - | 2,497 | - | - |
| 2036 | 938 | 938 | - | 2,513 | - | - |
| 2037 | 987 | 987 | - | 2,529 | - | - |
| 2038 | 1,072 | 1,072 | - | 2,545 | - | - |
| 2039 | 1,120 | 1,120 | - | 2,562 | - | - |
| 2040 | 1,190 | 1,190 | - | 2,578 | - | - |
| 2041 | 1,244 | 1,244 | - | 2,595 | - | - |
| 2042 | 1,327 | 1,327 | - | 2,612 | - | - |
| 2043 | 1,388 | 1,388 | - | 2,628 | - | - |

| | GREC with Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 290 | 290 | - | 2,110 | - | - |
| 2014 | 312 | 302 | 11 | 2,135 | 0.50 | 5.97 |
| 2015 | 323 | 314 | 9 | 2,160 | 0.42 | 5.03 |
| 2016 | 326 | 318 | 8 | 2,183 | 0.35 | 4.20 |
| 2017 | 349 | 344 | 5 | 2,205 | 0.23 | 2.81 |
| 2018 | 362 | 358 | 3 | 2,228 | 0.15 | 1.82 |
| 2019 | 381 | 378 | 3 | 2,249 | 0.14 | 1.68 |
| 2020 | 395 | 395 | - | 2,265 | 0.02 | 0.20 |
| 2021 | 414 | 415 | (1) | 2,280 | (0.06) | (0.71) |
| 2022 | 431 | 434 | (4) | 2,294 | (0.15) | (1.85) |
| 2023 | 454 | 458 | (3) | 2,310 | (0.15) | (1.79) |
| 2024 | 456 | 456 | 1 | 2,324 | 0.02 | 0.29 |
| 2025 | 495 | 516 | (21) | 2,341 | (0.89) | (10.72) |
| 2026 | 514 | 537 | (23) | 2,356 | (0.96) | (11.52) |
| 2027 | 539 | 568 | (30) | 2,372 | (1.26) | (15.11) |
| 2028 | 562 | 600 | (37) | 2,387 | (1.56) | (18.74) |
| 2029 | 590 | 637 | (47) | 2,402 | (1.95) | (23.37) |
| 2030 | 616 | 672 | (56) | 2,418 | (2.33) | (27.93) |
| 2031 | 724 | 779 | (55) | 2,433 | (2.26) | (27.08) |
| 2032 | 776 | 825 | (49) | 2,449 | (2.00) | (24.03) |
| 2033 | 808 | 861 | (53) | 2,465 | (2.15) | (25.77) |
| 2034 | 851 | 912 | (61) | 2,481 | (2.47) | (29.60) |
| 2035 | 890 | 956 | (66) | 2,497 | (2.66) | (31.96) |
| 2036 | 938 | 1,015 | (77) | 2,513 | (3.06) | (36.76) |
| 2037 | 987 | 1,069 | (82) | 2,529 | (3.24) | (38.82) |
| 2038 | 1,072 | 1,160 | (88) | 2,545 | (3.47) | (41.63) |
| 2039 | 1,120 | 1,214 | (94) | 2,562 | (3.68) | (44.12) |
| 2040 | 1,190 | 1,298 | (107) | 2,578 | (4.15) | (49.82) |
| 2041 | 1,244 | 1,357 | (113) | 2,595 | (4.35) | (52.25) |
| 2042 | 1,327 | 1,453 | (126) | 2,612 | (4.83) | (58.02) |
| 2043 | 1,388 | 1,521 | (133) | 2,628 | (5.08) | (60.94) |

| | GREC without Resale vs. No New Construction until 2023 | | | | | |
|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | |
| | Annual Total Revenue Requirements [Scenario A] | Annual Total Revenue Requirements [Scenario B] | Differential in Annual Total Revenue Requirements | Projected Total Sales After DSM | Differential in System Average Electric Rates | Differential in Residential Customer Bill |
| Year | ($millions, Nominal $) | | | (GWh @ meter) | (cents/kWh) | ($/1,200 kWh) |
| 2013 | 290 | 290 | - | 2,110 | - | - |
| 2014 | 335 | 302 | 33 | 2,135 | 1.55 | 18.58 |
| 2015 | 344 | 314 | 30 | 2,160 | 1.38 | 16.53 |
| 2016 | 346 | 318 | 27 | 2,183 | 1.24 | 14.93 |
| 2017 | 366 | 344 | 23 | 2,205 | 1.03 | 12.33 |
| 2018 | 378 | 358 | 19 | 2,228 | 0.87 | 10.39 |
| 2019 | 393 | 378 | 16 | 2,249 | 0.70 | 8.36 |
| 2020 | 407 | 395 | 12 | 2,265 | 0.53 | 6.37 |
| 2021 | 423 | 415 | 7 | 2,280 | 0.32 | 3.81 |
| 2022 | 437 | 434 | 3 | 2,294 | 0.12 | 1.45 |
| 2023 | 454 | 458 | (3) | 2,310 | (0.15) | (1.79) |
| 2024 | 456 | 456 | 1 | 2,324 | 0.02 | 0.29 |
| 2025 | 495 | 516 | (21) | 2,341 | (0.89) | (10.72) |
| 2026 | 514 | 537 | (23) | 2,356 | (0.96) | (11.52) |
| 2027 | 539 | 568 | (30) | 2,372 | (1.26) | (15.11) |
| 2028 | 562 | 600 | (37) | 2,387 | (1.56) | (18.74) |
| 2029 | 590 | 637 | (47) | 2,402 | (1.95) | (23.37) |
| 2030 | 616 | 672 | (56) | 2,418 | (2.33) | (27.93) |
| 2031 | 724 | 779 | (55) | 2,433 | (2.26) | (27.08) |
| 2032 | 776 | 825 | (49) | 2,449 | (2.00) | (24.03) |
| 2033 | 808 | 861 | (53) | 2,465 | (2.15) | (25.77) |
| 2034 | 851 | 912 | (61) | 2,481 | (2.47) | (29.60) |
| 2035 | 890 | 956 | (66) | 2,497 | (2.66) | (31.96) |
| 2036 | 938 | 1,015 | (77) | 2,513 | (3.06) | (36.76) |
| 2037 | 987 | 1,069 | (82) | 2,529 | (3.24) | (38.82) |
| 2038 | 1,072 | 1,160 | (88) | 2,545 | (3.47) | (41.63) |
| 2039 | 1,120 | 1,214 | (94) | 2,562 | (3.68) | (44.12) |
| 2040 | 1,190 | 1,298 | (107) | 2,578 | (4.15) | (49.82) |
| 2041 | 1,244 | 1,357 | (113) | 2,595 | (4.35) | (52.25) |
| 2042 | 1,327 | 1,453 | (126) | 2,612 | (4.83) | (58.02) |
| 2043 | 1,388 | 1,521 | (133) | 2,628 | (5.08) | (60.94) |

## Revised Responses to Interrogatory No. 56

**Cumulative Present Worth Cost Analysis by Scenario and Case ($000, 2013$)**

| Case | Scenario | | | |
|---|---|---|---|---|
| | GREC with Resale | GREC without Resale | No New Construction till 2023 | Least Cost Fossil Fuel Alternative |
| Base Case | 8,148,635 | 8,340,137 | 8,222,807 | NA |
| High Fuel | NA | NA | NA | NA |
| Low Fuel | NA | NA | NA | NA |
| High Load | NA | NA | NA | NA |
| Low Load | NA | NA | NA | NA |
| Regulated $CO_2$ | 9,941,798 | 10,056,497 | 10,423,983 | NA |
| High Regulated $CO_2$ | NA | NA | NA | NA |
| High Fuel & Regulated $CO_2$ | NA | NA | NA | NA |
| High Fuel, High Load, & Regulated $CO_2$ | NA | NA | NA | NA |
| Low Fuel, Low Load, & Regulated $CO_2$ | NA | NA | NA | NA |
| Low Fuel & Low Load | NA | NA | NA | NA |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Production cost results not available for all scenarios denoted "NA".
3. Present worth calculations use a 4.20% discount rate and 2013 base year.

**Revised Responses to Interrogatory No. 57**

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. All figures are present worth with a 4.20% discount rate and 2009 base year.
3. Fixed O&M Costs are included in the "Capital Costs" column.

Please refer to the following six (6) revised tables.

| | Scenario: GREC with Resale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Base | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 2,210 | 92,583 | | | 225,615 | 225,615 |
| 2015 | 126,329 | | 2,289 | 92,921 | | | 221,539 | 447,154 |
| 2016 | 117,338 | | 2,250 | 91,958 | | | 211,546 | 658,700 |
| 2017 | 121,675 | | 2,290 | 91,782 | | | 215,747 | 874,448 |
| 2018 | 119,690 | | 2,235 | 90,668 | | | 212,593 | 1,087,041 |
| 2019 | 117,737 | | 2,119 | 92,283 | | | 212,140 | 1,299,181 |
| 2020 | 115,816 | | 2,089 | 90,735 | | | 208,641 | 1,507,821 |
| 2021 | 113,927 | | 2,092 | 90,955 | | | 206,974 | 1,714,795 |
| 2022 | 112,068 | | 2,065 | 89,552 | | | 203,686 | 1,918,481 |
| 2023 | 110,240 | | 1,495 | 101,328 | | | 213,063 | 2,131,543 |
| 2024 | 108,441 | | 1,541 | 91,093 | | | 201,075 | 2,332,619 |
| 2025 | 106,672 | | 1,560 | 99,505 | | | 207,738 | 2,540,357 |
| 2026 | 104,932 | | 1,584 | 97,474 | | | 203,990 | 2,744,346 |
| 2027 | 103,220 | | 1,596 | 96,844 | | | 201,660 | 2,946,006 |
| 2028 | 101,536 | | 1,564 | 95,912 | | | 199,012 | 3,145,018 |
| 2029 | 99,879 | | 1,580 | 95,228 | | | 196,687 | 3,341,705 |
| 2030 | 98,250 | | 1,551 | 93,750 | | | 193,551 | 3,535,256 |
| 2031 | 96,647 | | 2,433 | 150,982 | | | 250,062 | 3,785,318 |
| 2032 | 95,070 | | 2,805 | 162,088 | | | 259,963 | 4,045,281 |
| 2033 | 93,519 | | 1,482 | 163,333 | | | 258,334 | 4,303,615 |
| 2034 | 91,993 | | 1,521 | 163,971 | | | 257,486 | 4,561,100 |
| 2035 | 90,492 | | 1,453 | 165,170 | | | 257,115 | 4,818,216 |
| 2036 | 89,016 | | 1,494 | 165,831 | | | 256,341 | 5,074,557 |
| 2037 | 87,564 | | 1,431 | 168,392 | | | 257,386 | 5,331,943 |
| 2038 | 86,135 | | 1,538 | 175,962 | | | 263,635 | 5,595,578 |
| 2039 | 84,730 | | 1,445 | 176,821 | | | 262,997 | 5,858,575 |
| 2040 | 83,348 | | 1,501 | 178,679 | | | 263,528 | 6,122,102 |
| 2041 | 81,988 | | 1,411 | 179,527 | | | 262,926 | 6,385,028 |
| 2042 | 80,650 | | 1,466 | 181,668 | | | 263,784 | 6,648,812 |
| 2043 | 79,334 | | 1,375 | 182,641 | | | 263,351 | 6,912,163 |

| | Scenario: GREC without Resale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Base | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 1,503 | 117,095 | | | 249,419 | 249,419 |
| 2015 | 126,329 | | 1,560 | 115,909 | | | 243,798 | 493,217 |
| 2016 | 117,338 | | 1,531 | 113,898 | | | 232,768 | 725,985 |
| 2017 | 121,675 | | 1,583 | 111,934 | | | 235,192 | 961,177 |
| 2018 | 119,690 | | 1,567 | 109,192 | | | 230,449 | 1,191,626 |
| 2019 | 117,737 | | 1,499 | 108,653 | | | 227,889 | 1,419,515 |
| 2020 | 115,816 | | 1,485 | 106,716 | | | 224,018 | 1,643,533 |
| 2021 | 113,927 | | 1,508 | 105,361 | | | 220,796 | 1,864,329 |
| 2022 | 112,068 | | 1,483 | 103,044 | | | 216,595 | 2,080,924 |
| 2023 | 110,240 | | 1,495 | 101,328 | | | 213,063 | 2,293,987 |
| 2024 | 108,441 | | 1,541 | 91,093 | | | 201,075 | 2,495,062 |
| 2025 | 106,672 | | 1,560 | 99,505 | | | 207,738 | 2,702,800 |
| 2026 | 104,932 | | 1,584 | 97,474 | | | 203,990 | 2,906,790 |
| 2027 | 103,220 | | 1,596 | 96,844 | | | 201,660 | 3,108,449 |
| 2028 | 101,536 | | 1,564 | 95,912 | | | 199,012 | 3,307,461 |
| 2029 | 99,879 | | 1,580 | 95,228 | | | 196,687 | 3,504,149 |
| 2030 | 98,250 | | 1,551 | 93,750 | | | 193,551 | 3,697,700 |
| 2031 | 96,647 | | 2,433 | 150,982 | | | 250,062 | 3,947,761 |
| 2032 | 95,070 | | 2,805 | 162,088 | | | 259,963 | 4,207,724 |
| 2033 | 93,519 | | 1,482 | 163,333 | | | 258,334 | 4,466,058 |
| 2034 | 91,993 | | 1,521 | 163,971 | | | 257,486 | 4,723,544 |
| 2035 | 90,492 | | 1,453 | 165,170 | | | 257,115 | 4,980,659 |
| 2036 | 89,016 | | 1,494 | 165,831 | | | 256,341 | 5,237,000 |
| 2037 | 87,564 | | 1,431 | 168,392 | | | 257,386 | 5,494,387 |
| 2038 | 86,135 | | 1,538 | 175,962 | | | 263,635 | 5,758,021 |
| 2039 | 84,730 | | 1,445 | 176,821 | | | 262,997 | 6,021,018 |
| 2040 | 83,348 | | 1,501 | 178,679 | | | 263,528 | 6,284,546 |
| 2041 | 81,988 | | 1,411 | 179,527 | | | 262,926 | 6,547,472 |
| 2042 | 80,650 | | 1,466 | 181,668 | | | 263,784 | 6,811,256 |
| 2043 | 79,334 | | 1,375 | 182,641 | | | 263,351 | 7,074,606 |

| | Scenario: No New Construction until 2023 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Base | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 3,156 | 76,300 | | | 210,277 | 210,277 |
| 2015 | 126,329 | | 3,235 | 78,533 | | | 208,097 | 418,374 |
| 2016 | 117,338 | | 3,146 | 78,648 | | | 199,132 | 617,506 |
| 2017 | 121,675 | | 3,183 | 80,206 | | | 205,064 | 822,571 |
| 2018 | 119,690 | | 3,088 | 79,227 | | | 202,005 | 1,024,575 |
| 2019 | 117,737 | | 2,843 | 81,691 | | | 202,271 | 1,226,846 |
| 2020 | 115,816 | | 2,793 | 81,622 | | | 200,232 | 1,427,078 |
| 2021 | 113,927 | | 2,796 | 82,870 | | | 199,593 | 1,626,671 |
| 2022 | 112,068 | | 2,757 | 82,136 | | | 196,961 | 1,823,632 |
| 2023 | 110,240 | | 2,795 | 82,848 | | | 195,883 | 2,019,515 |
| 2024 | 108,441 | | 2,795 | 69,482 | | | 180,718 | 2,200,234 |
| 2025 | 106,672 | | 2,815 | 88,052 | | | 197,539 | 2,397,773 |
| 2026 | 104,932 | | 2,862 | 86,521 | | | 194,315 | 2,592,088 |
| 2027 | 103,220 | | 2,804 | 87,565 | | | 193,589 | 2,785,677 |
| 2028 | 101,536 | | 2,808 | 88,351 | | | 192,696 | 2,978,373 |
| 2029 | 99,879 | | 2,773 | 89,817 | | | 192,469 | 3,170,842 |
| 2030 | 98,250 | | 2,766 | 90,403 | | | 191,420 | 3,362,262 |
| 2031 | 96,647 | | 3,050 | 161,951 | | | 261,649 | 3,623,910 |
| 2032 | 95,070 | | 3,454 | 172,897 | | | 271,421 | 3,895,331 |
| 2033 | 93,519 | | 1,778 | 175,806 | | | 271,102 | 4,166,433 |
| 2034 | 91,993 | | 1,848 | 177,521 | | | 271,362 | 4,437,796 |
| 2035 | 90,492 | | 1,723 | 180,442 | | | 272,657 | 4,710,453 |
| 2036 | 89,016 | | 1,795 | 182,292 | | | 273,103 | 4,983,556 |
| 2037 | 87,564 | | 1,672 | 186,428 | | | 275,664 | 5,259,220 |
| 2038 | 86,135 | | 1,753 | 195,287 | | | 283,176 | 5,542,396 |
| 2039 | 84,730 | | 1,630 | 197,436 | | | 283,796 | 5,826,192 |
| 2040 | 83,348 | | 1,700 | 200,564 | | | 285,612 | 6,111,804 |
| 2041 | 81,988 | | 1,579 | 202,629 | | | 286,195 | 6,397,999 |
| 2042 | 80,650 | | 1,645 | 205,880 | | | 288,175 | 6,686,174 |
| 2043 | 79,334 | | 1,529 | 208,043 | | | 288,906 | 6,975,080 |

| | Scenario: GREC with Resale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 2,222 | 104,012 | 17,308 | | 254,363 | 254,363 |
| 2015 | 126,329 | | 2,319 | 105,143 | 18,717 | | 252,508 | 506,871 |
| 2016 | 117,338 | | 2,268 | 104,961 | 19,879 | | 244,446 | 751,317 |
| 2017 | 121,675 | | 2,320 | 105,615 | 21,464 | | 251,074 | 1,002,391 |
| 2018 | 119,690 | | 2,264 | 105,105 | 22,803 | | 249,862 | 1,252,253 |
| 2019 | 117,737 | | 2,126 | 107,843 | 24,711 | | 252,417 | 1,504,670 |
| 2020 | 115,816 | | 2,106 | 107,182 | 26,078 | | 251,182 | 1,755,852 |
| 2021 | 113,927 | | 2,116 | 108,591 | 28,024 | | 252,658 | 2,008,509 |
| 2022 | 112,068 | | 2,097 | 108,470 | 29,633 | | 252,269 | 2,260,778 |
| 2023 | 110,240 | | 1,514 | 118,107 | 25,563 | | 255,424 | 2,516,202 |
| 2024 | 108,441 | | 1,535 | 108,327 | 27,933 | | 246,237 | 2,762,439 |
| 2025 | 106,672 | | 1,560 | 118,207 | 30,066 | | 256,505 | 3,018,945 |
| 2026 | 104,932 | | 1,585 | 117,202 | 31,675 | | 255,393 | 3,274,337 |
| 2027 | 103,220 | | 1,596 | 117,924 | 34,055 | | 256,795 | 3,531,132 |
| 2028 | 101,536 | | 1,564 | 118,166 | 36,054 | | 257,320 | 3,788,453 |
| 2029 | 99,879 | | 1,579 | 118,938 | 38,704 | | 259,101 | 4,047,554 |
| 2030 | 98,250 | | 1,552 | 118,893 | 40,904 | | 259,600 | 4,307,153 |
| 2031 | 96,647 | | 2,432 | 155,942 | 37,716 | | 292,737 | 4,599,890 |
| 2032 | 95,070 | | 2,805 | 162,093 | 41,413 | | 301,380 | 4,901,270 |
| 2033 | 93,519 | | 1,484 | 163,270 | 42,742 | | 301,015 | 5,202,285 |
| 2034 | 91,993 | | 1,522 | 163,870 | 46,710 | | 304,096 | 5,506,381 |
| 2035 | 90,492 | | 1,453 | 165,164 | 48,156 | | 305,266 | 5,811,647 |
| 2036 | 89,016 | | 1,494 | 165,819 | 52,598 | | 308,928 | 6,120,574 |
| 2037 | 87,564 | | 1,431 | 168,431 | 54,401 | | 311,827 | 6,432,401 |
| 2038 | 86,135 | | 1,538 | 175,968 | 61,399 | | 325,040 | 6,757,441 |
| 2039 | 84,730 | | 1,445 | 176,802 | 62,860 | | 325,837 | 7,083,278 |
| 2040 | 83,348 | | 1,501 | 178,675 | 69,001 | | 332,525 | 7,415,803 |
| 2041 | 81,988 | | 1,411 | 179,522 | 70,582 | | 333,503 | 7,749,306 |
| 2042 | 80,650 | | 1,466 | 181,668 | 77,541 | | 341,325 | 8,090,631 |
| 2043 | 79,334 | | 1,375 | 182,629 | 79,263 | | 342,602 | 8,433,232 |

| | Scenario: GREC without Resale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 1,497 | 126,465 | 13,849 | | 272,631 | 272,631 |
| 2015 | 126,329 | | 1,561 | 125,817 | 14,974 | | 268,682 | 541,313 |
| 2016 | 117,338 | | 1,537 | 124,283 | 15,923 | | 259,081 | 800,394 |
| 2017 | 121,675 | | 1,584 | 123,221 | 17,184 | | 263,665 | 1,064,059 |
| 2018 | 119,690 | | 1,609 | 121,309 | 18,243 | | 260,851 | 1,324,910 |
| 2019 | 117,737 | | 1,512 | 121,718 | 19,748 | | 260,716 | 1,585,626 |
| 2020 | 115,816 | | 1,491 | 120,377 | 20,912 | | 258,597 | 1,844,222 |
| 2021 | 113,927 | | 1,509 | 119,982 | 22,473 | | 257,892 | 2,102,114 |
| 2022 | 112,068 | | 1,491 | 118,649 | 23,750 | | 255,958 | 2,358,073 |
| 2023 | 110,240 | | 1,514 | 118,107 | 25,563 | | 255,424 | 2,613,497 |
| 2024 | 108,441 | | 1,535 | 108,327 | 27,933 | | 246,237 | 2,859,734 |
| 2025 | 106,672 | | 1,560 | 118,207 | 30,066 | | 256,505 | 3,116,239 |
| 2026 | 104,932 | | 1,585 | 117,202 | 31,675 | | 255,393 | 3,371,632 |
| 2027 | 103,220 | | 1,596 | 117,924 | 34,055 | | 256,795 | 3,628,427 |
| 2028 | 101,536 | | 1,564 | 118,166 | 36,054 | | 257,320 | 3,885,747 |
| 2029 | 99,879 | | 1,579 | 118,938 | 38,704 | | 259,101 | 4,144,848 |
| 2030 | 98,250 | | 1,552 | 118,893 | 40,904 | | 259,600 | 4,404,448 |
| 2031 | 96,647 | | 2,432 | 155,942 | 37,716 | | 292,737 | 4,697,185 |
| 2032 | 95,070 | | 2,805 | 162,093 | 41,413 | | 301,380 | 4,998,564 |
| 2033 | 93,519 | | 1,484 | 163,270 | 42,742 | | 301,015 | 5,299,580 |
| 2034 | 91,993 | | 1,522 | 163,870 | 46,710 | | 304,096 | 5,603,675 |
| 2035 | 90,492 | | 1,453 | 165,164 | 48,156 | | 305,266 | 5,908,941 |
| 2036 | 89,016 | | 1,494 | 165,819 | 52,598 | | 308,928 | 6,217,869 |
| 2037 | 87,564 | | 1,431 | 168,431 | 54,401 | | 311,827 | 6,529,695 |
| 2038 | 86,135 | | 1,538 | 175,968 | 61,399 | | 325,040 | 6,854,736 |
| 2039 | 84,730 | | 1,445 | 176,802 | 62,860 | | 325,837 | 7,180,572 |
| 2040 | 83,348 | | 1,501 | 178,675 | 69,001 | | 332,525 | 7,513,097 |
| 2041 | 81,988 | | 1,411 | 179,522 | 70,582 | | 333,503 | 7,846,600 |
| 2042 | 80,650 | | 1,466 | 181,668 | 77,541 | | 341,325 | 8,187,925 |
| 2043 | 79,334 | | 1,375 | 182,629 | 79,263 | | 342,602 | 8,530,527 |

| | Scenario: No New Construction until 2023 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Case: Regulated CO2 | | | | | | | |
| | All Costs are in Present Worth (2009 $, $000) | | | | | | | |
| Year | Capital Costs | Fixed O&M Costs | Variable O&M Costs | Fuel Costs | Environmental Costs ($CO_2$) | Other Costs | Total Costs | Cumulative Total Costs |
| 2014 | 130,821 | | 3,316 | 90,053 | 21,530 | | 245,720 | 245,720 |
| 2015 | 126,329 | | 3,275 | 92,652 | 23,181 | | 245,437 | 491,157 |
| 2016 | 117,338 | | 3,197 | 93,607 | 24,570 | | 238,713 | 729,870 |
| 2017 | 121,675 | | 3,217 | 95,977 | 26,489 | | 247,358 | 977,228 |
| 2018 | 119,690 | | 3,169 | 96,540 | 28,128 | | 247,527 | 1,224,755 |
| 2019 | 117,737 | | 2,856 | 99,536 | 30,204 | | 250,333 | 1,475,088 |
| 2020 | 115,816 | | 2,810 | 100,347 | 31,974 | | 250,947 | 1,726,035 |
| 2021 | 113,927 | | 2,806 | 102,577 | 34,167 | | 253,477 | 1,979,511 |
| 2022 | 112,068 | | 2,780 | 103,348 | 36,142 | | 254,337 | 2,233,849 |
| 2023 | 110,240 | | 2,821 | 105,370 | 38,929 | | 257,360 | 2,491,209 |
| 2024 | 108,441 | | 2,868 | 92,077 | 42,542 | | 245,929 | 2,737,138 |
| 2025 | 106,672 | | 2,855 | 112,105 | 45,695 | | 267,327 | 3,004,465 |
| 2026 | 104,932 | | 2,862 | 111,637 | 47,195 | | 266,626 | 3,271,091 |
| 2027 | 103,220 | | 2,833 | 114,445 | 50,542 | | 271,040 | 3,542,131 |
| 2028 | 101,536 | | 2,819 | 116,637 | 53,390 | | 274,381 | 3,816,512 |
| 2029 | 99,879 | | 2,791 | 119,897 | 57,085 | | 279,651 | 4,096,163 |
| 2030 | 98,250 | | 2,786 | 122,032 | 60,254 | | 283,321 | 4,379,485 |
| 2031 | 96,647 | | 3,069 | 168,705 | 46,531 | | 314,952 | 4,694,437 |
| 2032 | 95,070 | | 3,454 | 172,902 | 48,992 | | 320,419 | 5,014,856 |
| 2033 | 93,519 | | 1,778 | 175,823 | 49,612 | | 320,732 | 5,335,587 |
| 2034 | 91,993 | | 1,848 | 177,466 | 54,666 | | 325,974 | 5,661,561 |
| 2035 | 90,492 | | 1,723 | 180,436 | 55,430 | | 328,081 | 5,989,642 |
| 2036 | 89,016 | | 1,795 | 182,279 | 61,183 | | 334,273 | 6,323,915 |
| 2037 | 87,564 | | 1,672 | 186,473 | 61,975 | | 337,684 | 6,661,599 |
| 2038 | 86,135 | | 1,753 | 195,294 | 68,641 | | 351,824 | 7,013,423 |
| 2039 | 84,730 | | 1,630 | 197,414 | 69,477 | | 353,251 | 7,366,674 |
| 2040 | 83,348 | | 1,700 | 200,560 | 76,816 | | 362,423 | 7,729,098 |
| 2041 | 81,988 | | 1,579 | 202,623 | 77,601 | | 363,790 | 8,092,888 |
| 2042 | 80,650 | | 1,645 | 205,880 | 85,633 | | 373,808 | 8,466,696 |
| 2043 | 79,334 | | 1,529 | 208,031 | 86,661 | | 375,555 | 8,842,251 |

## Revised Responses to Interrogatory No. 60

| Monthly Residential Bill ($/1200 kWh) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Base Case** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| **GREC w/out Resale** | 135.25 | 139.10 | 141.96 | 144.68 | 172.24 | 173.36 | 170.65 | 177.85 | 179.71 | 183.51 |
| **GREC w/Resale** | 135.25 | 139.10 | 141.96 | 144.68 | 155.80 | 157.53 | 155.09 | 163.15 | 165.79 | 170.83 |
| **GREC Delayed w/Resale** | 135.25 | 139.10 | 141.96 | 144.68 | 157.59 | 159.31 | 156.85 | 164.88 | 167.50 | 172.53 |
| **No New Construction** | 135.25 | 139.10 | 141.96 | 144.68 | 145.21 | 147.97 | 145.99 | 155.07 | 157.53 | 162.88 |
| **Regulated $CO_2$ Case** | | | | | | | | | | |
| **Scenario** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| **GREC w/out Resale** | 135.25 | 139.10 | 160.58 | 165.10 | 188.27 | 191.05 | 189.94 | 199.38 | 203.42 | 209.94 |
| **GREC w/Resale** | 135.25 | 139.10 | 160.58 | 165.10 | 175.65 | 179.55 | 179.21 | 189.86 | 194.85 | 203.26 |
| **GREC Delayed w/Resale** | 135.25 | 139.10 | 160.58 | 165.10 | 177.45 | 181.33 | 180.97 | 191.60 | 196.57 | 204.96 |
| **No New Construction** | 135.25 | 139.10 | 160.58 | 165.10 | 169.68 | 174.53 | 175.01 | 187.05 | 193.03 | 201.58 |

Notes:

1. In all scenarios the GREC PPA begins January 1, 2014.
2. Residential 1,200 kWh bill assumes system average electric rate equal to residential average rate.
3. All $ are nominal.

Table of Contents

Abbreviations and Acronyms ..... AB-1

1.0 Executive Summary ..... 1-1
1.1 The Applicants ..... 1-1
1.2 The Proposed Biomass Facility ..... 1-1
1.3 The Power Plant Siting Act Process ..... 1-2
1.4 The Commission's Need Determination ..... 1-2
1.5 The Need for the Gainesville Renewable Energy Center ..... 1-3
1.6 Analysis of Generating (Supply-Side) Alternatives ..... 1-3
1.7 Analysis of Non-Generating (Demand-Side) Alternatives ..... 1-4
1.8 Integrated Fuel and $CO_2$ Emissions Allowance Cost Projections ..... 1-4
1.9 Most Cost-Effective Alternative ..... 1-4
1.10 Adverse Consequences if the GREC is Delayed ..... 1-5
1.11 Conclusion ..... 1-5

2.0 Introduction ..... 2-1

3.0 Description of Existing System ..... 3-1
3.1 Existing Generation Resources ..... 3-1
3.1.1 Steam Turbine Generation ..... 3-4
3.1.2 Gas Turbines ..... 3-4
3.1.3 Internal Combustion (Piston/Diesel) ..... 3-4
3.1.4 Environmental Considerations ..... 3-4
3.2 Existing Plant Descriptions ..... 3-5
3.2.1 John R. Kelly Generating Station ..... 3-5
3.2.2 Deerhaven Generating Station ..... 3-5
3.2.3 South Energy Center ..... 3-5
3.3 Power Purchase Agreements ..... 3-5
3.4 GRU's Transmission System ..... 3-6
3.4.1 Transmission Lines ..... 3-6
3.4.2 State Interconnections ..... 3-10
3.5 GRU's Distribution System ..... 3-10
3.6 Wholesale Energy Sales ..... 3-11

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 27
COMPANY GRU/GREC LLC
WITNESS GREC Need for Power Application
DATE 12/16/09

DOCUMENT NUMBER-DATE
09700 SEP 18 09
FPSC-COMMISSION CLERK

Table of Contents (Continued)

4.0 Forecast of Electrical Demand and Energy ..... 4-1
4.1 Forecast Assumptions and Data Sources ..... 4-1
4.2 Development of Regression Equations ..... 4-2
4.2.1 Residential Sector ..... 4-2
4.2.2 General Service Non-Demand Sector ..... 4-2
4.2.3 General Service Demand Sector ..... 4-3
4.2.4 Large Power Sector ..... 4-3
4.2.5 Outdoor Lighting Sector ..... 4-4
4.2.6 Wholesale Energy Sales ..... 4-4
4.3 Net Energy for Load and Seasonal Peak Demands ..... 4-4
4.4 Forecast Error Bands ..... 4-5
4.5 Forecast Results, Tables, and Figures ..... 4-6

5.0 Reliability Criteria and Capacity Requirements ..... 5-1
5.1 Reserve Sharing Requirements ..... 5-1
5.2 Reserve Margin Requirements ..... 5-1
5.3 Capacity Requirements ..... 5-1

6.0 Economic Parameters ..... 6-1
6.1 Inflation and Escalation Rates ..... 6-1
6.2 Municipal Bond Interest Rate ..... 6-1
6.3 Present Worth Discount Rate ..... 6-1
6.4 Interest During Construction Rate ..... 6-1
6.5 Levelized Fixed Charge Rate ..... 6-1

7.0 Fuel and Emissions Allowance Price Projections ..... 7-1
7.1 Importance of Fully Integrated Fuel and Emissions Allowance Price Projections ..... 7-1
7.2 Description of 2009 US Energy Information Administration Annual Energy Outlook Reference Case ..... 7-1
7.2.1 Consideration of State and Federal Legislation and Regulations in AEO2009 ..... 7-2
7.3 AEO2009 Reference Case FRCC Natural Gas and Coal Price Projections ..... 7-2
7.4 AEO2009 High and Low Price Case Natural Gas and Coal Price Projections ..... 7-4

Table of Contents (Continued)

7.5 FRCC High and Low Fuel Price Projections ..... 7-4
7.5.1 High and Low Fuel Price Projections for the FRCC ..... 7-4
7.6 EIA Analysis of H.R. 2454 ..... 7-5
7.6.1 EIA Analysis of H.R. 2454 – Overview and Summary of Results ..... 7-7
7.7 Consideration of EIA Analysis of H.R. 2454 ..... 7-16
7.7.1 H.R. 2454 Fuel Price Projections for the FRCC ..... 7-16

8.0 GRU Resource Planning Process ..... 8-1
8.1 Summary of Recent Activities ..... 8-1
8.2 Public Participation and Policy Directives ..... 8-2
8.3 Alternative Evaluations ..... 8-4
8.3.1 Conservation Cost-Effectiveness Criteria Policy ..... 8-4
8.3.2 Feasibility of Power Purchase Agreement Alternatives ..... 8-8
8.3.3 Fossil Fuels Excluded ..... 8-8
8.3.4 Competitive Biomass Solicitation ..... 8-8
8.4 Biomass Resource Evaluations ..... 8-9
8.4.1 Post – Cunilio Study ..... 8-9
8.4.2 Black & Veatch Study ..... 8-9
8.4.3 ICF Consulting ..... 8-11
8.4.4 University of Florida, School of Forest Resources and Conservation, Institute of Food and Agricultural Sciences ..... 8-11
8.5 Selection of the Proposed GREC Project ..... 8-11

9.0 Project Overview ..... 9-1
9.1 Project Developers ..... 9-1
9.2 Description of Facilities ..... 9-2
9.3 Power Purchase Agreement ..... 9-3
9.4 Fuel Handling and Supply ..... 9-4
9.5 Power Resale ..... 9-5
9.6 Project Schedule ..... 9-5

10.0 Supply-Side Alternatives ..... 10-1
10.1 Introduction ..... 10-1
10.1.1 General O&M Basis ..... 10-1
10.1.2 General Capital Cost Basis ..... 10-2

Table of Contents (Continued)

10.1.3 Consideration of Owner's Costs ..... 10-2
10.1.4 Meteorological Conditions ..... 10-2
10.1.5 Performance Degradation ..... 10-2
10.2 GE LMS100 Simple Cycle Combustion Turbine ..... 10-4
10.2.1 General Description ..... 10-4
10.2.2 Preliminary Thermal Performance Estimates ..... 10-5
10.2.3 O&M Cost Estimates ..... 10-5
10.2.4 Preliminary Capital Cost Estimates ..... 10-8
10.3 1x1 GE 7EA Combined Cycle Combustion Turbine ..... 10-10
10.3.1 General Description ..... 10-10
10.3.2 Thermal Performance Estimates ..... 10-11
10.3.3 Preliminary O&M Cost Estimates ..... 10-11
10.3.4 Preliminary Capital Cost Estimates ..... 10-13
10.4 Pulverized Coal ..... 10-17
10.4.1 Thermal Performance Estimates ..... 10-19
10.4.2 O&M Cost Estimates ..... 10-20
10.4.3 Capital Cost Estimates ..... 10-22
10.5 Pulverized Coal with Carbon Capture and Sequestration ..... 10-26

11.0 Evaluation Methodology ..... 11-1
11.1 Description of the Levelized Cost of Energy Analyses ..... 11-1
11.2 Fuel and $CO_2$ Emissions Allowance Price Forecasts ..... 11-2

12.0 Economic Evaluation ..... 12-1
12.1 Overview of Cases Considered ..... 12-1
12.2 Results of the LCOE Analyses ..... 12-2
12.3 Summary of the LCOE Analyses Results ..... 12-3

13.0 Demand-Side Management and Supply-Side Efficiency ..... 13-1
13.1 Planning Criteria and Program Goals ..... 13-1
13.2 Retail Rate Design ..... 13-4
13.3 Existing Residential DSM Programs ..... 13-4
13.4 Existing Non-Residential DSM Programs ..... 13-5
13.5 Public Infrastructure ..... 13-6
13.6 Measurement and Verification ..... 13-7
13.7 Renewable Energy ..... 13-7

Table of Contents (Continued)

13.8 Supply-Side Efficiency Improvements ..... 13-8
13.8.1 Transformers ..... 13-8
13.8.2 Reconductoring ..... 13-8
13.8.3 Capacitors ..... 13-9
14.0 Transmission System Impacts ..... 14-1

15.0 Strategic Considerations ..... 15-1
15.1 Long-Term Production Cost Benefits ..... 15-1
15.2 Rate Implications ..... 15-1
15.3 Long-Term Firm Capacity Benefits ..... 15-3
15.4 Regulatory Hedge Benefits ..... 15-4
15.5 Fuel Price Volatility Reduction ..... 15-4
15.6 Fuel Diversification Benefits ..... 15-4
15.7 Forest Stewardship Programs ..... 15-5
15.8 Other Benefits for the Community ..... 15-6

16.0 Consequences of Delay ..... 16-1
16.1 Economic Consequences ..... 16-1
16.2 Reliability Consequences ..... 16-2
16.3 Potential Regulatory Consequences ..... 16-2

17.0 Financial Analysis ..... 17-1
17.1 Project Developers ..... 17-1
17.2 GRU's Financial Capability ..... 17-2

Tables

Table 3-1 Existing Generating Facilities (as of Summer 2009) ..... 3-3
Table 3-2 Transmission Line Ratings (Summer Power Flow Ratings) ..... 3-8
Table 3-3 GRU's Transmission Network ..... 3-9
Table 3-4 Substation Transformation and Circuits ..... 3-11
Table 4-1 Historical and Forecast Net Energy for Load (GWh) ..... 4-7
Table 4-2 Historical and Forecast Summer Peak Demand (MW) ..... 4-9
Table 7-1 Annual Energy Outlook 2009 Reference Case Price Projections Forecast of Natural Gas and Coal Delivered to the FRCC ..... 7-3

Table of Contents (Continued)

Tables (Continued)


| | | |
|---|---|---|
| Table 7-2 | High and Low Case Price Projections Forecast of Natural Gas and Coal Delivered to the FRCC | 7-6 |
| Table 7-3 | Natural Gas Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454 (2007 $/MBtu – Henry Hub) | 7-10 |
| Table 7-4 | Coal Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454 (2007 $/MBtu – Average Minemouth) | 7-11 |
| Table 7-5 | EIA Projections of $CO_2$ Emissions Allowance Prices per Analysis of H.R. 2454 (2007 $/metric ton) | 7-12 |
| Table 7-6 | H.R. 2454 Fuel Price Projections Forecast of Natural Gas and Coal Delivered to the FRCC | 7-17 |
| Table 8-1 | Public Participation Timeline | 8-3 |
| Table 8-2 | Electric Generation Alternatives Considered Preliminary Work in 2003 | 8-5 |
| Table 8-3 | Generation Alternatives Considered (2005-2009) | 8-6 |
| Table 8-4 | Summary of Biomass Generation Alternatives | 8-10 |
| Table 8-5 | Gainesville City Commission Approved Factor Weights for Binding Responses to GRU Biomass RFP | 8-13 |
| Table 9-1 | Billing Elements of the Power Purchase Agreement Between GRU and GREC LLC | 9-4 |
| Table 9-2 | GREC Project Schedule | 9-6 |
| Table 10-1 | Possible Owner's Costs | 10-3 |
| Table 10-2 | Nonrecoverable Degradation Factors | 10-4 |
| Table 10-3 | GE LMS100 Simple Cycle Performance and Emissions Estimates | 10-6 |
| Table 10-4 | GE LMS100 O&M Cost Estimates | 10-7 |
| Table 10-5 | GE LMS100 Capital Cost Estimate | 10-10 |
| Table 10-6 | 1x1 GE 7EA Combined Cycle Performance and Emissions Estimates | 10-12 |
| Table 10-7 | GE 1x1 7EA O&M Cost Estimates | 10-14 |
| Table 10-8 | GE 1x1 7EA Combined Cycle Capital Cost Estimate | 10-16 |
| Table 10-9 | 125 MW (net) Subcritical PC Performance and Emissions Estimates | 10-19 |
| Table 10-10 | 125 MW (net) PC O&M Cost Estimates | 10-21 |
| Table 10-11 | 125 MW (net) PC Capital Cost Estimate | 10-26 |
| Table 10-12 | Estimated Impacts of Addition of Carbon Capture and Sequestration to Subcritical PC Plant Performance and Cost | 10-28 |
| Table 11-1 | Fuel and $CO_2$ Emissions Allowance Price Projections | 11-3 |

Table of Contents (Continued)

Tables (Continued)

Table 12-1 LCOE Matrix (Differences Compared to the LCOE of the GREC PPA) ..... 12-3
Table 13-1 Demand-Side Management Impacts ..... 13-3
Table 13-2 DSM Services Offered to Residential Consumers in 2009 ..... 13-5
Table 13-3 DSM Services Offered to Non-Residential Customers in 2009 ..... 13-6
Table 15-1 Biomass Plant Risk Assessment ..... 15-2
Table 15-2 Biomass Plant Risk Assessment Increase of 1,000 kWh Residential Bill ..... 15-2

Figures

Figure 3-1 Gainesville Regional Utilities Electric System Map ..... 3-2
Figure 3-2 Gainesville Regional Utilities Electric System One-Line Diagram ..... 3-7
Figure 4-1 Net Energy for Load ..... 4-8
Figure 4-2 Summer Peak Demand ..... 4-10
Figure 7-1 Natural Gas Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454 (2007 $/MBtu – Henry Hub) ..... 7-13
Figure 7-2 Coal Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454 (2007 $/MBtu – Average Minemouth) ..... 7-14
Figure 7-3 $CO_2$ Emissions Allowance Price Projections per EIA Analysis of H.R. 2454 (2007 $/Metric Ton) ..... 7-15
Figure 15-1 Existing Generation Capacity versus Age ..... 15-3

# Abbreviations and Acronyms

| | |
|---|---|
| $/kW-Yr | Dollars per kilowatt per Year |
| $/MWh | Dollars per megawatt |
| ACESA | American Clean Energy and Security Act |
| ACI | Activated Carbon Injection |
| ACSR | Aluminum Conductor Steel Reinforced |
| AEO2009 | Annual Energy Outlook 2009 |
| Alachua | City of Alachua |
| American Renewables | American Renewables, LLC |
| Application | Need for Power Application |
| ARRA | American Recovery and Reinvestment Act |
| BayCorp | BayCorp Holdings, Ltd. |
| BEBR | Bureau of Economic and Business Research |
| BOP | Balance-of-Plant |
| CAFE | Corporate Average Fuel Economy |
| CCCT | Combined Cycle Combustion Turbine |
| CCS | Carbon Capture Sequestration |
| CEMS | Continuous Emissions Monitoring System |
| CFB | Circulating Fluidized Bed |
| CHP | Combined Heat and Power |
| CI | Confidence Intervals |
| City Commission | Gainesville City Commission |
| Clay | Clay Electric Cooperative |
| CO | Carbon Monoxide |
| $CO_2$ | Carbon Dioxide |
| Commission | Florida Public Service Commission |
| CPI | Consumer Price Index |
| CR3 | Crystal River 3 |
| CTG | Combustion Turbine Generator |
| DEP | Florida Department of Environmental Protection |
| DLN | Dry Low $NO_x$ |
| DSM | Demand-Side Management |
| EGEAS | Electrical Generation Expansion Analysis System |

| | |
|---|---|
| EIA | Energy Information Administration |
| EMI | Energy Management, Inc. |
| EPC | Engineering, Procurement, and Construction |
| EPRI | Electric Power Research Institute |
| FAC | Florida Administration Code |
| FCR | Fixed Charge Rate |
| FD | Forced Draft |
| FGD | Flue Gas Desulfurization |
| FIT | Feed-in-Tariff |
| FMPA | Florida Municipal Power Agency |
| FPL | Florida Power & Light |
| FRCC | Florida Reliability Coordinating Council, Inc. |
| G2 | G2 Energy Marion, LLC |
| GE | General Electric |
| GEAC | Gainesville Energy Advisory Committee |
| GHG | Greenhouse Gas |
| GIS | Geographic Information System |
| GREC | Gainesville Renewable Energy Center |
| GREC LLC | Gainesville Renewable Energy Center, LLC |
| GRU | Gainesville Regional Utilities |
| GSD | General Service Demand |
| GSN | General Service Nondemand |
| GSU | Generator Step-Up |
| GWh | Gigawatt-Hours |
| Hg | Mercury |
| HP | High-Pressure |
| HPC | High-Pressure Compressor |
| HPT | High-Pressure Turbine |
| HRSG | Heat Recovery Steam Generator |
| HVAC | Heating, Ventilation, and Air Conditioning |
| Hz | Hertz |
| ICF | ICF Consulting |
| ID | Induced Draft |
| IDC | Interest During Construction |

| | |
|---|---|
| IFAS | Institute of Food and Agricultural Sciences |
| IGCC | Integrated Gasification Combined Cycle |
| IPT | Intermediate-Pressure Turbine |
| IRP | Integrated Resource Planning |
| JRK | John R. Kelly |
| kV | Kilovolts |
| kW | Kilowatts |
| kWh | Kilowatt-Hours |
| LCOE | Levelized Cost of Energy |
| LED | Light Emitting Diode |
| LNG | Liquefied Natural Gas |
| LPC | Low-Pressure Compressor |
| MBtu | Million British Thermal Units |
| MCM | Thousand Circular Mils |
| MSW | Municipal Solid Waste |
| MVA | Megavolt-Ampere |
| MVAR | Megavolt-Ampere Reactive |
| MW | Megawatts |
| MWh | Megawatt-Hour |
| NEMA | National Electric Manufacturers Association |
| NEMS | National Energy Modeling System |
| NERC | North American Electric Reliability Council |
| NOAA | National Oceanic and Atmospheric Administration |
| $NO_x$ | Nitrogen Oxide |
| O&M | Operations and Maintenance |
| OEM | Original Equipment Manufacturer |
| ORNL | Oak Ridge National Laboratory |
| PA | Primary Air |
| PDS | Power Delivery Substations |
| PEF | Progress Energy Florida |
| Petcoke | Petroleum Coke |
| PPA | Power Purchase Agreement |
| PPSA | Florida Electrical Power Plant Siting Act |

# 1.0 Executive Summary

Gainesville Regional Utilities (GRU) and Gainesville Renewable Energy Center, LLC (GREC LLC) are submitting this Need for Power Application (Application) in support of the proposed Gainesville Renewable Energy Center (GREC) facility. The analyses summarized below and discussed throughout this Application demonstrate that the woody waste-fueled biomass facility will provide GRU with reliable, clean, economical power while further diversifying GRU's fuel supply.

## 1.1 The Applicants

GRU is a municipal electric, natural gas, water, wastewater, and telecommunications utility that is owned and operated by the City of Gainesville in Alachua County, located in north-central Florida. GRU's General Manager reports directly to the elected members of the Gainesville City Commission (City Commission) which sets policy and has fiduciary responsibility for the utility. GRU's existing electric generation includes coal, gas, nuclear, and renewable energy resources. GRU's present summer net generating capability is approximately 608 megawatts (MW) and its winter net generating capability is approximately 623 MW.

GREC LLC is a subsidiary of American Renewables, LLC (American Renewables), a private, for-profit renewable power producer. American Renewables is jointly owned by affiliates of BayCorp Holdings, LTD (BayCorp), Energy Management, Inc. (EMI) and Tyr Energy (Tyr). These entities are more fully described in Section 9.0 of this Application.

## 1.2 The Proposed Biomass Facility

The GREC facility will consist of a nominal 100 MW net capacity steam unit. GREC is designed to use clean woody biomass and is scheduled to come on line December 1, 2013. The plant will be located on GRU's existing Deerhaven Power Plant site within the City of Gainesville's corporate limits in Alachua County, Florida. The fuel supply will consist primarily of residuals from timber harvesting in north-central Florida, but will also include materials from urban forestry, land clearing, and mill waste. The GREC biomass facility will be owned and operated by GREC LLC. GRU will receive power from the GREC facility under a 30 year power purchase agreement (PPA) with a fixed nonfuel energy charge per megawatt-hour (MWh) that covers construction, debt service, and all fixed operations and maintenance (O&M) costs.

The decision to enter into the PPA with GREC LLC is the result of an extensive integrated planning process, including 43 public workshops and Gainesville City Commission meetings, several dozen presentations to civic and community groups, as well as a competitive bidding process to select the project developer. One of the most important outcomes of this process was the decision made by the Gainesville City Commission to pursue only renewable energy resources for additional generating capacity as opposed to coal, petroleum coke, and natural gas alternatives.

## 1.3 The Power Plant Siting Act Process

The Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes, provides a "centrally coordinated, one-stop licensing process" for power plant projects. The PPSA provides a centralized process to ensure that all affected state and local agencies review a potential project. A Siting Board, consisting of the Governor and Cabinet, takes final action on the Site Certification Application. The Florida Public Service Commission (Commission) need determination is a critical step in the PPSA certification process. Along with the reports submitted by the Florida Department of Environmental Protection (DEP) and other agencies, the Commission's need determination allows the Siting Board to balance "the increasing demand for electrical power plants with the broad interests of the public."

## 1.4 The Commission's Need Determination

Section 403.519(3), Florida Statutes, sets forth the following criteria that the Commission must consider when making need determinations:

- The need for electric system reliability and integrity.
- The need for adequate electricity at a reasonable cost.
- The need for fuel diversity and supply reliability.
- Whether the proposed plant is the most cost-effective alternative available.
- Whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available.
- Whether there are conservation measures taken by, or reasonably available to, the applicant or its members that might mitigate the need for the proposed plant.

The Florida Legislature did not assign the weight that the Florida Public Service Commission is to give each of these factors. Rule 25-22.081, Florida Administrative Code (FAC), sets forth specific information that each Need for Power Application must include to allow the Commission to address the statutory factors. The required information is summarized below and discussed in detail throughout this Application.

## 1.5 The Need for the Gainesville Renewable Energy Center

Although the GREC is not immediately needed to meet GRU's 15 percent reserve margin planning criterion, GREC's capacity is needed to improve and maintain the reliability of GRU's system. GRU's system is unique because the lowest cost fossil fueled unit, Deerhaven Unit 2, serves approximately 50 percent of GRU's system peak demand. The capacity from GREC is needed to replace the capacity from Deerhaven Unit 2 during maintenance and forced outages. Deerhaven Unit 2 is aging and will be 32 years old when GREC goes into service in late 2013. With increased age, the availability of Deerhaven Unit 2 is expected to decrease. Furthermore, most of the remainder of GRU's capacity is older than Deerhaven Unit 2 and will be retired during the term of the GREC PPA, requiring the capacity from GREC to meet GRU's 15 percent reserve margin planning criterion.

In addition to filling a capacity need, the GREC is needed by GRU's system to diversify GRU's existing fuel mix, which is dominated by coal (and therefore is potentially at risk under future carbon dioxide [$CO_2$] regulations), and natural gas, which is highly volatile in price and availability and also, to a lesser degree than coal, potentially at risk under future $CO_2$ regulations. The GREC is needed to minimize the effects of these potentially costly and regulation-constrained fuels.

## 1.6 Analysis of Generating (Supply-Side) Alternatives

The GREC LLC PPA was evaluated on a levelized cost basis against comparable supply-side alternatives over the term of the GREC LLC PPA, with results summarized in Table 12-1. The supply-side alternatives were evaluated considering seven different scenarios of fuel cost, capital cost, and $CO_2$ regulation. On a levelized cost basis, the lowest cost natural gas alternative was 11 percent higher in cost than the GREC LLC PPA for the expected case without $CO_2$ regulation. For all other sensitivity cases, natural gas alternatives were higher in cost than the GREC LLC PPA by 5 percent to 210 percent.

Although it is uncertain that any type of coal unit could be permitted in Florida at this time, coal units with carbon capture and sequestration are from 31 percent to 104 percent higher in levelized cost than GREC. As would be expected, coal fired units without any consideration for $CO_2$ costs or carbon emissions control technologies are projected to be lower in cost than the GREC LLC PPA.

## 1.7 Analysis of Non-Generating (Demand-Side) Alternatives

GRU has invested significant effort in developing the demand-side management (DSM) programs currently offered to its customers and is considered the leading utility in the State in this area. Since 1980, GRU has offered incentives and services as DSM tools for energy conservation and demand reduction. DSM programs are available for all retail customers, including commercial and industrial customers. In addition, GRU continues to offer standardized interconnection procedures and compensation for excess energy production for both residential and non-residential customers who install distributed resources, and also offers rebates to residential customers for the installation of photovoltaic generation. GRU also has several programs to improve the adequacy and reliability of the transmission and distribution systems, which also result in decreased energy losses.

## 1.8 Integrated Fuel and $CO_2$ Emissions Allowance Cost Projections

Although no $CO_2$ regulatory programs have been adopted to date, considering the ongoing discussions about potential $CO_2$ regulation, this Application presents additional economic analyses that incorporate a range of $CO_2$ emissions allowance cost estimates, and associated fuel forecasts, developed by the US Department of Energy's Energy Information Administration (EIA). These analyses demonstrate that the GREC LLC PPA provides increased economic advantages, assuming a carbon-regulated environment and a range of costs associated with $CO_2$ emissions allowances.

Fuel and emissions allowance costs are interrelated. Therefore, fuel and $CO_2$ emissions allowance cost projections included in this Application are fully integrated. That is, the EIA price projections consider fuel supply and demand in tandem with potential $CO_2$ emissions allowance costs, along with numerous other market influences, to develop fully integrated fuel and $CO_2$ emissions allowance cost projections.

## 1.9 Most Cost-Effective Alternative

The levelized cost analyses performed for purposes of this Application indicate that the GREC PPA is the most cost-effective alternative when compared to natural gas generating units and a coal alternative that includes carbon capture and sequestration technology. No coal alternatives were lower in cost than the GREC PPA if $CO_2$ costs are considered.

## 1.10 Adverse Consequences if the GREC is Delayed

Delay of the GREC biomass facility would result in economic, reliability, and potential regulatory consequences. Adverse consequences of delaying the GREC biomass facility include:

- Increased costs resulting from not being eligible for renewable energy grants,
- Increased costs associated with replacement power, and
- Adverse indirect economic impacts associated with construction and operation jobs created by the GREC.

The GREC PPA will enhance GRU's system reliability. A delay in the operation of the GREC will, therefore, have a detrimental impact from a system reliability perspective. The GREC PPA will also provide GRU with increased ability to comply with potential legislation and regulations related to renewable energy standards and regulations of $CO_2$ emissions in a reliable and cost-effective manner.

## 1.11 Conclusion

The proposed GREC facility will ensure that GRU has an adequate supply of power to serve its customers' needs at a reasonable cost while enhancing system reliability. The addition of cost-effective biomass capacity and energy will further diversify GRU's fuel mix and substantially contributes towards meeting the policy objectives of the Gainesville City Commission. The project will also enhance fuel diversity and supply reliability by utilizing multiple biomass fuel supply options.

# 2.0 Introduction

This Application demonstrates the need for the GREC biomass facility pursuant to the requirements outlined within Section 403.519 of the Florida Statutes. The GREC facility will consist of a new nominal rated 100 MW net biomass-fired electric generating facility, consisting of a biomass fuel handling system, a biomass-fired boiler, a condensing steam turbine generator (STG) with evaporative cooling towers, and auxiliary support equipment. The facility will utilize a zero liquid discharge (ZLD) system to eliminate industrial wastewater discharges, in accordance with the site's current restrictions pursuant to its current certification. The facility will be designed in accordance with standards normally used in the utility industry so that the facility will, with standard O&M practices, be designed to provide full service over its 42 year design life.

Section 3.0 provides a description of GRU and its existing facilities. This general overview discusses GRU's existing generating units, PPAs, transmission and distribution system, wholesale energy sales, and distributed generation resources.

Section 4.0 presents GRU's load forecast and discusses various sensitivity load forecasts that were developed in addition to the base load forecast.

Section 5.0 discusses the reliability criteria used by GRU, and indicates GRU's need for capacity by applying the 15 percent reserve margin to GRU's load forecast and comparing the capacity requirements to GRU's existing generating resources.

Section 6.0 provides the economic parameters and assumptions used throughout the Application.

Section 7.0 presents the fuel price projections used in the economic evaluations. The fuel price projections are based on the US Department of Energy's EIA Annual Energy Outlook 2009 (AEO2009) projections and also include projections of $CO_2$ emissions allowance prices.

Section 8.0 discusses the integrated resource planning (IRP) process used by GRU that has culminated in the decision to pursue the PPA with GREC LLC.

Section 9.0 describes the GREC biomass facility and the PPA between GRU and GREC LLC. Section 9.0 demonstrates that there will be a reliable supply of fuel for the GREC facility and that the GREC facility will provide clean, reliable power to GRU.

Section 10.0 discusses the generating unit alternatives with which the GREC PPA was compared.

Section 11.0 describes the methodology used to evaluate the cost-effectiveness of the GREC biomass facility.

Section 12.0 presents the results of the economic analyses conducted. These analyses demonstrate that GRU's PPA with GREC LLC provides the most economic power under the wide range of cases considered.

Section 13.0 describes GRU's current DSM programs, renewable energy projects that have been encouraged by GRU, and efficiency improvements to supply-side resources that have helped to reduce demand and energy requirements.

Section 14.0 describes the evaluations conducted to demonstrate that interconnection of the GREC facility will not have an adverse impact on the Florida Reliability Coordinating Council's bulk electric transmission system.

Section 15.0 summarizes the strategic considerations taken into account by GRU when evaluating whether to pursue a commitment to the PPA with GREC LLC.

Section 16.0 discusses the adverse consequences of delaying the GREC facility.

Section 17.0 describes the financial capability of GREC LLC and demonstrates that GRU has the financial resources to commit to the GREC LLC PPA.

# 3.0 Description of Existing System

GRU operates a fully vertically integrated electric power production, transmission, and distribution system (herein referred to as the System), which is wholly owned by the City of Gainesville. In addition to retail electric service, GRU also provides wholesale electric service to the City of Alachua (Alachua) and Clay Electric Cooperative (Clay). GRU's distribution system serves its retail territory of approximately 124 square miles and approximately 93,000 customers. The general locations of GRU electric facilities and the electric system service area are shown in Figure 3-1.

## 3.1 Existing Generation Resources

The existing generating facilities operated by GRU are summarized in Table 3-1. The present summer net generating capability is approximately 608 MW, and the winter net generating capability is approximately 623 MW.[1] Currently, the System's energy is produced by three fossil fuel steam turbines, six simple cycle combustion turbines, one combined cycle unit, a 1.4079 percent ownership share of the Crystal River 3 (CR3) nuclear unit operated by Progress Energy Florida (PEF), and a small distributed generation unit at the South Energy Center.

The System has two primary generating plant sites: Deerhaven and John R. Kelly (JRK). Each site is comprised of both steam turbine and gas turbine generating units. The JRK Station also includes a combined cycle unit.

[1] Net capability is that specified by the "SERC Guideline Number Two for Uniform Generator Ratings for Reporting." The winter rating will normally exceed the summer rating because generating plant efficiencies are increased by lower ambient air temperatures and lower cooling water temperatures.

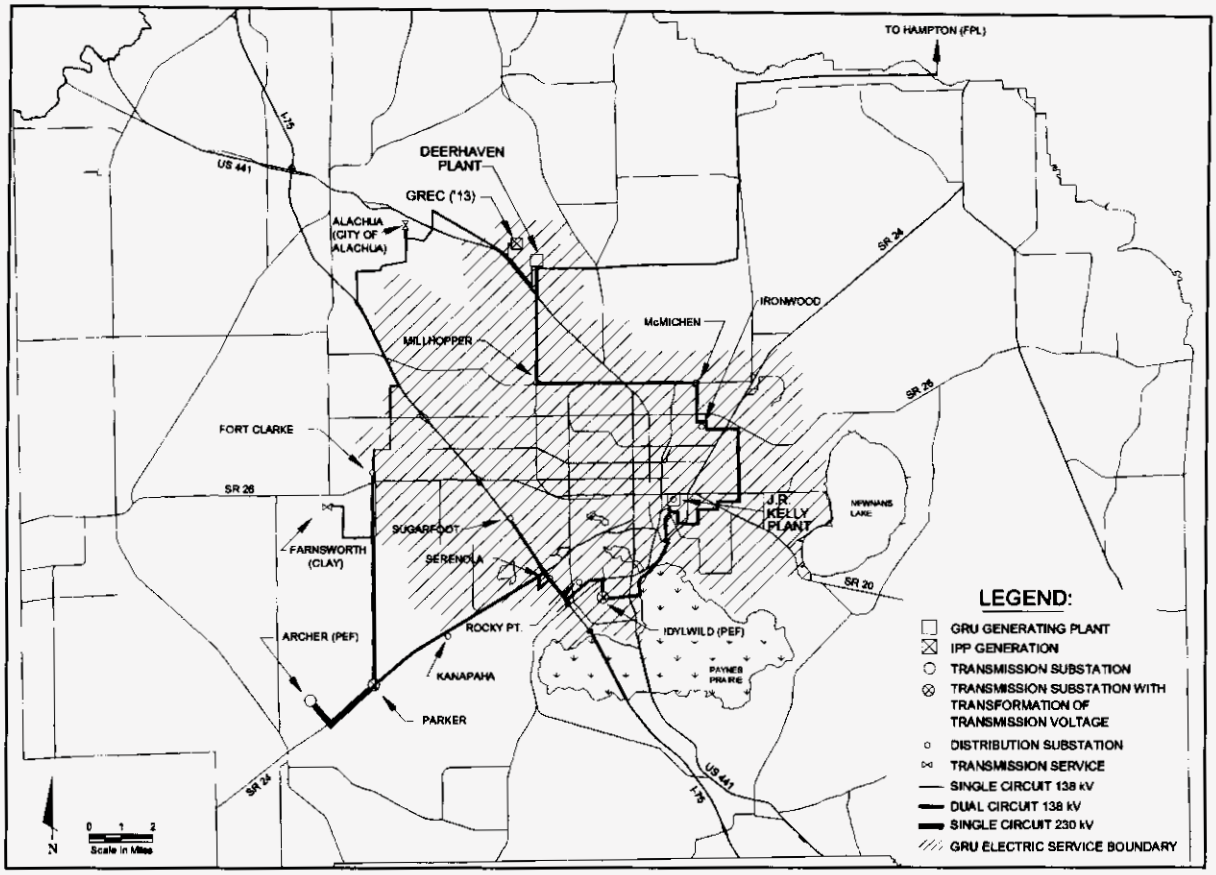



**Figure 3-1**
**Gainesville Regional Utilities Electric System Map**

**Table 3-1**
**EXISTING GENERATING FACILITIES (as of Summer 2009)**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Primary Fuel | | Alternate Fuel | | Commercial | Expected | Gross Capability | | Net Capability | | |
| Plant Name | Unit No. | Location | Unit Type | Type | Trans. | Type | Trans. | In-Service Month/Year | Retirement Month/Year | Summer MW | Winter MW | Summer MW | Winter MW | Status |
| **J. R. Kelly** | | Alachua County | | | | | | | | **180.0** | **189.0** | **177.2** | **186.2** | |
| | FS08 | Sec. 4, T10S, R20E | CA | WH | PL | | | [ 4/65 ; 5/01 ] | 2051 | 38.0 | 38.0 | 37.0 | 37.0 | OP |
| | FS07 | (GRU) | ST | NG | PL | RFO | TK | 8/61 | 10/13 | 24.0 | 24.0 | 23.2 | 23.2 | OP |
| | GT04 | | CT | NG | PL | DFO | TK | 5/01 | 2051 | 76.0 | 82.0 | 75.0 | 81.0 | OP |
| | GT03 | | GT | NG | PL | DFO | TK | 5/69 | 05/19 | 14.0 | 15.0 | 14.0 | 15.0 | OP |
| | GT02 | | GT | NG | PL | DFO | TK | 9/68 | 09/18 | 14.0 | 15.0 | 14.0 | 15.0 | OP |
| | GT01 | | GT | NG | PL | DFO | TK | 2/68 | 02/18 | 14.0 | 15.0 | 14.0 | 15.0 | OP |
| **Deerhaven** | | Alachua County | | | | | | | | **437.0** | **447.0** | **415.1** | **426.1** | |
| | FS02 | Secs. 26,27,35 | ST | BIT | RR | | | 10/81 | 2031 | 235.0 | 235.0 | 222.1 | 222.1 | OP |
| | FS01 | T8S, R19E | ST | NG | PL | RFO | TK | 8/72 | 08/22 | 88.0 | 88.0 | 83.0 | 83.0 | OP |
| | GT03 | (GRU) | GT | NG | PL | DFO | TK | 1/96 | 2046 | 76.0 | 82.0 | 75.0 | 81.0 | OP |
| | GT02 | | GT | NG | PL | DFO | TK | 8/76 | 2026 | 19.0 | 21.0 | 17.5 | 20.0 | OP |
| | GT01 | | GT | NG | PL | DFO | TK | 7/76 | 2026 | 19.0 | 21.0 | 17.5 | 20.0 | OP |
| **Crystal River** | 3 | Citrus County Sec. 33, T17S, R16E | ST | NUC | TK | | | 3/77 | 2037 | **12.2** | **12.4** | **11.6** | **11.9** | OP |
| **South Energy Center** Distributed Generation | GT1 | Alachua County SEC. 10, T10S, R20E | CT | NG | PL | | | 5/09 | | **4.5** | **4.5** | **4.1** | **4.1** | OP |
| **System Total** | | | | | | | | | | | | **608.0** | **628.3** | |

Unit Type
CA = Combined Cycle Steam Part
CT = Combined Cycle or Cogeneration Combustion Turbine Part
GT = Gas Turbine
ST = Steam Turbine

Fuel Type
BIT = Bituminous Coal
DFO = Distillate Fuel Oil
NG = Natural Gas
NUC = Uranium
RFO = Residual Fuel Oil
WH = Waste Heat

Transportation Method
PL = Pipe Line
RR = Railroad
TK = Truck

Status
OP = Operational

### 3.1.1 Steam Turbine Generation

The System's steam turbines are powered by fossil fuels, and CR3 is nuclear powered. The fossil fueled steam turbines comprise 54.8 percent of the System's net summer capability and produced 84.6 percent of the electric energy supplied by the System in 2008. These units range in size from 23.2 MW to 228.4 MW. The combined cycle unit, which includes a heat recovery steam generator/turbine and combustion turbine set, comprises 18.4 percent of the System's net summer capability and produced 8.5 percent of the electric energy supplied by the System in 2008. The System's 11.6 MW share of CR3 comprises 1.9 percent of the System's net summer capability and produced 5.7 percent of total electric energy in 2008. The System's share of CR3 will increase to 11.981 MW in 2010 and to 13.911 MW in 2012 as the result of capacity upgrades planned by PEF. Deerhaven Unit 2 and CR3 are used for baseload purposes, while JRK Unit 7, JRK Combined Cycle Unit 1, and Deerhaven Unit 1 are used for intermediate loading.

### 3.1.2 Gas Turbines

The System's six industrial gas turbines make up 24.9 percent of the System's summer generating capability and produced 1.3 percent of the electric energy supplied by the System in 2008. These simple cycle combustion turbines are utilized for peaking purposes because their energy conversion efficiencies are considerably lower than steam units. As a result, they yield higher operating costs and are, consequently, unsuitable for baseload operation. Gas turbines are advantageous in that they can be started and placed on line quickly. The System's gas turbines are most economically used as peaking units during high demand periods when baseload units, intermediate load units, and economy power cannot serve all of the System's loads.

### 3.1.3 Internal Combustion (Piston/Diesel)

The two reciprocating internal combustion engines operated by the System at the Southwest Landfill were decommissioned in 2008 because of a diminished fuel supply.

### 3.1.4 Environmental Considerations

All of the System's steam turbines, except for CR3, utilize recirculating freshwater cooling systems with mechanical draft cooling towers for the condensing of steam. CR3 uses a once-through cooling system aided by helper towers. Currently, only Deerhaven Unit 2 has flue gas cleaning equipment consisting of a "hot-side" electrostatic precipitator and a recently completed selective catalytic reduction (SCR) system to reduce nitrogen oxides ($NO_x$), and a dry flue gas desulfurization unit with fabric filters, which reduces sulfur dioxide ($SO_2$), mercury, and particulates. Operation of this equipment resulted in a decrease in the net output of 6 MW.

## 3.2 Existing Plant Descriptions

### 3.2.1 John R. Kelly Generating Station

The JRK Station is located in southeast Gainesville near the downtown business district and consists of one combined cycle unit, one fossil fuel fired steam turbine, three simple cycle gas turbines, and the associated cooling facilities, fuel storage, pumping equipment, and transmission and distribution equipment.

### 3.2.2 Deerhaven Generating Station

The Deerhaven Station is located 6 miles northwest of Gainesville. The original site, which was certified pursuant to the Power Plant Siting Act, includes a 1,146 acre parcel of partially forested land. The facility consists of two steam turbines, three gas turbines, and the associated cooling facilities, fuel storage, pumping equipment, and transmission equipment. As amended, the certified site now includes coal unloading and storage facilities and a zero discharge water treatment plant, which treats effluent from both steam units. A potential expansion area, owned by the System and adjacent to the certified Deerhaven plant site, was incorporated into the Gainesville City limits February 12, 2007 (Ordinance 0-06-130), and consists of an additional 2,328 acres, for a total of 3,474 acres.

### 3.2.3 South Energy Center

The South Energy Center is located on the site of the new Shands at University of Florida (UF) Cancer Hospital. This facility includes a 4.1 MW natural gas fired turbine capable of supplying 100 percent of the hospital's electric and thermal needs. The South Energy Center will provide electricity, chilled water, steam and medical gases to the hospital. The unique design is 75 percent efficient at primary fuel conversion to useful energy and greatly reduces emissions compared to traditional generation. Commercial operation of the South Energy Center began in May 2009 and the Cancer Hospital is expected to open in November 2009.

## 3.3 Power Purchase Agreements

The following power purchase resources are included in the System's portfolio of available capacity.

GRU has entered into a 15 year contract to receive 3 MW of landfill gas fueled capacity at the Marion County Baseline Landfill, from G2 Energy Marion, LLC (G2). The generation facility began commercial operation on January 1, 2009. G2 expects to complete a capacity expansion of 0.8 MW by December 2009, bringing net output to 3.8 MW.

GRU negotiated a contract with PEF for 50 MW of baseload capacity. This contract began January 1, 2009, and continues through December 31, 2013. Extensions of this contract are subject to negotiation. An additional 25 MW of baseload capacity was contracted from January 1, 2009 through December 31, 2010, and another additional 25 MW of baseload capacity was contracted for March through August of 2009 and 2010, respectively.

In March 2009, GRU became the first utility in the United States to offer a European style solar feed-in tariff (FIT). Under this program, GRU agrees to purchase 100 percent of the distributed solar power produced from any private installation at a fixed rate for a contract term of 20 years. The FIT rate has a built-in subsidy to incentivize the installation of solar in the community and help create a strong solar marketplace. GRU's FIT costs are recovered through fuel adjustment charges and have been limited to the equivalent of a 0.6 percent base rate increase. This limit translates to an annual capacity stop-loss to purchase no more than 4 MW. GRU's FIT capacity is fully subscribed through 2016. Solar capacity thus obtained is assumed to have a 35 percent coincidence factor.

In sum, purchased power resources contribute 102.2 MW of net capability for the summer of 2009. The combination of owned generation and purchased power provides 710.2 MW of available capacity.

## 3.4 GRU's Transmission System

GRU's bulk electric power transmission network consists of a 230 kilovolt (kV) radial and a 138 kV loop that connects the following:

- GRU's two generating stations.
- GRU's nine distribution substations.
- One 230 kV and two 138 kV interties with PEF.
- A 138 kV intertie with Florida Power & Light Company (FPL).
- A radial interconnection with Clay at Farnsworth Substation.
- A loop-fed interconnection with Alachua at Alachua No. 1 Substation.

Refer to Figure 3-1 for line geographical locations and Figure 3-2 for electrical connectivity and line numbers.

### *3.4.1 Transmission Lines*

The ratings for all of GRU's transmission lines are presented in Table 3-2. Refer to Figure 3-2 for a one-line diagram of GRU's electric system, including how the GREC will be interconnected.

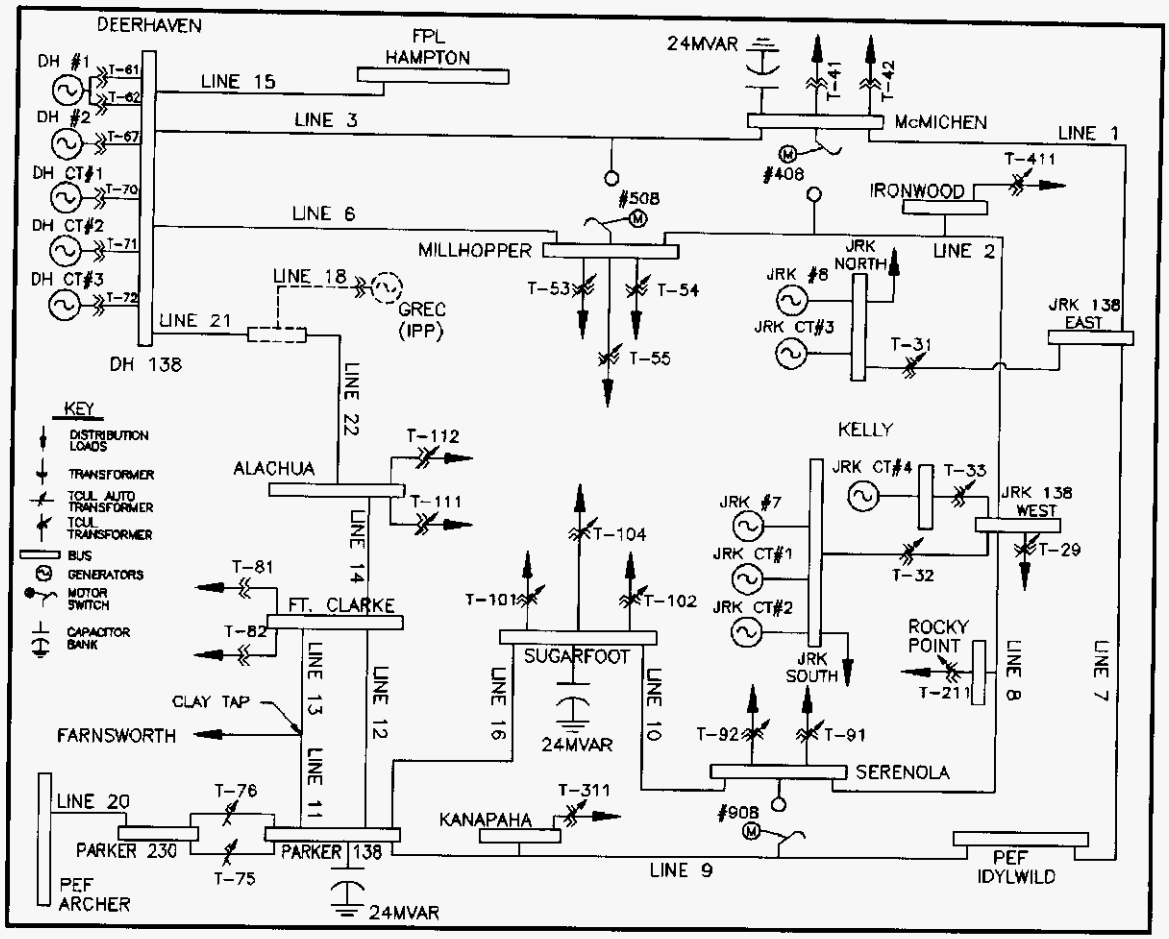



**Figure 3-2**
**Gainesville Regional Utilities Electric System One-Line Diagram**

**Table 3-2**
**Transmission Line Ratings**
**(Summer Power Flow Ratings)**

| Line Number | Description | Normal 100° C (MVA) | Limiting Device | 8-Hour Emergency 125° C (MVA) | Limiting Device |
|---|---|---|---|---|---|
| 1 | McMichen - Depot East | 236.2 | Conductor | 282.0 | Conductor |
| 2 | Millhopper - Depot West | 236.2 | Conductor | 282.0 | Conductor |
| 3 | Deerhaven - McMichen | 236.2 | Conductor | 282.0 | Conductor |
| 6 | Deerhaven - Millhopper | 236.2 | Conductor | 282.0 | Conductor |
| 7 | Depot East - Idylwild | 236.2 | Conductor | 282.0 | Conductor |
| 8 | Depot West - Serenola | 236.2 | Conductor | 282.0 | Conductor |
| 9 | Idylwild - Parker | 236.2 | Conductor | 236.2 | Conductor |
| 10 | Serenola - Sugarfoot | 236.2 | Conductor | 282.0 | Conductor |
| 11 | Parker - Clay Tap | 143.6 | Switch | 186.0 | Switch |
| 12 | Parker - Ft. Clarke | 236.2 | Conductor | 282.0 | Conductor |
| 13 | Clay Tap - Ft. Clarke | 143.6 | Switch | 186.0 | Switch |
| 14 | Ft. Clarke - Alachua | 287.3 | Switch | 356.0 | Conductor |
| 15 | Deerhaven - Hampton | 224.0[1] | Transformers | 270.0 | Transformers |
| 16 | Sugarfoot - Parker | 236.2 | Conductor | 282.0 | Conductor |
| 17 | Clay Tap - Farnsworth | 236.2 | Conductor | 282.0 | Conductor |
| 18 | GREC - GREC Interconnection | 236.2 | Conductor | 282.0 | Conductor |
| 20 | Parker - Archer (T75, T76) | 224.0 | Transformers | 300.0 | Transformers |
| 21 | Alachua - GREC Interconnection | 287.3 | Switch | 356.0 | Conductor |
| 22 | GREC Interconnection - Deerhaven | 287.3 | Switch | 356.0 | Conductor |
| xx | Idylwild - PEF | 150.0[2] | Transformer | 168.0[2] | Transformer |

[1]These two transformers are located at the FPL Bradford Substation and are the limiting elements in the Normal and Emergency ratings for this intertie.
[2]This transformer, along with the entire Idylwild Substation, is owned and maintained by PEF.

Assumptions:
100° C for normal conductor operation.
125° C for emergency 8 hour conductor operation.
40° C ambient air temperature.
2 ft/sec wind speed.
Transformers T75 and T76 normal limits are based on a 65 °C temperature rise rating.

The criteria for normal and emergency loading are taken to be as follows:

- Normal loading: conductor temperature not to exceed 100° C (212° F).
- Emergency 8 hour loading: conductor temperature not to exceed 125° C (257° F).

The present transmission network is summarized in Table 3-3.

**Table 3-3**
**GRU's Transmission Network**

| Line | Circuit Miles | Conductor |
|---|---|---|
| 138 kV double circuit | 80.01 | 795 MCM ACSR |
| 138 kV single circuit | 16.30 | 1192 MCM ACSR |
| 138 kV single circuit | 20.91 | 795 MCM ACSR |
| 230 kV single circuit | 2.53 | 795 MCM ACSR |
| Total | 119.75 | |

Notes:
MCM = thousand circular mills.
ACSR = aluminum conductor steel reinforced

Annually, GRU participates in Florida Reliability Coordinating Council, Inc. (FRCC) studies that analyze multilevel contingencies. Contingencies are occurrences that depend on changes or uncertain conditions and, as used herein, represent various equipment failures that may occur. All single and double circuit common pole contingencies have no identifiable problems.

Contingency simulations revealed the system effects of serving peak summer load with assumed outages of both Deerhaven Unit 2 and the Archer 230 kV tie line. The results identified GRU bus voltages that would fall below acceptable levels. These were addressed by installing two three-phase, 138 kV, 24.6 megavolt-ampere reactive (MVAr) capacitor banks: one at the Parker Transmission Substation (May 2009) and another at the McMichen Substation (July 2009).

According to the FRCC, which is responsible for the integrity and stability of the entire Florida transmission grid, with these new capacitor banks GRU could plan to import approximately 250 MW before exceeding the bus voltage standard for reliability.

### 3.4.2 State Interconnections

The System is currently interconnected with PEF and FPL at four separate points. The System interconnects with PEF's Archer Substation via a 230 kV transmission line to the System's Parker Substation with 224 megavolt-ampere (MVA) of transformation capacity from 230 kV to 138 kV. The System also interconnects with PEF's Idylwild Substation with two separate circuits via a 150 MVA 138/69 kV transformer at the Idylwild Substation. The System interconnects with FPL via a 138 kV tie between FPL's Hampton Substation and the System's Deerhaven Substation. This interconnection has a transformation capacity at Bradford Substation of 224 MVA.

## 3.5 GRU's Distribution System

The System has six loop-fed and three radial-fed distribution substations connected to the transmission network: Ft. Clarke, Kelly, McMichen, Millhopper, Serenola, Sugarfoot, Ironwood, Kanapaha, and Rocky Point substations, respectively. Parker is GRU's only 230 kV transmission voltage substation. The locations of these substations are shown on Figure 3-1.

The six major distribution substations are connected to the 138 kV bulk power transmission network with looped feeds that prevent the outage of a single transmission line from causing major outages in the distribution system. Ironwood, Kanapaha, and Rocky Point are served by a single tap to the 138 kV network, which would require distribution switching to restore customer power if the single transmission line that is tapped experiences an outage. GRU serves its retail customers through a 12.47 kV distribution network. The distribution substations, their present rated transformer capabilities, and the number of circuits for each are listed in Table 3-4.

The System has three power delivery substations with single 33.6 MVA transformers that are directly radial-tapped to GRU's looped 138 kV system. Currently, Ft. Clarke, Kelly, McMichen, and Serenola substations consist of two transformers of approximately equal size, allowing these stations to be loaded under normal conditions to 80 percent of the capabilities shown in Table 3-4. Millhopper and Sugarfoot substations currently consist of three transformers of equal size, allowing both of these substations to be loaded under normal conditions to 100 percent of the capability shown in Table 3-4. One of the two 22.4 MVA transformers at Ft. Clarke has been repaired with rewinding to a 28.0 MVA rating. This makes the normal rating for this substation 50.4 MVA.

**Table 3-4**
**Substation Transformation and Circuits**

| Substations | Normal Transformer Rated Capability | Current Number of Circuits |
|---|---|---|
| **Distribution** | | |
| Ft. Clarke | 50.4 MVA | 4 |
| J.R. Kelly[(1)] | 168.0 MVA | 20 |
| McMichen | 44.8 MVA | 6 |
| Millhopper | 100.8 MVA | 10 |
| Serenola | 67.2 MVA | 8 |
| Sugarfoot | 100.8 MVA | 9 |
| Ironwood | 33.6 MVA | 3 |
| Kanapaha | 33.6 MVA | 3 |
| Rocky Point | 33.6 MVA | 3 |
| **Transmission** | | |
| Parker | 224 MVA | 5 |
| Deerhaven | No transformations- All 138 kV circuits | 4 |

[(1)]J.R. Kelly is a generating station as well as two distribution substations. One substation has 14 distribution feeders directly fed from two 12.47 kV generator buses with connection to the 138 kV loop by two 56 MVA transformers. The other substation (Kelly West) has 6 distribution feeders fed from a single, loop-fed 56 MVA transformer.

In 2007, GRU expanded its JRK Station generation-transmission-distribution substation configuration to include a third 56 MVA 138/12.47 kV transformer located on the south side of the plant (referred to as Kelly West). This expansion has enhanced reliability by reassigning load to a point on the system not directly tied to the generator buses of the plant. The additional transformer capacity will allow for load growth in Gainesville's downtown area.

## 3.6 Wholesale Energy Sales

The System provides full requirements wholesale electric service to Clay through a contract between GRU and Seminole Electric Cooperative (Seminole), of which Clay is a member. The System began the 138 kV service at Clay's Farnsworth Substation in February 1975. This substation is supplied through a 2.37 mile radial line connected to the System's transmission facilities at Parker Road near SW 24$^{th}$ Avenue.

The System also provides full requirements wholesale electric service to Alachua. The Alachua No. 1 Substation is supplied by GRU's looped 138 kV transmission system. The System provides approximately 94 percent of Alachua's energy requirements, with the remainder being supplied by Alachua's generation entitlements from PEF's CR3 and FPL's St. Lucie 2 nuclear units. Energy supplied to Alachua by these nuclear units is wheeled over GRU's transmission network. Alachua and GRU agreed to a 2 year extension of the original contract that expired on December 31, 2008.

Wholesale sales to Clay and Alachua have been included as native load for purposes of projecting GRU's needs for generating capacity and associated reserve margins.

# 4.0 Forecast of Electrical Demand and Energy

GRU developed forecasts for the number of customers, energy sales, and seasonal peak demands for 2009 through 2044. Separate energy sales forecasts were developed for each of the following customer segments: residential, general service non-demand (GSN), general service demand (GSD), large power, outdoor lighting, sales to Seminole for Clay, and sales to Alachua. Separate forecasts of the number of customers were developed for residential, GSN, GSD, and large power retail rate classifications. The basis for these independent forecasts originated with the development of least-squares regression models. All modeling was performed by GRU using the Statistical Analysis System (SAS).[1] The remainder of this section describes forecast assumptions, the development of regression equations utilized to forecast energy sales and number of customers, the basis for NEL and seasonal peak demand projections, as well as the development of banded energy and demand forecasts.

## 4.1 Forecast Assumptions and Data Sources

The following assumptions and data sources were used by GRU in developing load forecasts through 2044:

(1) All regression analyses were based on annual data. Historical data was compiled for calendar years 1970 through 2008. System data, such as NEL, seasonal peak demands, customer counts, and energy sales, was obtained from GRU records and sources.

(2) Estimates and projections of Alachua County population were obtained from the "Florida Population Studies," March 2008 (Bulletin No. 150), published by the Bureau of Economic and Business Research (BEBR) at the University of Florida.

(3) Historical weather data was used to fit regression models. The forecast assumed normal weather conditions, including normal heating degree days and cooling degree days that were equal to the mean of data reported to the National Oceanic and Atmospheric Association (NOAA) by the Gainesville Municipal Airport station from 1984 to 2008.

(4) All income and price figures were adjusted for inflation, and indexed to a base year of 2008, using the US Consumer Price Index for All Urban Consumers from the US Department of Labor, Bureau of Labor Statistics. Inflation was assumed to average approximately 2.5 percent per year for each year of the forecast.

[1] SAS is the registered trademark of SAS Institute, Inc., Cary, NC.

(5) The US Department of Commerce provided historical estimates of total income and per capita income for Alachua County. Forecast values of per capita income for Alachua County were obtained from Global Insight.

(6) Historical estimates of household size were obtained from the BEBR, and projected levels were estimated from a logarithmic trend.

(7) The Florida Agency for Workforce Innovation and the US Department of Labor provided historical estimates of nonagricultural employment in Alachua County. Forecast values of nonagricultural employment were obtained from Global Insight.

(8) The average price of electricity for all customer classes for all customer classes was projected to increase 3 percent per year.

(9) Estimates of energy and demand reductions resulting from planned DSM were subtracted from all retail forecasts.

10) Alachua will generate (via generation entitlement shares of PEF and FPL nuclear units) approximately 8,077 MWh (6 percent) of its annual energy requirements.

## 4.2 Development of Regression Equations

### *4.2.1 Residential Sector*

The equation of the model developed to project residential average annual energy use (kilowatt-hours [kWh] per year) specifies average use as a function of household income in Alachua County, residential price of electricity, heating degree days, and cooling degree days.

Projections of the average annual number of residential customers were developed from a linear regression model stating the number of customers as a function of the Alachua County population, the number of persons per household, the historical series of Clay customer transfers, and an indicator variable for customer counts recorded under the billing system used prior to 1992.

The product of forecasted values of average use and number of customers yielded the projected energy sales for the residential sector.

### *4.2.2 General Service Non-Demand Sector*

The GSN customer class includes nonresidential customers with maximum annual demands of less than 50 kilowatts (kW). In 1990, GRU began offering GSN customers the option to elect the GSD rate classification. This option offers potential benefit to GSN customers that use high amounts of energy and have good load factors. Since 1990, 428 customers have elected to transfer to the GSD rate class. The forecast assumes that additional GSN customers will voluntarily elect the GSD classification, but at a more

modest pace than has been observed historically. A regression model was developed to project average annual energy use by GSN customers. The model includes cumulative number of optional demand customers and cooling degree days as independent variables.

The number of GSN customers was projected using an equation specifying customers as a function of Alachua County population, Clay non-demand transfer customers, and the number of optional demand customers.

Forecasted energy sales to GSN customers were derived from the product of the projected number of customers and the projected average annual use per customer.

### 4.2.3 General Service Demand Sector

The GSD customer class includes nonresidential customers with established annual maximum demands typically of at least 50 kW, but less than 1,000 kW. Average annual energy use per customer was projected using an equation specifying average use as a function of per capita income (Alachua County) and the number of optional demand customers. A significant portion of the energy load in this sector is from large retailers such as department stores and grocery stores, whose business activity is related to income levels of area residents.

The annual average number of customers was projected using a regression model that includes the Alachua County population, Clay demand customer transfers, and the number of optional demand customers as independent variables.

The forecast of energy sales to GSD customers was the resultant product of the projected number of customers and the projected average annual use per customer.

### 4.2.4 Large Power Sector

The large power customer class currently includes11 customers that maintain an average monthly billing demand of at least 1,000 kW. Analyses of average annual energy use were based on historical observations from 1976 through 2008. The model that was developed to project average use by large power customers includes Alachua County nonagricultural employment and the large power price of electricity as independent variables. Energy use per customer has been observed to increase over time, presumably due to the periodic expansion or increased utilization of existing facilities. This growth is measured by local employment levels in the model.

The forecast of energy sales to the large power sector was derived from the product of projected average use per customer and the projected number of large power customers, which is projected to remain constant at eleven.

### 4.2.5 Outdoor Lighting Sector

The outdoor lighting sector consists of streetlight, traffic light, and rental light accounts. Outdoor lighting energy sales account for approximately 1.3 percent of total energy sales. Outdoor lighting energy sales were forecast using a model that specified lighting energy as a function of the natural log of the number of residential customers.

### 4.2.6 Wholesale Energy Sales

The System provides control area services to two wholesale customers: Clay at the Farnsworth Substation (Clay-Farnsworth); and Alachua at the Alachua No. 1 Substation. Approximately 6 percent of City of Alachua's 2008 energy requirements were met through generation entitlements of nuclear generating units operated by PEF and FPL. These wholesale delivery points serve an urban area that is either included in, or adjacent to, the Gainesville urban area. These loads are considered part of the System's native load for facilities planning through the forecast horizon. GRU provides other utilities services in the same geographic areas served by Clay and Alachua, and continued electrical service will avoid duplicating facilities. Furthermore, the populations served by Clay and Alachua benefit from services provided by the City of Gainesville, which are in part supported by transfers from the System.

Clay-Farnsworth net energy requirements were modeled with an equation in which Alachua County population was the independent variable. Output from this model was adjusted to account for the history of load that has been transferred between GRU and Clay-Farnsworth, yielding energy sales to Clay. Historical boundary adjustments between Clay and GRU have reduced the duplication of facilities in both companies' service areas.

Net energy requirements for Alachua were estimated using a model in which Alachua's population was the independent variable. BEBR provided historical estimates of Alachua's population. This variable was projected from a trend analysis of the component populations within Alachua County.

To obtain a final forecast of the System's sales to Alachua, projected annual net energy requirements were reduced by 8,077 MWh to reflect Alachua's nuclear generation entitlements.

## 4.3 Net Energy for Load and Seasonal Peak Demands

The forecast of total system energy sales was derived by summing energy sales projections for each customer class: residential, GSN, GSD, large power, outdoor lighting, sales to Clay, and sales to Alachua. NEL was then forecast by applying a delivered efficiency factor for the System to total energy sales. The projected delivered efficiency factor used in this forecast was 0.96. Historical delivered efficiencies were

examined from the past 25 years to make this determination. Prior to calculating NEL, the impact of energy savings from conservation programs was accounted for in energy sales to each customer class.

The forecasts of seasonal peak demands were derived from forecasts of the annual NEL. Winter peak demands were projected to occur in January of each year, and summer peak demands are projected to occur in August of each year, although historical data suggested that the summer peak is nearly as likely to occur in July. The average ratio of the most recent 25 years of monthly NEL for January and August, as a portion of annual NEL, was applied to projected annual NEL to obtain estimates of January and August NEL over the forecast horizon. The medians of the past 25 years' load factors for January and August were applied to January and August NEL projections, yielding seasonal peak demand projections. Forecast seasonal peak demands include the net impacts from planned conservation programs.

## 4.4 Forecast Error Bands

Probabilistic bands around the forecasts of NEL and summer peak demand were also developed. The historical forecast error from 1992 through 2008 was analyzed to determine both the standard deviation of the historical forecast error and the trajectory of forecast error over time. For example, the average error of forecasts of summer peak demand was approximately -0.1 percent 5 years into the future, about 1.1 percent 10 years into the future, and roughly 2.3 percent 15 years into the future. This trend was extrapolated 36 years for this Application. The standard deviation of all 153 data points in the historical error fan for summer peak demand was 4.57 percent. The standard deviation of NEL for historical forecast errors was 4.13 percent.

From the standard normal distribution table, the z-values for a 95 percent confidence interval are +/- 1.96. The sum of [(standard deviation of forecast error multiplied by the z-value plus a constant representing increasing error through time) was multiplied by the base case forecast value] and added to (or subtracted from) the base case value to determine the high (or low) value in each forecast year. Use of the standard normal table allowed for the development of confidence intervals of any magnitude, and in this case, a 68 percent confidence interval was also developed from z-values of +/- 1.00.

## 4.5 Forecast Results, Tables, and Figures

Table 4-1 presents historical and forecast NEL, including 68 percent and 95 percent confidence intervals (CIs) for the base case NEL. Figure 4-1 depicts this same information graphically. Table 4-2 gives historical and forecast summer peak demand, with 68 percent and 95 percent confidence intervals for the base case summer peak demand. Figure 4-2 depicts this same information graphically.

## Table 4-1
## Historical and Forecast Net Energy for Load (GWh)

| Year | History | Lower (95% CI) | Lower (68% CI) | Base | Upper (68% CI) | Upper (95% CI) |
|---|---|---|---|---|---|---|
| 1989 | 1,323 | | | | | |
| 1990 | 1,363 | | | | | |
| 1991 | 1,411 | | | | | |
| 1992 | 1,424 | | | | | |
| 1993 | 1,502 | | | | | |
| 1994 | 1,519 | | | | | |
| 1995 | 1,648 | | | | | |
| 1996 | 1,659 | | | | | |
| 1997 | 1,661 | | | | | |
| 1998 | 1,779 | | | | | |
| 1999 | 1,798 | | | | | |
| 2000 | 1,868 | | | | | |
| 2001 | 1,882 | | | | | |
| 2002 | 2,008 | | | | | |
| 2003 | 2,015 | | | | | |
| 2004 | 2,049 | | | | | |
| 2005 | 2,082 | | | | | |
| 2006 | 2,099 | | | | | |
| 2007 | 2,122 | | | | | |
| 2008 | 2,079 | | | | | |
| 2009 | | 1,903 | 1,985 | 2,045 | 2,106 | 2,187 |
| 2010 | | 1,897 | 1,978 | 2,044 | 2,109 | 2,190 |
| 2011 | | 1,908 | 1,990 | 2,061 | 2,133 | 2,214 |
| 2012 | | 1,925 | 2,008 | 2,085 | 2,162 | 2,245 |
| 2013 | | 1,943 | 2,026 | 2,110 | 2,193 | 2,277 |
| 2014 | | 1,961 | 2,045 | 2,135 | 2,224 | 2,309 |
| 2015 | | 1,979 | 2,064 | 2,160 | 2,256 | 2,342 |
| 2016 | | 1,994 | 2,081 | 2,183 | 2,285 | 2,372 |
| 2017 | | 2,009 | 2,097 | 2,205 | 2,314 | 2,401 |
| 2018 | | 2,025 | 2,113 | 2,228 | 2,344 | 2,432 |
| 2019 | | 2,038 | 2,127 | 2,249 | 2,370 | 2,459 |
| 2020 | | 2,047 | 2,137 | 2,265 | 2,394 | 2,483 |
| 2021 | | 2,055 | 2,146 | 2,280 | 2,415 | 2,505 |
| 2022 | | 2,063 | 2,154 | 2,295 | 2,436 | 2,527 |
| 2023 | | 2,071 | 2,162 | 2,310 | 2,457 | 2,549 |
| 2024 | | 2,078 | 2,170 | 2,325 | 2,479 | 2,571 |
| 2025 | | 2,087 | 2,180 | 2,341 | 2,502 | 2,594 |
| 2026 | | 2,095 | 2,188 | 2,356 | 2,524 | 2,617 |
| 2027 | | 2,103 | 2,197 | 2,372 | 2,546 | 2,640 |
| 2028 | | 2,111 | 2,205 | 2,387 | 2,569 | 2,663 |
| 2029 | | 2,118 | 2,213 | 2,402 | 2,591 | 2,686 |
| 2030 | | 2,125 | 2,221 | 2,417 | 2,612 | 2,708 |
| 2031 | | 2,132 | 2,229 | 2,431 | 2,634 | 2,731 |
| 2032 | | 2,139 | 2,236 | 2,446 | 2,656 | 2,753 |
| 2033 | | 2,146 | 2,243 | 2,460 | 2,678 | 2,775 |
| 2034 | | 2,152 | 2,250 | 2,475 | 2,700 | 2,798 |
| 2035 | | 2,158 | 2,257 | 2,489 | 2,721 | 2,820 |
| 2036 | | 2,165 | 2,264 | 2,503 | 2,743 | 2,842 |
| 2037 | | 2,171 | 2,271 | 2,518 | 2,765 | 2,865 |
| 2038 | | 2,178 | 2,279 | 2,533 | 2,788 | 2,889 |
| 2039 | | 2,184 | 2,285 | 2,547 | 2,810 | 2,911 |
| 2040 | | 2,190 | 2,291 | 2,561 | 2,831 | 2,933 |
| 2041 | | 2,196 | 2,298 | 2,576 | 2,854 | 2,956 |
| 2042 | | 2,202 | 2,305 | 2,590 | 2,876 | 2,979 |
| 2043 | | 2,208 | 2,311 | 2,605 | 2,899 | 3,002 |
| 2044 | | 2,215 | 2,318 | 2,620 | 2,922 | 3,026 |

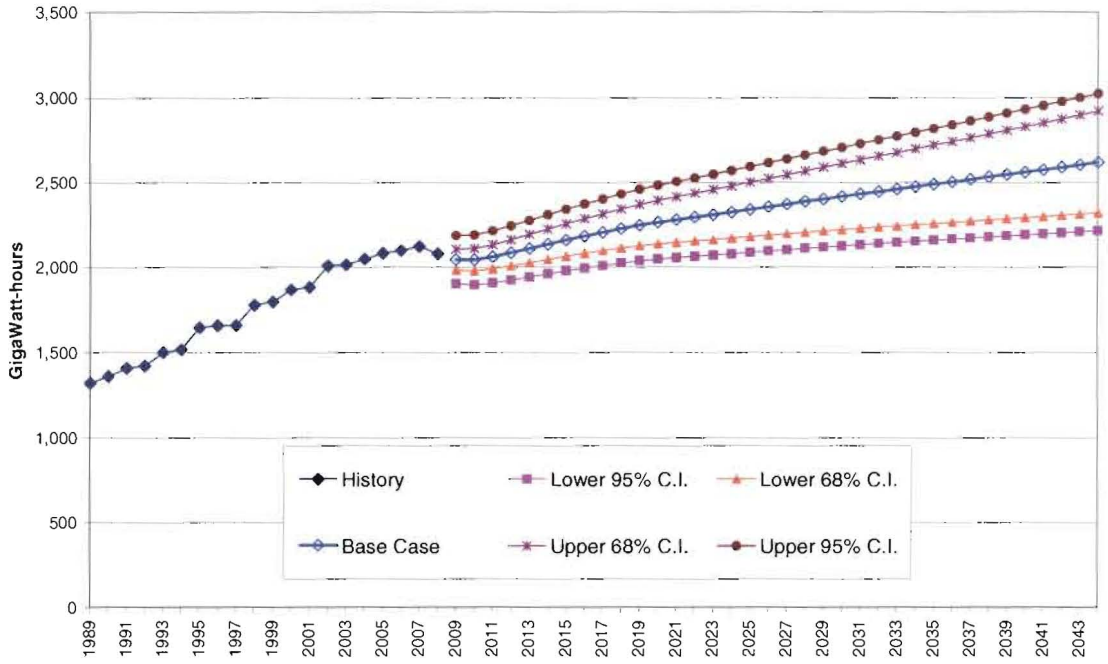



**Figure 4-1**
**Net Energy for Load**

## Table 4-2
## Historical and Forecast Summer Peak Demand (MW)

| Year | History | Lower (95% CI) | Lower (68% CI) | Base | Upper (68% CI) | Upper (95% CI) |
|---|---|---|---|---|---|---|
| 1989 | 296 | | | | | |
| 1990 | 305 | | | | | |
| 1991 | 297 | | | | | |
| 1992 | 320 | | | | | |
| 1993 | 339 | | | | | |
| 1994 | 331 | | | | | |
| 1995 | 361 | | | | | |
| 1996 | 365 | | | | | |
| 1997 | 373 | | | | | |
| 1998 | 396 | | | | | |
| 1999 | 419 | | | | | |
| 2000 | 425 | | | | | |
| 2001 | 409 | | | | | |
| 2002 | 433 | | | | | |
| 2003 | 417 | | | | | |
| 2004 | 432 | | | | | |
| 2005 | 465 | | | | | |
| 2006 | 464 | | | | | |
| 2007 | 481 | | | | | |
| 2008 | 457 | | | | | |
| 2009 | | 406 | 425 | 441 | 458 | 477 |
| 2010 | | 403 | 422 | 439 | 456 | 475 |
| 2011 | | 403 | 422 | 441 | 459 | 478 |
| 2012 | | 404 | 424 | 443 | 462 | 482 |
| 2013 | | 405 | 425 | 445 | 466 | 485 |
| 2014 | | 407 | 426 | 448 | 469 | 489 |
| 2015 | | 408 | 427 | 450 | 473 | 492 |
| 2016 | | 410 | 430 | 453 | 477 | 497 |
| 2017 | | 412 | 432 | 457 | 482 | 502 |
| 2018 | | 414 | 434 | 460 | 486 | 506 |
| 2019 | | 415 | 435 | 463 | 490 | 510 |
| 2020 | | 416 | 436 | 465 | 493 | 514 |
| 2021 | | 416 | 437 | 466 | 496 | 517 |
| 2022 | | 416 | 437 | 468 | 499 | 519 |
| 2023 | | 417 | 437 | 469 | 502 | 522 |
| 2024 | | 417 | 438 | 471 | 504 | 525 |
| 2025 | | 418 | 438 | 473 | 507 | 528 |
| 2026 | | 418 | 439 | 475 | 510 | 531 |
| 2027 | | 419 | 439 | 476 | 513 | 534 |
| 2028 | | 419 | 440 | 478 | 516 | 537 |
| 2029 | | 419 | 440 | 480 | 519 | 540 |
| 2030 | | 420 | 441 | 481 | 522 | 543 |
| 2031 | | 420 | 441 | 483 | 524 | 546 |
| 2032 | | 420 | 441 | 484 | 527 | 549 |
| 2033 | | 420 | 442 | 486 | 530 | 551 |
| 2034 | | 421 | 442 | 487 | 533 | 554 |
| 2035 | | 421 | 442 | 489 | 535 | 557 |
| 2036 | | 421 | 442 | 490 | 538 | 560 |
| 2037 | | 421 | 443 | 492 | 541 | 563 |
| 2038 | | 421 | 443 | 493 | 544 | 566 |
| 2039 | | 421 | 443 | 495 | 547 | 568 |
| 2040 | | 422 | 443 | 496 | 549 | 571 |
| 2041 | | 422 | 444 | 498 | 552 | 574 |
| 2042 | | 422 | 444 | 499 | 555 | 577 |
| 2043 | | 422 | 444 | 501 | 558 | 580 |
| 2044 | | 422 | 444 | 503 | 561 | 583 |

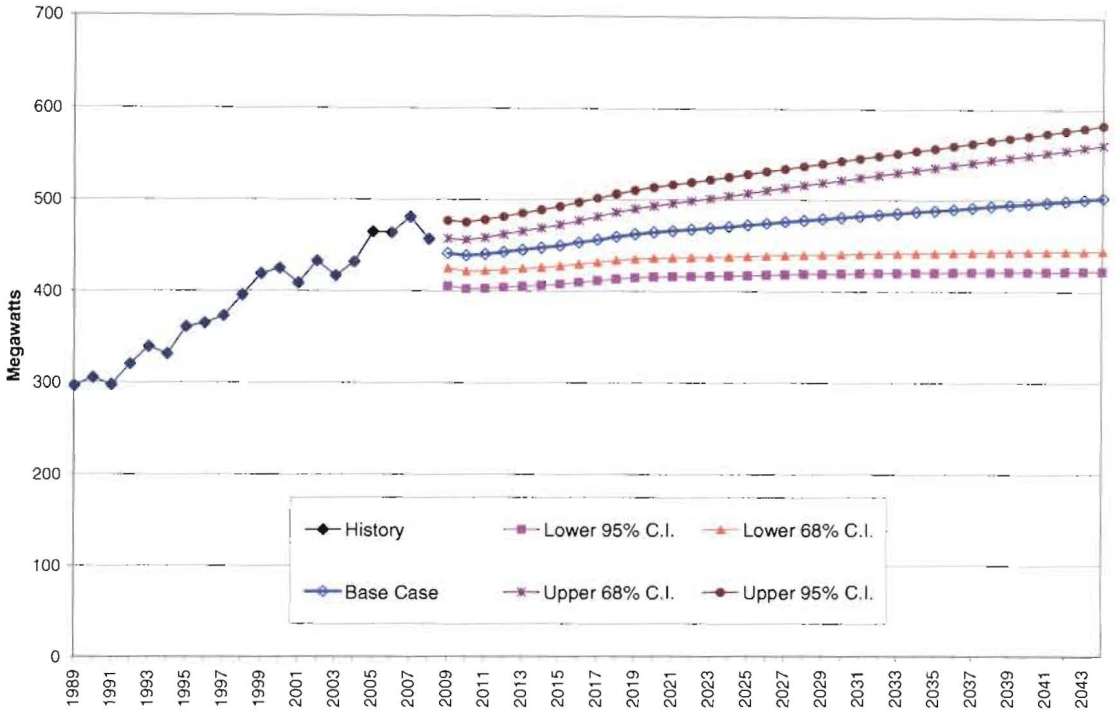



**Figure 4-2**
**Summer Peak Demand**

# 5.0 Reliability Criteria and Capacity Requirements

Prudent utility practices require a utility to plan for sufficient capacity resources to meet its peak demand and to maintain an additional margin of capacity should unforeseen events result in higher system demand and/or lower than anticipated availability of capacity. This section discusses the reliability criteria used by GRU.

## 5.1 Reserve Sharing Requirements

Section 25-6.035, FAC, requires that Florida utilities maintain a minimum 15 percent planned reserve margin for purposes of equitable sharing of energy reserves. The investor owned utilities in the State of Florida have entered into a stipulation to maintain 20 percent reserve margins, while the municipal utilities in the State generally maintain reserve margins of no less than 15 percent.

## 5.2 Reserve Margin Requirements

GRU uses a minimum 15 percent planning reserve margin in both the summer and winter. Based on GRU's load forecast and available capacity, the summer peak demand dictates capacity additions to maintain reserve margin requirements. The planning reserve margin covers uncertainties in extreme weather, forced outages for generators, and uncertainty in load projections. GRU plans to maintain its seasonal reserve margins for firm load obligations. The reserve margin is calculated as follows:

$$\frac{\text{System Net Capacity - System Firm Peak Demand}}{\text{System Firm Peak Demand}}$$

## 5.3 Capacity Requirements

Table 5-1 presents GRU's projected capacity requirements based on the existing generating capacity resources discussed in Section 3.0 and the base case load forecast discussed in Section 4.0. As shown in Table 5-1, GRU is projected to require additional capacity in order to maintain reserve margin requirements beginning in 2023.

Table 5-2 presents GRU's projected capacity requirements based on the existing generating capacity resources discussed in Section 3.0 and the base case load forecast discussed in Section 4.0, and reflects the capacity that will be provided by the GREC biomass PPA (including GRU's planned initial sale of 50 MW from the facility). As shown in Table 5-2, after factoring in the capacity from the GREC biomass facility GRU's projected need for additional capacity in order to maintain reserve margin requirements is deferred until 2032.

## Table 5-1
## GRU Projected Capacity Requirements (Without the GREC LLC PPA)

| Year | GRU[1] Owned Summer Net Generating Capacity (MW) | Renewable Energy Sources | | | (15) Other PPAs PEF (MW) | Total Available Summer Capacity (MW) | Summer Peak Demand (MW) | 15% Reserve Margin (MW) | Total Summer Peak Demand Including Reserves (MW) | Excess/ (Deficit) Capacity to Maintain Reserve Margin (MW) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (12) FIT Solar PV (MW) | LFG G2 Energy, LLC (MW) | GREC LLC PPA (MW) | | | | | | |
| 2009 | 608[2] | 1 | 3 | 0 | 98 | 710 | 441 | 66 | 507 | 203 |
| 2010 | 608[3] | 3 | 4[13] | 0 | 98 | 713 | 439 | 66 | 505 | 208 |
| 2011 | 608 | 4 | 4 | 0 | 49[16] | 665 | 441 | 66 | 507 | 158 |
| 2012 | 620[4] | 6 | 4 | 0 | 49 | 678 | 443 | 66 | 509 | 168 |
| 2013 | 620 | 7 | 4 | 0 | 49 | 679 | 445 | 67 | 512 | 168 |
| 2014 | 597[5] | 8 | 4 | 0 | 0[17] | 609 | 448 | 67 | 515 | 93 |
| 2015 | 597 | 10 | 4 | 0 | 0 | 610 | 450 | 68 | 518 | 93 |
| 2016 | 597 | 11 | 4 | 0 | 0 | 611 | 453 | 68 | 521 | 90 |
| 2017 | 597 | 12 | 4 | 0 | 0 | 612 | 457 | 69 | 526 | 87 |
| 2018 | 583[6] | 13 | 4 | 0 | 0 | 599 | 460 | 69 | 529 | 70 |
| 2019 | 555[7] | 13 | 4 | 0 | 0 | 572 | 463 | 69 | 532 | 39 |
| 2020 | 555 | 14 | 4 | 0 | 0 | 572 | 465 | 70 | 535 | 37 |
| 2021 | 555 | 15 | 4 | 0 | 0 | 573 | 466 | 70 | 536 | 37 |
| 2022 | 555 | 15 | 4 | 0 | 0 | 574 | 468 | 70 | 538 | 35 |
| 2023 | 472[8] | 16 | 4 | 0 | 0 | 491 | 469 | 70 | 539 | (48) |
| 2024 | 472 | 17 | 4 | 0 | 0 | 492 | 471 | 71 | 542 | (50) |
| 2025 | 472 | 18 | 4 | 0 | 0 | 493 | 473 | 71 | 544 | (51) |
| 2026 | 472 | 18 | 4 | 0 | 0 | 493 | 475 | 71 | 546 | (53) |
| 2027 | 437[9] | 19 | 4 | 0 | 0 | 459 | 476 | 71 | 547 | (88) |
| 2028 | 437 | 20 | 4 | 0 | 0 | 460 | 478 | 72 | 550 | (90) |
| 2029 | 437 | 20 | 0[14] | 0 | 0 | 456 | 480 | 72 | 552 | (96) |
| 2030 | 437 | 20 | 0 | 0 | 0 | 456 | 481 | 72 | 553 | (97) |
| 2031 | 437 | 20 | 0 | 0 | 0 | 456 | 483 | 72 | 555 | (99) |
| 2032 | 205[10] | 20 | 0 | 0 | 0 | 225 | 484 | 73 | 557 | (332) |
| 2033 | 205 | 20 | 0 | 0 | 0 | 225 | 486 | 73 | 559 | (334) |
| 2034 | 205 | 20 | 0 | 0 | 0 | 225 | 487 | 73 | 560 | (335) |
| 2035 | 205 | 20 | 0 | 0 | 0 | 225 | 489 | 73 | 562 | (338) |
| 2036 | 205 | 20 | 0 | 0 | 0 | 225 | 490 | 74 | 564 | (339) |
| 2037 | 191[11] | 20 | 0 | 0 | 0 | 211 | 492 | 74 | 566 | (355) |
| 2038 | 191 | 20 | 0 | 0 | 0 | 211 | 493 | 74 | 567 | (356) |
| 2039 | 191 | 20 | 0 | 0 | 0 | 211 | 495 | 74 | 569 | (359) |
| 2040 | 191 | 20 | 0 | 0 | 0 | 211 | 496 | 74 | 570 | (360) |
| 2041 | 191 | 20 | 0 | 0 | 0 | 211 | 498 | 75 | 573 | (362) |
| 2042 | 191 | 20 | 0 | 0 | 0 | 211 | 499 | 75 | 574 | (363) |
| 2043 | 191 | 20 | 0 | 0 | 0 | 211 | 501 | 75 | 576 | (365) |

(1) GRU's assets including photovoltaic (PV) and efficiency and capacity improvements and retirements.
(2) This capacity reflects MW reductions in net capacity due to auxiliary power to run Deerhaven Unit 2's new (May 2009) Air Quality Control Systems to significantly reduce $NO_X$, $SO_2$, particulates, & mercury emissions.
(3) GRU's 0.3859 MW share of efficiency improvement in CR3 net output.
(4) Net 9.4 MW capacity increase from steam turbine and other efficiency improvement in Deerhaven Unit 2 and GRU's 1.93 MW share of capacity increase in CR3 net output (Steam Generator replacement).
(5) John R. Kelly Steam Unit 7 retires.
(6) John R. Kelly GT 1 retires.
(7) John R. Kelly GT 2 & GT 3 retire.
(8) Deerhaven Steam Unit 1 retires.
(9) Deerhaven GT 1 & GT 2 retire.
(10) Deerhaven Steam Unit 2 retires.
(11) CR3 retires.
(12) Total from Feed-In Tariff for Solar PV capacity adjusted for coincidence as well as annual increases in Feed-In Tariff capacity and follow-on net metered PV.
(13) Additional net 0.775 MW delivered capacity from G2 Energy Power Purchase Agreement (PPA).
(14) End of net delivered 3.68 MW from G2 Energy PPA.
(15) Total from Other PPAs adjusting for losses.
(16) End of PEF's 50 MW summer PPA (48.94 MW delivered).
(17) End of PEF's 50 MW summer PPA (48.94 MW delivered).

## Table 5-2
## GRU Projected Capacity Requirements (With the GREC LLC PPA)

| Year | GRU[1] Owned Summer Net Generating Capacity (MW) | Renewable Energy Sources | | | (17) Other PPAs PEF (MW) | Total Available Summer Capacity (MW) | Summer Peak Demand (MW) | 15% Reserve Margin (MW) | Total Summer Peak Demand Including Reserves (MW) | Excess/ (Deficit) Capacity to Maintain Reserve Margin (MW) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (12) FIT Solar PV (MW) | LFG G2 Energy, LLC (MW) | GREC LLC PPA (MW) | | | | | | |
| 2009 | 608[2] | 1 | 3 | 0 | 98 | 710 | 441 | 66 | 507 | 203 |
| 2010 | 608[3] | 3 | 4[13] | 0 | 98 | 713 | 439 | 66 | 505 | 208 |
| 2011 | 608 | 4 | 4 | 0 | 49[18] | 665 | 441 | 66 | 507 | 158 |
| 2012 | 620[4] | 6 | 4 | 0 | 49 | 678 | 443 | 66 | 509 | 168 |
| 2013 | 620 | 7 | 4 | 0 | 49 | 679 | 445 | 67 | 512 | 168 |
| 2014 | 597[5] | 8 | 4 | 50[15] | 0[19] | 659 | 448 | 67 | 515 | 143 |
| 2015 | 597 | 10 | 4 | 50 | 0 | 660 | 450 | 68 | 518 | 143 |
| 2016 | 597 | 11 | 4 | 50 | 0 | 661 | 453 | 68 | 521 | 140 |
| 2017 | 597 | 12 | 4 | 50 | 0 | 662 | 457 | 69 | 526 | 137 |
| 2018 | 583[6] | 13 | 4 | 50 | 0 | 649 | 460 | 69 | 529 | 120 |
| 2019 | 555[7] | 13 | 4 | 50 | 0 | 622 | 463 | 69 | 532 | 89 |
| 2020 | 555 | 14 | 4 | 50 | 0 | 622 | 465 | 70 | 535 | 87 |
| 2021 | 555 | 15 | 4 | 50 | 0 | 623 | 466 | 70 | 536 | 87 |
| 2022 | 555 | 15 | 4 | 50 | 0 | 624 | 468 | 70 | 538 | 85 |
| 2023 | 472[8] | 16 | 4 | 50 | 0 | 541 | 469 | 70 | 539 | 2 |
| 2024 | 472 | 17 | 4 | 100[16] | 0 | 592 | 471 | 71 | 542 | 50 |
| 2025 | 472 | 18 | 4 | 100 | 0 | 593 | 473 | 71 | 544 | 49 |
| 2026 | 472 | 18 | 4 | 100 | 0 | 593 | 475 | 71 | 546 | 47 |
| 2027 | 437[9] | 19 | 4 | 100 | 0 | 559 | 476 | 71 | 547 | 12 |
| 2028 | 437 | 20 | 4 | 100 | 0 | 560 | 478 | 72 | 550 | 10 |
| 2029 | 437 | 20 | 0[14] | 100 | 0 | 556 | 480 | 72 | 552 | 4 |
| 2030 | 437 | 20 | 0 | 100 | 0 | 556 | 481 | 72 | 553 | 3 |
| 2031 | 437 | 20 | 0 | 100 | 0 | 556 | 483 | 72 | 555 | 1 |
| 2032 | 205[10] | 20 | 0 | 100 | 0 | 325 | 484 | 73 | 557 | (232) |
| 2033 | 205 | 20 | 0 | 100 | 0 | 325 | 486 | 73 | 559 | (234) |
| 2034 | 205 | 20 | 0 | 100 | 0 | 325 | 487 | 73 | 560 | (235) |
| 2035 | 205 | 20 | 0 | 100 | 0 | 325 | 489 | 73 | 562 | (238) |
| 2036 | 205 | 20 | 0 | 100 | 0 | 325 | 490 | 74 | 564 | (239) |
| 2037 | 191[11] | 20 | 0 | 100 | 0 | 311 | 492 | 74 | 566 | (255) |
| 2038 | 191 | 20 | 0 | 100 | 0 | 311 | 493 | 74 | 567 | (256) |
| 2039 | 191 | 20 | 0 | 100 | 0 | 311 | 495 | 74 | 569 | (259) |
| 2040 | 191 | 20 | 0 | 100 | 0 | 311 | 496 | 74 | 570 | (260) |
| 2041 | 191 | 20 | 0 | 100 | 0 | 311 | 498 | 75 | 573 | (262) |
| 2042 | 191 | 20 | 0 | 100 | 0 | 311 | 499 | 75 | 574 | (263) |
| 2043 | 191 | 20 | 0 | 100 | 0 | 311 | 501 | 75 | 576 | (265) |

(1) GRU's assets including PV and efficiency & capacity improvements and retirements.
(2) This capacity reflects MW reductions in net capacity due to auxiliary power to run Deerhaven Unit 2's new (May 2009) Air Quality Control Systems to significantly reduce $NO_X$, $SO_2$, particulates, & mercury emissions.
(3) GRU's 0.3859 MW share of efficiency improvement in CR3 net output.
(4) Net 9.4 MW capacity increase from steam turbine and other efficiency improvement in Deerhaven Unit 2 and GRU's 1.93 MW share of capacity increase in CR3 net output (Steam Generator replacement).
(5) John R. Kelly Steam Unit 7 retires.
(6) John R. Kelly GT 1 retires.
(7) John R. Kelly GT 2 & GT 3 retire.
(8) Deerhaven Steam Unit 1 retires.
(9) Deerhaven GT 1 & GT 2 retire.
(10) Deerhaven Steam Unit 2 retires.
(11) CR3 retires.
(12) Total from Feed-In Tariff for Solar PV capacity adjusted for coincidence as well as annual increases in Feed-In Tariff capacity and follow-on net metered PV.
(13) Additional net 0.775 MW delivered capacity from G2 Energy Purchased Power Agreement (PPA).
(14) End of net delivered 3.68 MW from G2 Energy PPA.
(15) Addition of 100 MW from GREC LLC PPA and start of 10 year resale of 50 MW from GREC.
(16) End of GREC LLC PPA 50 MW Resale.
(17) Total from Other PPAs adjusting for losses.
(18) End of PEF's 50 MW summer PPA (48.94 MW delivered).
(19) End of PEF's 50 MW summer PPA (48.94 MW delivered).

# 6.0 Economic Parameters

This section presents the economic parameters and methodology used to develop the levelized cost of electricity from the proposed biomass project, as well as the alternatives to which the proposed project is being compared in this Application.

## 6.1 Inflation and Escalation Rates

The general inflation rate, construction cost escalation rate, fixed O&M escalation rate, and nonfuel variable O&M escalation rate are each assumed to be 2.5 percent.

## 6.2 Municipal Bond Interest Rate

The tax exempt municipal bond interest rate is based on GRU's current cost of debt of 4.2 percent.

## 6.3 Present Worth Discount Rate

The present worth discount rate is assumed to be equal to the tax exempt municipal bond interest rate of 4.2 percent.

## 6.4 Interest During Construction Rate

The interest during construction rate (IDC) is assumed to be 4.2 percent.

## 6.5 Levelized Fixed Charge Rate

The fixed charge rate (FCR) represents the sum of a project's fixed charges as a percent of the initial investment cost. When the FCR is applied to the initial investment, the product equals the revenue requirements needed to offset the fixed charges during a given year. A separate FCR can be calculated and applied to each year of an economic analysis, but it is common practice to use a single, levelized FCR that has the same present value as the year-by-year FCR.

Different generating technologies are assumed to have different economic lives and, therefore, different financing terms. Simple cycle combustion turbines are assumed to have a 20 year financing term, combined cycle units are assumed to be financed over 25 years, and solid fuel units are assumed to be financed over 30 years. Given the various economic lives and corresponding financing terms, different levelized FCRs were developed. All levelized FCR calculations assume the 4.2 percent tax exempt municipal bond interest rate, a 2.0 percent bond issuance fee, an assumed 0.50 percent annual property insurance cost, and a debt service reserve fund equal to 100 percent of the

average annual debt service requirement earning interest at an interest rate equal to the bond interest rate of 4.2 percent. The resulting 20 year FCR is approximately 8.43 percent, the 25 year FCR is approximately 7.35 percent, and the 30 year FCR is approximately 6.66 percent.

# 7.0 Fuel and Emissions Allowance Price Projections

This section discusses the methodology used to develop projections for the prices of natural gas and coal specific to the Florida Reliability Coordinating Council (FRCC) region that are considered in this Application. In addition to the reference case price projections, high and low price projections have been developed. The analyses presented throughout this Application also consider projections of $CO_2$ emissions allowance prices. The development of $CO_2$ emissions allowance price projections are also discussed in this section.

## 7.1 Importance of Fully Integrated Fuel and Emissions Allowance Price Projections

The fuel and $CO_2$ emissions allowance price projections considered throughout this Application represent fully integrated forecasts. That is, fuel price supply and demand are considered in tandem with potential costs associated with the regulation of various emissions, along with numerous other market influences, to develop fully integrated projections of fuel and emissions allowance prices. This is especially important when considering the potential impacts associated with acquiring any allowances for existent regulated emissions and considering the potential impacts of the $CO_2$ regulations.

Although there is currently no State or Federal regulation of $CO_2$ emissions, several bills to regulate $CO_2$ emissions (and other greenhouse gases [GHGs]) have been proposed to the US Congress. On June 26, 2009, the *American Clean Energy and Security Act of 2009* (commonly referred to as H.R. 2454) passed the US House of Representatives. While H.R. 2454 has not yet passed through the US Senate, it is considered the leading bill to regulate $CO_2$ emissions. As such, this Application considers the potential regulation of $CO_2$ emissions as discussed in Sections 7.6 and 7.7.

## 7.2 Description of 2009 US Energy Information Administration Annual Energy Outlook Reference Case

The fuel price projections for natural gas, fuel oil, and coal used in this Application were developed based on those included in the EIA's Annual Energy Outlook 2009 (AEO2009)[1]. The AEO2009 presents projections of energy supply, demand, and prices through 2030. The projections presented in the AEO2009 are based on results

[1] The version of AEO2009 is that published by the EIA in April 2009 and represents the updated AEO2009 to reflect the provisions of the American Recovery and Reinvestment Act (ARRA) that were enacted in mid-February 2009.

from the EIA's National Energy Modeling System (NEMS). NEMS is a computer based, energy-economy modeling system of US energy markets and projects the production, imports, conversion, consumption, and prices of energy, subject to a variety of assumptions related to macroeconomic and financial factors, world energy markets, resource availability and costs, behavioral and technological choice criteria, technology characteristics, and demographics. The discussion of the fuel price projections presented in this section is intended to be an overview of the AEO2009 and, therefore, focuses on the more salient aspects of AEO2009 and elaborates on relevant conclusions and projections.

The AEO2009 in its entirety can be found on the EIA web site at http://www.eia.doe.gov/oiaf/servicerpt/stimulus/index.html while documentation on the NEMS can be found at http://tonto.eia.doe.gov/FTPROOT/modeldoc/m057(2009).pdf.

### 7.2.1 Consideration of State and Federal Legislation and Regulations in AEO2009

Analyses developed by the EIA are required to be policy neutral. Therefore, the projections in the AEO2009 generally are based on Federal and State laws and regulations in effect on or before November 2008. As stated in the AEO2009, the potential impacts of pending or proposed legislation, regulations, and standards – and sections of existing legislation that require implementing regulations or funds that have not been appropriated– are not reflected in the projections.

## 7.3 AEO2009 Reference Case FRCC Natural Gas and Coal Price Projections

The AEO2009 Reference Case forecast prices for natural gas and coal delivered to the FRCC region are presented in Table 7-1. The fuel price projections shown in Table 7-1 are presented in constant 2007 dollars per million British Thermal Units (MBtu). For the economic analysis presented in Section 12.0 of this Application, the fuel price projections were extrapolated beyond 2030, based on the average annual escalation rate in fuel prices for 2026 through 2030, and then converted to nominal dollars per MBtu by applying the 2.5 percent general inflation rate.

**Table 7-1**
**Annual Energy Outlook 2009 Reference Case Price Projections**
**Forecast of Natural Gas and Coal Delivered to the FRCC[1]**

| Year | Natural Gas (2007 $/MBtu) | Coal (2007 $/MBtu) |
|---|---|---|
| 2009 | 4.99 | 3.03 |
| 2010 | 5.61 | 2.75 |
| 2011 | 6.32 | 2.76 |
| 2012 | 6.99 | 2.66 |
| 2013 | 6.81 | 2.68 |
| 2014 | 7.05 | 2.67 |
| 2015 | 7.24 | 2.67 |
| 2016 | 7.44 | 2.68 |
| 2017 | 7.57 | 2.65 |
| 2018 | 7.74 | 2.60 |
| 2019 | 7.98 | 2.61 |
| 2020 | 8.18 | 2.61 |
| 2021 | 8.42 | 2.60 |
| 2022 | 8.54 | 2.60 |
| 2023 | 8.38 | 2.60 |
| 2014 | 8.40 | 2.61 |
| 2025 | 8.18 | 2.63 |
| 2026 | 8.28 | 2.65 |
| 2027 | 8.43 | 2.66 |
| 2028 | 8.74 | 2.66 |
| 2029 | 8.95 | 2.66 |
| 2030 | 9.19 | 2.67 |

[1] Based on data presented in Supplemental Table 79 to the AEO2009 Reference Case updated with provisions of the ARRA.

## 7.4 AEO2009 High and Low Price Case Natural Gas and Coal Price Projections

The AEO2009 includes various cases in addition to the Reference Case. Each of these cases incorporates various changes to the Reference Case assumptions. Of the various cases considered by the EIA as part of the AEO2009, two cases have been carried forward to the analyses considered in this Application in addition to the Reference Case – the High Price Case and the Low Price Case. Both the High Price Case and the Low Price Case rely on assumptions consistent with the Reference Case, with the exception of assumptions related to crude oil and natural gas resources. The High Price Case reflects more pessimistic assumptions related to these resources; the Low Price Case reflects more optimistic assumptions. Both the High Price Case and Low Price Case are fully integrated NEMS simulations, consistent with the Reference Case.

It should be noted that the additional cases provided by the EIA as part of the AEO2009 were not developed to reflect the provisions of the ARRA discussed previously in this section. As a result, the AEO2009 Reference Case published in March 2009 (which does not reflect provisions of ARRA) has been used to develop high and low price projections for purposes of this Application. To develop high fuel price projections, annual price differences between the March 2009 AEO Reference Case and High Price Case were calculated for natural gas and coal. Similarly, low price projections were developed by calculating annual price differences between the March 2009 AEO Reference Case and Low Price Case for natural gas and coal.

The following section discusses the methodology used to develop high and low fuel price projections specific to the FRCC.

## 7.5 FRCC High and Low Fuel Price Projections

The following subsections discuss the methodology used to develop the FRCC-specific high and low fuel price projections and present the resulting annual natural gas and coal price projections.

### *7.5.1 High and Low Fuel Price Projections for the FRCC*

***7.5.1.1 High and Low Natural Gas Prices.*** To develop natural gas price projections for the FRCC region based on the AEO2009 High Price Case, the March 2009 AEO Reference Case and High Price Case natural gas price projections were analyzed to determine the annual price differentials. These differentials were then added to the FRCC-specific natural gas price projections presented in Table 7-1.

To develop natural gas price projections for the FRCC region based on the AEO2009 Low Price Case, the March 2009 AEO Reference Case and Low Price Case natural gas price projections were analyzed to determine the annual price differentials. These differentials were then subtracted from the FRCC-specific natural gas price projections presented in Table 7-1.

The resulting high and low natural gas price projections specific to the FRCC region are presented in Table 7-2.

***7.5.1.2 High and Low Coal Prices.*** To develop coal price projections for the FRCC region based on the AEO2009 High Price Case, the March 2009 AEO Reference Case and High Price Case coal price projections were analyzed to determine the annual price differentials. These differentials were then added to the FRCC-specific coal gas price projections presented in Table 7-1.

To develop coal price projections for the FRCC region based on the AEO2009 Low Price Case, the March 2009 AEO Reference Case and Low Price Case coal price projections were analyzed to determine the annual price differentials. These differentials were then subtracted from the FRCC-specific coal price projections presented in Table 7-1.

The resulting high and low coal price projections specific to the FRCC region are presented in Table 7-2.

## 7.6 EIA Analysis of H.R. 2454

Several bills to regulate emissions of GHGs (including $CO_2$) have been proposed to the US Congress in recent years. In response to a request from Senators Henry A. Waxman and Edward J. Markey, the EIA developed an analysis entitled *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009,* which was published in August 2009. The following subsections discuss this analysis and summarize the conclusions EIA arrived at regarding projected $CO_2$ emissions allowance prices and associated impacts to the prices of natural gas and coal. Given that it is the most current comprehensive, fully integrated analysis of the leading proposed legislation to regulate $CO_2$ emissions (with the legislation having passed though the US House of Representatives on June 26, 2009), the EIA's analysis of H.R. 2454 was selected for consideration in this Application.

**Table 7-2**
**High and Low Case Price Projections**
**Forecast of Natural Gas and Coal Delivered to the FRCC**

| Year | Natural Gas (2007 $/MBtu) | | Coal (2007 $/MBtu) | |
|---|---|---|---|---|
| | High Price | Low Price | High Price | Low Price |
| 2009 | 4.99 | 4.99 | 3.03 | 3.03 |
| 2010 | 5.84 | 5.03 | 2.77 | 2.72 |
| 2011 | 6.57 | 5.65 | 2.78 | 2.72 |
| 2012 | 7.23 | 6.14 | 2.68 | 2.60 |
| 2013 | 7.16 | 5.98 | 2.71 | 2.62 |
| 2014 | 7.52 | 6.15 | 2.71 | 2.60 |
| 2015 | 7.85 | 6.32 | 2.73 | 2.62 |
| 2016 | 8.06 | 6.58 | 2.73 | 2.63 |
| 2017 | 8.23 | 6.73 | 2.70 | 2.60 |
| 2018 | 8.40 | 6.88 | 2.66 | 2.55 |
| 2019 | 8.50 | 7.15 | 2.67 | 2.56 |
| 2020 | 8.55 | 7.68 | 2.67 | 2.56 |
| 2021 | 8.68 | 8.29 | 2.66 | 2.55 |
| 2022 | 8.81 | 8.48 | 2.66 | 2.54 |
| 2023 | 8.82 | 8.22 | 2.66 | 2.54 |
| 2024 | 8.75 | 8.10 | 2.66 | 2.54 |
| 2025 | 8.47 | 7.79 | 2.68 | 2.56 |
| 2026 | 8.54 | 7.87 | 2.69 | 2.57 |
| 2027 | 8.62 | 7.96 | 2.70 | 2.58 |
| 2028 | 8.98 | 8.34 | 2.70 | 2.58 |
| 2029 | 9.28 | 8.57 | 2.70 | 2.58 |
| 2030 | 9.55 | 8.64 | 2.71 | 2.58 |

### 7.6.1 EIA Analysis of H.R. 2454 – Overview and Summary of Results[2]

In developing its analysis of H.R. 2454, the EIA ran each of the policy cases described below through its integrated NEMS program. NEMS is developed and maintained by the EIA's Office of Integrated Analysis and Forecasting to provide projections of domestic energy-economy markets in the long term and perform policy analyses requested by decision makers in various US government agencies (including the White House, Congress, and offices within the US Department of Energy, among others). NEMS is the modeling tool used by the EIA in developing its AEO2009. For the H.R. 2454 analysis the EIA made adjustments to the AEO2009 Reference Case (updated in April 2009 to reflect the provision of the ARRA) that are delineated in Appendix B of the *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009.*

The use of NEMS allows for a fully integrated analysis of potential GHG emissions allowance prices and energy demand. As stated in the EIA's analysis of H.R. 2454:

> **NEMS endogenously calculates changes in energy-related $CO_2$ emissions in the analysis cases. The cost of using each fossil fuel includes the costs associated with the GHG allowances needed to cover the emissions produced when they are used. These adjustments influence energy demand and energy-related $CO_2$ emissions. The GHG allowance price also determines the reductions in projected baseline emissions of other GHGs based on assumed abatement cost relationships. With emission allowance banking, NEMS solves for the time path of permit prices such that cumulative emissions match the cumulative emissions target with price escalation consistent with the average cost of capital to the electric power sector.**

The EIA analysis of H.R. 2454 includes various policy cases and projections of associated $CO_2$ emissions allowance prices. The policy cases considered by the EIA in the analysis of H.R. 2454 (which the EIA refers to as ACESA [American Clean Energy and Security Act]) are described as follows:

- **ACESA Basic Case**--Represents an environment where key low emissions technologies (nuclear, fossil with carbon capture and sequestration [CCS], and various renewables]) are developed and deployed on a large scale in a timeframe consistent with the emissions

[2] Refer to *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009* for additional detail regarding the various policy cases and the analysis as a whole.

reduction requirements of ACESA without encountering any major obstacles.

- **ACESA Zero Bank Case**--Similar to the ACESA Basic Case, but it assumes that there is no accumulation of excess allowances for use beyond 2030.
- **ACESA High Offsets Case**--Similar to the ACESA Basic Case except it assumes that covered entities use the maximum allowable amount of international offsets beginning in 2012.
- **ACESA High Cost Case**--Similar to the ACESA Basic Case except the costs of nuclear, fossil with CCS, and biomass generating technologies are assumed to be 50 percent higher.
- **ACESA No International Case**--Similar to the ACESA Basic Case, but it represents an environment in which the use of international offsets is severely limited by cost, regulation, and/or slow progress in reaching international agreements or arrangements covering offsets in key countries and sectors.
- **ACESA No International/Limited Case**--Combines the treatment of offsets in the ACESA No International Case with an assumption that the deployment of key technologies, including nuclear, fossil with CCS, and biomass, cannot expand beyond their Reference Case levels beyond 2030.
- **ACESA High Tech Case**--Similar to the ACESA Basic Case except that it incorporates more aggressive assumptions about technological improvements and their role in reducing GHG emissions.
- **ACESA Low Discount Case**--Similar to the ACESA Basic Case except that it assumes a 5 percent discount rate for allowance banking decisions.
- **ACESA 35CAFE2016 Case**--Similar to the ACESA Basic Case except that it also incorporates an accelerated schedule for raising the combined fuel economy standards for cars and light trucks to 35 miles per gallon in 2016.
- **ACESA High Banking Case**--Similar to the ACESA Basic Case, but it assumes that a greater level of allowances is banked.
- **ACESA Limited Alternatives Case**--Represents an environment in which the deployment of key technologies, including nuclear, fossil with CCS, and biomass, is limited to Reference Case levels.

The following tables and figures summarize the results of the evaluations of the 11 policy cases considered by the EIA in its analysis of H.R. 2454. Tables 7-3 and 7-4 present projections of annual natural gas and coal prices, respectively, as well as the corresponding annual price projections presented in the AEO2009 Reference Case. The annual natural gas price projections are presented in constant 2007 dollars per MBtu for pricing at Henry Hub, and the annual coal price projections are presented in constant 2007 dollars per MBtu for average minemouth prices. Annual natural gas and coal price projections are presented beginning in 2012, which is the initial year of $CO_2$ emissions regulations contemplated in H.R. 2454. Table 7-5 presents projections of annual $CO_2$ emissions allowance prices for each of the 11 policy cases, in constant 2007 dollars per metric ton $CO_2$ equivalent, beginning in 2012. Figure 7-1 through Figure 7-3 present graphical depictions of the data in Tables 7-3 through 7-5, respectively. Analysis of Tables 7-3 through 7-5 (supplemented by Figures 7-1 through 7-3) shows that projected impacts on natural gas prices and corresponding $CO_2$ emissions allowance price projections differ depending on the policy cases considered in the EIA analysis of H.R. 2454.

**Table 7-3**
**Natural Gas Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454**
**(2007 $/MBtu – Henry Hub)**

| Year | AEO 2009 Reference Case[1] | H.R. 2454 Basic | H.R. 2454 Zero Bank | H.R. 2454 High Offsets | H.R. 2454 High Cost | H.R. 2454 No Int Offsets | H.R. 2454 No Int Offsets/ Lim Alt | H.R. 2454 Accelerated CAFE | H.R. 2454 Low Discount | H.R. 2454 Lim Alt | H.R. 2454 High Tech | H.R. 2454 High Bank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | 5.60 | 5.75 | 5.67 | 5.68 | 5.75 | 5.65 | 6.32 | 5.71 | 5.73 | 5.63 | 5.66 | 5.52 |
| 2013 | 5.74 | 5.97 | 5.83 | 5.84 | 5.98 | 5.77 | 6.66 | 5.94 | 5.98 | 5.87 | 5.88 | 5.70 |
| 2014 | 5.92 | 6.13 | 5.97 | 5.98 | 6.13 | 5.90 | 7.03 | 6.11 | 6.17 | 6.04 | 5.99 | 5.85 |
| 2015 | 6.16 | 6.40 | 6.21 | 6.22 | 6.43 | 6.38 | 7.78 | 6.36 | 6.45 | 6.34 | 6.20 | 6.22 |
| 2016 | 6.38 | 6.60 | 6.41 | 6.44 | 6.63 | 6.67 | 8.02 | 6.55 | 6.66 | 6.55 | 6.32 | 6.40 |
| 2017 | 6.60 | 6.72 | 6.58 | 6.58 | 6.81 | 6.83 | 8.23 | 6.68 | 6.81 | 6.76 | 6.40 | 6.53 |
| 2018 | 6.82 | 6.81 | 6.72 | 6.75 | 6.97 | 6.87 | 8.45 | 6.74 | 6.88 | 6.94 | 6.48 | 6.62 |
| 2019 | 7.12 | 6.90 | 6.92 | 6.94 | 7.14 | 6.93 | 8.57 | 6.83 | 7.03 | 7.12 | 6.59 | 6.70 |
| 2020 | 7.47 | 7.05 | 7.11 | 7.14 | 7.34 | 7.08 | 8.66 | 7.00 | 6.95 | 7.37 | 6.83 | 6.90 |
| 2021 | 7.72 | 6.89 | 7.01 | 7.02 | 7.22 | 6.88 | 8.47 | 6.87 | 6.77 | 7.30 | 6.66 | 6.75 |
| 2022 | 7.74 | 6.73 | 6.85 | 6.87 | 7.13 | 6.69 | 8.56 | 6.71 | 6.83 | 7.26 | 6.52 | 6.67 |
| 2023 | 7.55 | 6.68 | 6.83 | 6.86 | 7.15 | 6.68 | 8.61 | 6.66 | 6.87 | 7.36 | 6.50 | 6.62 |
| 2024 | 7.56 | 6.69 | 6.90 | 6.94 | 7.20 | 6.76 | 8.49 | 6.67 | 6.93 | 7.47 | 6.49 | 6.59 |
| 2025 | 7.51 | 6.62 | 6.90 | 6.91 | 7.22 | 6.75 | 8.37 | 6.60 | 6.85 | 7.53 | 6.46 | 6.53 |
| 2026 | 7.64 | 6.69 | 6.92 | 6.96 | 7.37 | 6.76 | 8.59 | 6.66 | 6.89 | 7.65 | 6.37 | 6.59 |
| 2027 | 7.92 | 6.78 | 7.02 | 7.01 | 7.49 | 6.87 | 8.72 | 6.76 | 6.96 | 7.87 | 6.41 | 6.68 |
| 2028 | 8.29 | 7.00 | 7.12 | 7.14 | 7.72 | 7.00 | 8.75 | 6.98 | 7.13 | 8.19 | 6.57 | 6.87 |
| 2029 | 8.54 | 7.21 | 7.32 | 7.32 | 7.97 | 7.21 | 8.75 | 7.18 | 7.30 | 8.51 | 6.84 | 7.14 |
| 2030 | 8.83 | 7.36 | 7.39 | 7.34 | 8.13 | 7.28 | 8.78 | 7.37 | 7.35 | 8.78 | 7.11 | 7.35 |

[1] April 2009 update of AEO2009 reflecting ARRA provisions, as described previously in Section 7.0 of this Application.

**Table 7-4**
**Coal Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454**
**(2007 $/MBtu – Average Minemouth)**

| Year | AEO 2009 Reference Case[1] | H.R. 2454 Basic | H.R. 2454 Zero Bank | H.R. 2454 High Offsets | H.R. 2454 High Cost | H.R. 2454 No Int Offsets | H.R. 2454 No Int Offsets/ Lim Alt | H.R. 2454 Accelerated CAFE | H.R. 2454 Low Discount | H.R. 2454 Lim Alt | H.R. 2454 High Tech | H.R. 2454 High Bank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | 1.37 | 1.35 | 1.35 | 1.36 | 1.35 | 1.36 | 1.42 | 1.36 | 1.35 | 1.36 | 1.35 | 1.35 |
| 2013 | 1.37 | 1.35 | 1.36 | 1.36 | 1.35 | 1.30 | 1.40 | 1.35 | 1.35 | 1.36 | 1.35 | 1.35 |
| 2014 | 1.38 | 1.35 | 1.36 | 1.36 | 1.34 | 1.32 | 1.40 | 1.35 | 1.34 | 1.36 | 1.35 | 1.35 |
| 2015 | 1.38 | 1.35 | 1.37 | 1.36 | 1.35 | 1.34 | 1.36 | 1.35 | 1.35 | 1.37 | 1.35 | 1.34 |
| 2016 | 1.38 | 1.34 | 1.36 | 1.36 | 1.34 | 1.34 | 1.36 | 1.34 | 1.34 | 1.37 | 1.34 | 1.34 |
| 2017 | 1.38 | 1.33 | 1.36 | 1.36 | 1.33 | 1.34 | 1.35 | 1.33 | 1.34 | 1.36 | 1.33 | 1.34 |
| 2018 | 1.38 | 1.34 | 1.36 | 1.35 | 1.33 | 1.31 | 1.33 | 1.34 | 1.35 | 1.36 | 1.33 | 1.34 |
| 2019 | 1.37 | 1.34 | 1.35 | 1.34 | 1.32 | 1.31 | 1.32 | 1.34 | 1.34 | 1.36 | 1.34 | 1.35 |
| 2020 | 1.37 | 1.36 | 1.34 | 1.34 | 1.33 | 1.33 | 1.33 | 1.36 | 1.35 | 1.37 | 1.34 | 1.37 |
| 2021 | 1.38 | 1.37 | 1.36 | 1.35 | 1.35 | 1.33 | 1.36 | 1.38 | 1.36 | 1.38 | 1.36 | 1.38 |
| 2022 | 1.38 | 1.39 | 1.36 | 1.36 | 1.34 | 1.33 | 1.38 | 1.39 | 1.37 | 1.39 | 1.37 | 1.37 |
| 2023 | 1.38 | 1.39 | 1.37 | 1.37 | 1.34 | 1.32 | 1.39 | 1.39 | 1.37 | 1.39 | 1.37 | 1.38 |
| 2024 | 1.39 | 1.39 | 1.38 | 1.37 | 1.34 | 1.34 | 1.37 | 1.39 | 1.38 | 1.38 | 1.37 | 1.37 |
| 2025 | 1.39 | 1.38 | 1.38 | 1.39 | 1.35 | 1.34 | 1.35 | 1.37 | 1.38 | 1.37 | 1.36 | 1.35 |
| 2026 | 1.39 | 1.36 | 1.38 | 1.38 | 1.35 | 1.34 | 1.35 | 1.37 | 1.38 | 1.35 | 1.34 | 1.34 |
| 2027 | 1.39 | 1.36 | 1.37 | 1.37 | 1.34 | 1.33 | 1.36 | 1.35 | 1.38 | 1.33 | 1.33 | 1.32 |
| 2028 | 1.39 | 1.35 | 1.36 | 1.37 | 1.35 | 1.34 | 1.39 | 1.35 | 1.37 | 1.32 | 1.31 | 1.31 |
| 2029 | 1.40 | 1.33 | 1.36 | 1.36 | 1.35 | 1.34 | 1.38 | 1.33 | 1.36 | 1.31 | 1.29 | 1.27 |
| 2030 | 1.40 | 1.30 | 1.36 | 1.36 | 1.34 | 1.32 | 1.45 | 1.30 | 1.35 | 1.29 | 1.27 | 1.23 |

[1] April 2009 update of AEO2009 reflecting ARRA provisions, as described previously in Section 7.0 of this Application.

**Table 7-5**
**EIA Projections of $CO_2$ Emissions Allowance Prices per Analysis of H.R. 2454**
**(2007 $/metric ton)**

| Year | H.R. 2454 Basic | H.R. 2454 Zero Bank | H.R. 2454 High Offsets | H.R. 2454 High Cost | H.R. 2454 No Int Offsets | H.R. 2454 No Int Offsets/ Lim Alt | H.R. 2454 Accelerated CAFE | H.R. 2454 Low Discount | H.R. 2454 Lim Alt | H.R. 2454 High Tech | H.R. 2454 High Bank |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | 17.93 | 11.23 | 11.59 | 19.98 | 29.42 | 52.71 | 17.80 | 22.86 | 20.53 | 15.70 | 20.56 |
| 2013 | 19.26 | 12.06 | 12.45 | 21.46 | 31.60 | 56.61 | 19.12 | 24.00 | 22.05 | 16.87 | 22.08 |
| 2014 | 20.69 | 12.96 | 13.37 | 23.05 | 33.94 | 60.80 | 20.53 | 25.20 | 23.68 | 18.12 | 23.71 |
| 2015 | 22.22 | 13.91 | 14.36 | 24.76 | 36.45 | 65.30 | 22.05 | 26.46 | 25.44 | 19.46 | 25.46 |
| 2016 | 23.86 | 14.94 | 15.42 | 26.59 | 39.15 | 70.13 | 23.68 | 27.78 | 27.32 | 20.90 | 27.35 |
| 2017 | 25.63 | 16.05 | 16.56 | 28.56 | 42.04 | 75.32 | 25.43 | 29.17 | 29.34 | 22.44 | 29.37 |
| 2018 | 27.52 | 17.24 | 17.79 | 30.67 | 45.15 | 80.89 | 27.31 | 30.63 | 31.51 | 24.10 | 31.55 |
| 2019 | 29.56 | 18.51 | 19.11 | 32.94 | 48.50 | 86.88 | 29.34 | 32.16 | 33.84 | 25.89 | 33.88 |
| 2020 | 31.75 | 19.88 | 20.52 | 35.37 | 52.08 | 93.30 | 31.51 | 33.77 | 36.35 | 27.80 | 36.39 |
| 2021 | 34.10 | 21.35 | 22.04 | 37.99 | 55.94 | 100.21 | 33.84 | 35.46 | 39.04 | 29.86 | 39.08 |
| 2022 | 36.62 | 22.94 | 23.67 | 40.80 | 60.08 | 107.62 | 36.34 | 37.23 | 41.93 | 32.07 | 41.97 |
| 2023 | 39.33 | 24.63 | 25.42 | 43.82 | 64.52 | 115.59 | 39.03 | 39.09 | 45.03 | 34.44 | 45.08 |
| 2024 | 42.24 | 26.46 | 27.30 | 47.07 | 69.30 | 124.14 | 41.92 | 41.04 | 48.36 | 36.99 | 48.41 |
| 2025 | 45.37 | 28.41 | 29.32 | 50.55 | 74.43 | 133.33 | 45.02 | 43.10 | 51.94 | 39.73 | 52.00 |
| 2026 | 48.73 | 30.52 | 31.49 | 54.29 | 79.93 | 143.20 | 48.35 | 45.25 | 55.78 | 42.67 | 55.84 |
| 2027 | 52.33 | 32.77 | 33.82 | 58.31 | 85.85 | 153.79 | 51.93 | 47.51 | 59.91 | 45.82 | 59.98 |
| 2028 | 56.20 | 35.20 | 36.32 | 62.62 | 92.20 | 165.17 | 55.78 | 49.89 | 64.35 | 49.22 | 64.42 |
| 2029 | 60.36 | 37.80 | 39.01 | 67.26 | 99.02 | 177.40 | 59.90 | 52.38 | 69.11 | 52.86 | 69.18 |
| 2030 | 64.83 | 40.60 | 41.90 | 72.23 | 106.35 | 190.52 | 64.34 | 55.00 | 74.22 | 56.77 | 74.30 |

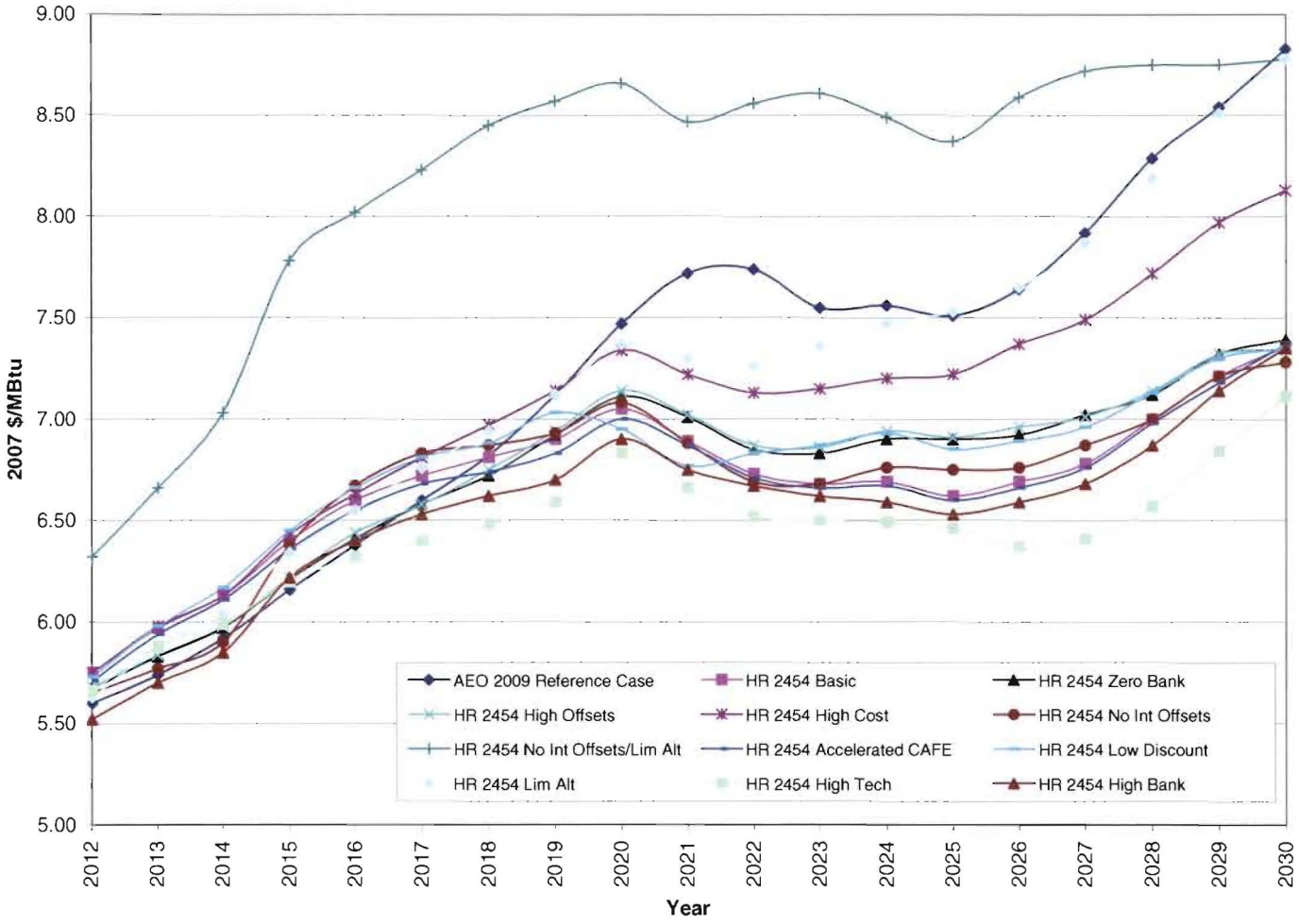



**Figure 7-1**
**Natural Gas Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454**
**(2007 $/MBtu – Henry Hub)**

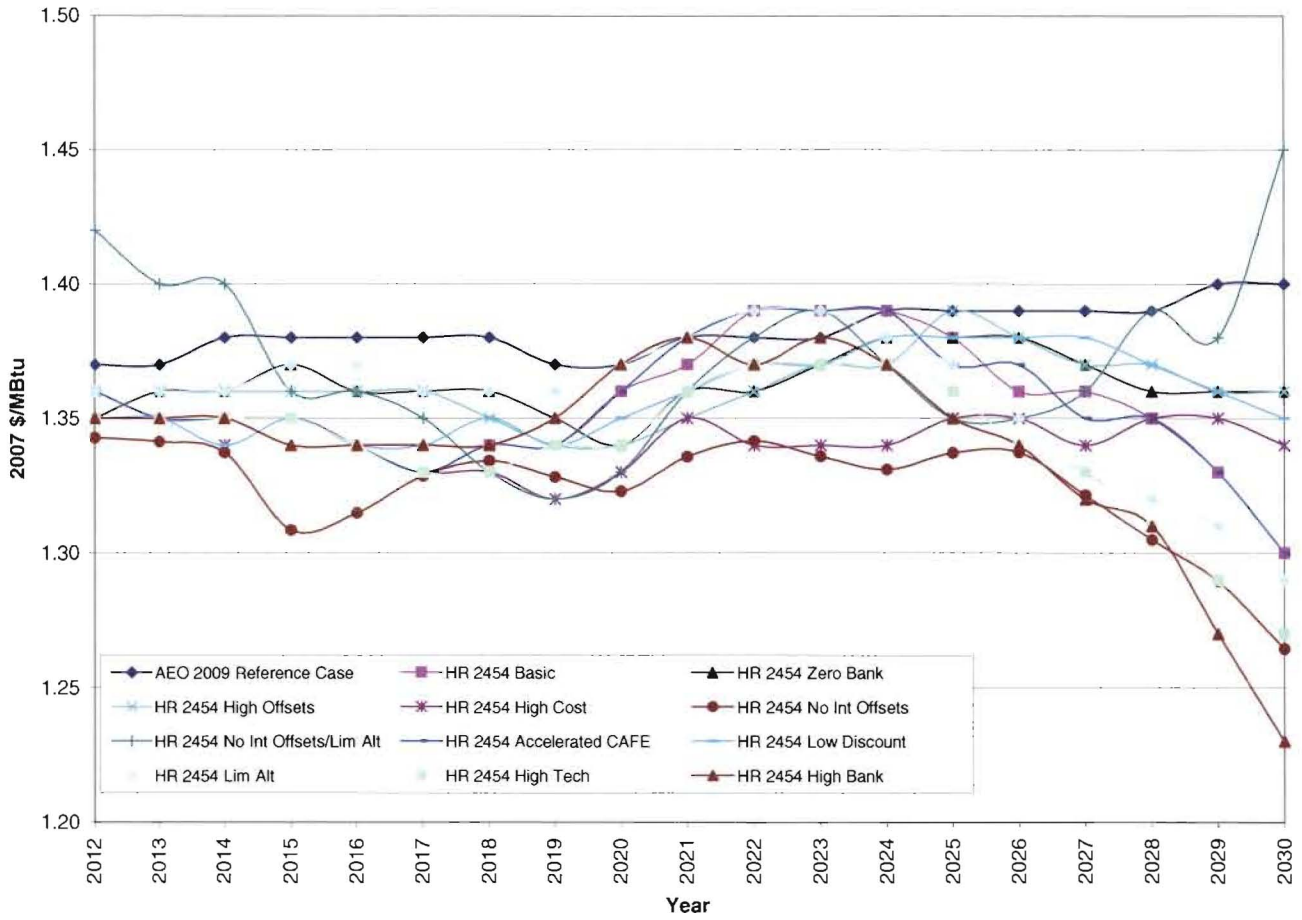



**Figure 7-2**
**Coal Price Projections for AEO2009 Reference Case and EIA Analysis of H.R. 2454**
**(2007 $/MBtu – Average Minemouth)**

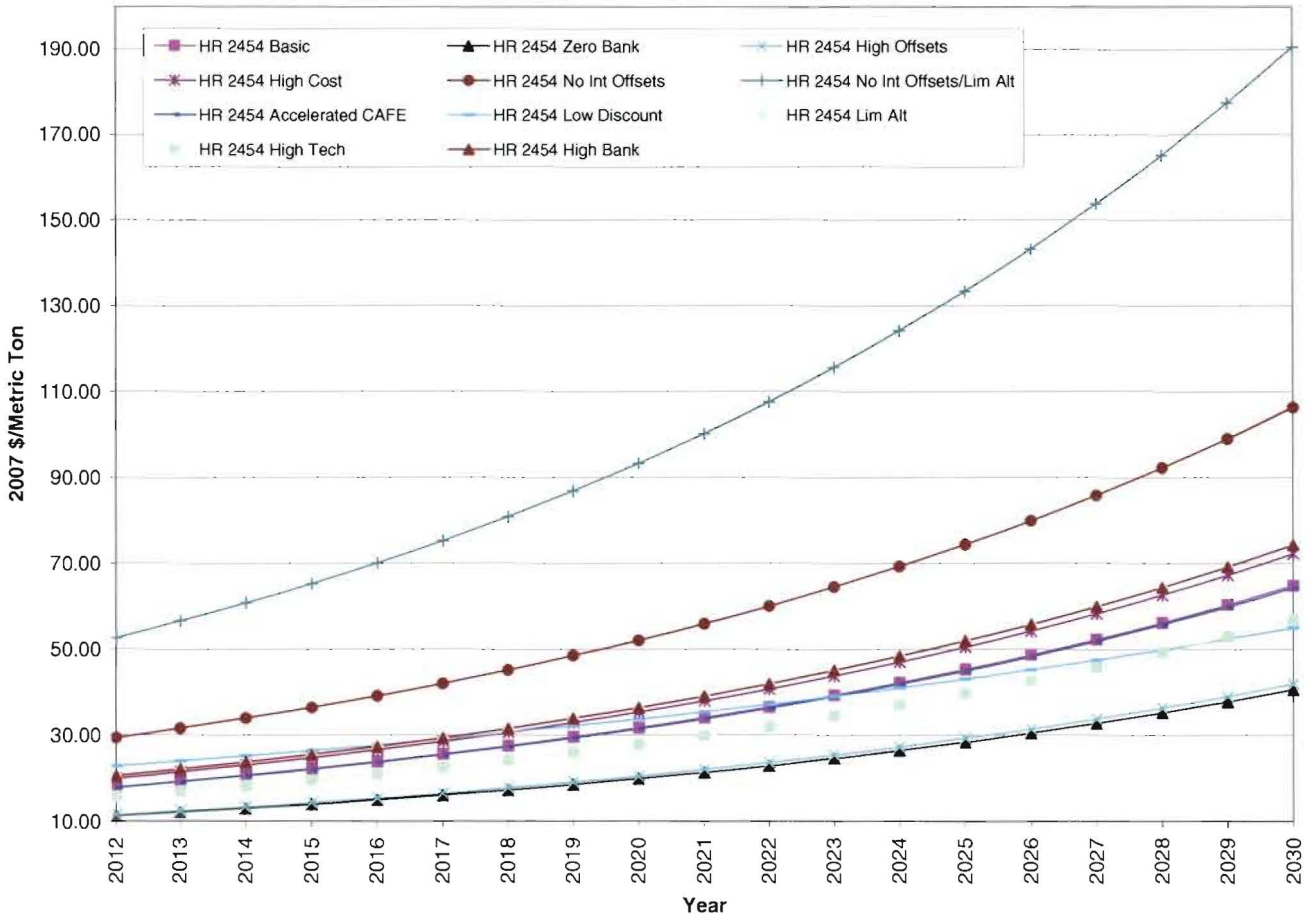



**Figure 7-3**
**$CO_2$ Emissions Allowance Price Projections per EIA Analysis of H.R. 2454**
**(2007 $/Metric Ton)**

## 7.7 Consideration of EIA Analysis of H.R. 2454

As discussed in Section 7.6, the *American Clean Energy and Security Act of 2009* has passed though the US House of Representatives. The EIA's analysis of H.R. 2454 included projections of natural gas and coal prices, along with projected prices for $CO_2$ emissions, for 11 policy cases involving different assumptions related to the structure of how H.R. 2454 may be implemented if ultimately enacted. The fuel price projections, as well as the $CO_2$ emissions allowance price projections, for each of the 11 policy cases are presented throughout Section 7.6.

Of the 11 policy cases evaluated by the EIA in its analysis of H.R. 2454, two were selected for further evaluation in this Application for the following reasons:

- The EIA considers the H.R. 2454 Basic Case as being representative of an environment where key low emissions technologies (nuclear, fossil with carbon capture and sequestration [CCS], and various renewables) are developed and deployed on a large scale in a time frame consistent with the emissions reduction requirements of ACESA without encountering any major obstacles. Additionally, the impact on natural gas and coal price projections, along with the resulting projections of $CO_2$ emissions allowance prices, for the H.R. 2454 Basic Case are bracketed by the 10 other policy cases. For these reasons, the H.R. 2454 Basic Case was selected for further analysis in this Application.
- The impacts on natural gas and coal price projections, along with the resulting projections of $CO_2$ emissions allowance prices, are most pronounced in the H.R. 2454 No International/Limited Case. Therefore, this case was selected for a high $CO_2$ price case for further evaluation in this Application.

### *7.7.1 H.R. 2454 Fuel Price Projections for the FRCC*

To develop natural gas and coal price projections for the FRCC region based on the EIA's analysis of H.R. 2454, the April 2009 AEO Reference Case and the price projections described earlier in this section from the EIA's analysis of H.R. 2454 were analyzed to determine the annual price differentials. These differentials were then added to the FRCC-specific natural gas price projections presented in Table 7-1.

The resulting natural gas and coal price projections specific to the FRCC region reflecting the EIA's analysis of H.R. 2454 are presented in Table 7-6.

**Table 7-6**
**H.R. 2454 Fuel Price Projections**
**Forecast of Natural Gas and Coal Delivered to the FRCC**

| Year | Natural Gas (2007 $/MBtu) | | Coal (2007 $/MBtu) | |
|---|---|---|---|---|
| | H.R. 2454 Basic Case | H.R. 2454 No International/ Limited Alternatives | H.R. 2454 Basic Case | H.R. 2454 No International/ Limited Alternatives |
| 2012 | 7.14 | 7.71 | 2.64 | 2.72 |
| 2013 | 7.04 | 7.73 | 2.66 | 2.71 |
| 2014 | 7.26 | 8.16 | 2.63 | 2.68 |
| 2015 | 7.48 | 8.86 | 2.63 | 2.65 |
| 2016 | 7.66 | 9.09 | 2.64 | 2.65 |
| 2017 | 7.70 | 9.20 | 2.60 | 2.62 |
| 2018 | 7.73 | 9.37 | 2.56 | 2.55 |
| 2019 | 7.77 | 9.44 | 2.58 | 2.56 |
| 2020 | 7.76 | 9.36 | 2.60 | 2.56 |
| 2021 | 7.59 | 9.17 | 2.60 | 2.59 |
| 2022 | 7.53 | 9.36 | 2.60 | 2.59 |
| 2023 | 7.51 | 9.44 | 2.61 | 2.61 |
| 2024 | 7.53 | 9.33 | 2.62 | 2.59 |
| 2025 | 7.29 | 9.03 | 2.62 | 2.60 |
| 2026 | 7.33 | 9.22 | 2.62 | 2.61 |
| 2027 | 7.29 | 9.23 | 2.62 | 2.63 |
| 2028 | 7.46 | 9.21 | 2.62 | 2.66 |
| 2029 | 7.61 | 9.16 | 2.60 | 2.64 |
| 2030 | 7.72 | 9.14 | 2.57 | 2.72 |

# 8.0 GRU Resource Planning Process

The purpose of this section is to provide the Florida Public Service Commission with a sense of the extensiveness and depth of the IRP studies and the public participation and City Commission deliberations that have culminated in GRU's decision to pursue its PPA from the proposed GREC biomass facility.

## 8.1 Summary of Recent Activities

Load and energy forecasts developed early in 2003 indicated that GRU would need additional baseload capacity by 2011, which was not too soon to begin considering alternatives with long lead times, especially solid fuel alternatives. The ensuing community discussion was extensive and in-depth, and included evaluations of nearly every demand and supply resource alternative; analysis and simulations of local air quality; and consideration of climate change trends. The entire process led to at least eight major policy decisions that resulted in the decision to proceed with the GREC. These policy decisions included the following:

1. Electric rate designs intended to promote energy conservation.
2. Adoption of the total resource cost (TRC) test for DSM planning.
3. Adoption of a DSM plan that would reduce load growth by 60 percent.
4. Commitment to the goal of meeting the Kyoto Protocol.
5. Exclusion of coal and petroleum coke as fuel sources for additional new capacity.
6. Consideration of PPAs in lieu of self-built generation facilities.
7. Energy efficient combined heat and power (CHP) distributed generation.
8. Implementation of the first utility European style solar FIT in the USA.

The combined effect of the DSM programs, the addition of 7.1 MW of generation from CHP and landfill gas to energy projects, the ongoing addition of 4 MW per year of solar PV capacity through the solar FIT, and the effects of the recent economic downturn have delayed the need for additional generation capacity to meet planning reserve margin criteria (15 percent) until 2023.

Reserve margins are not the only criterion for additional generation capacity. The cost to produce electricity, the age and reliability of the units, and other economic and environmental factors are additional criteria to consider. GRU's most economical and largest unit, the coal fired Deerhaven Unit 2, is 28 years old, and any unplanned outage imposes significant replacement power costs on GRU's rate payers. One third of GRU's generating resources, including its other intermediate load steam plant, are older gas fired units with relatively poor heat rates and an average age of 38 years. The GREC will provide a long-term, economic, baseload generating resource, and will also help offset the cost of Deerhaven Unit 2 outages and volatile fuel prices. Furthermore, the GREC will not only help Gainesville meet its policy objectives for reducing GHGs, it will also provide a significant hedge against the costs of any forthcoming regulations mandating renewable portfolio standards or any form of carbon constraint.

## 8.2 Public Participation and Policy Directives

The IRP process culminating in this request for a Determination of Need for the proposed GREC was launched by the City Commission's September 2002 authorization for GRU to participate in a joint planning study with consumer owned utilities in Florida to investigate solid fuel alternatives. A wide ranging public participation component was added to the IRP process, with a public participation program sponsored by the Gainesville Energy Advisory Committee (GEAC) in the summer and fall of 2003. The GEAC is a standing citizen's advisory committee created by ordinance, whose members are appointed by the City Commission. This public participation was ongoing through May 2009, at which point the PPA with GREC LLC was approved unanimously by the City Commission. To date, there have been more than 43 community workshops and formal presentations to policymakers, including the GEAC, the City Commission's Regional Utilities Committee (RUC), the Alachua County Board of County Commissioners, and 27 televised City Commission meetings dedicated to Gainesville's long-term energy supply strategy. In addition, there have been several dozen less formal meetings with civic groups throughout the community.

Table 8-1 provides a timeline of significant milestones in the process described previously.

**Table 8-1**
**Public Participation Timeline**

| Date | Milestone |
|---|---|
| Sep 23, 2002 | The City Commission authorizes participation in a joint study of solid fuel generation feasibility with FMPA, Seminole, JEA, OUC, and Reedy Creek Utilities. |
| Summer, Fall 2003 | GEAC sponsors six workshops at various city locations to solicit ideas and input on DSM programs and generation alternatives. |
| Dec 15, 2003 | A formal IRP study entitled *Alternatives For Meeting Gainesville's Electrical Requirements Through 2022: Base Study And Preliminary Findings* is presented to the City Commission |
| Jan 31, 2005 | Staff recommends to City Commission to proceed with a 240 MW circulating fluidized bed (CFB), with capability to burn up to 30 MW of biomass |
| Jun 14, 2005 | Staff is authorized to solicit an independent study of DSM potential and IRP analysis of selected generation expansion plans. |
| Jun 27, 2005 | Gainesville signs the Mayors' Climate Protection Agreement with an objective of meeting the Kyoto Protocol for GHG reduction. |
| Apr 12, 2006 | The TRC test for DSM planning and ICF and GDS recommendation for "All Source Solicitation" is approved. |
| Aug 21, 2006 | The budget is approved for a DSM plan to reduce load growth by 60 percent (since re-approved). |
| Jun 18, 2007 | After the results of the "All Source Solicitation" are presented, a decision is made not to pursue coal or petroleum coke and to consider PPAs in addition to ownership options |
| Summer 2007 | University of Florida School of Forest Resources performs biomass fuel study. |
| Oct 8, 2007 | A two step process for biomass solicitation is initiated. |
| Jan 28, 2008 | Biomass proposals are evaluated and short listed to three. |
| May 12, 2008 | American Renewables (previously Nacogdoches Power) proposal for 100 MW net fluidized bed biomass facility is selected (now named GREC). |
| Summer, Fall 2008 | Consideration and eventual decline of opportunity for minority participation in PEF's proposed nuclear facility to be located in Levy County. |
| Apr 16, 2009 | The Forest Stewardship Incentive Plan is approved. |
| May 7, 2009 | The City Commission approves the PPA with GREC, LLC. |

## 8.3 Alternative Evaluations

The IRP studies throughout the process described previously ranged from technology feasibility screening studies and busbar comparisons to full blown generation optimization studies using the Electric Power Research Institute (EPRI) *Electrical Generation Expansion Analysis System (EGEAS).* Table 8-2 summarizes the alternatives considered through the period 2003 and 2004. Table 8-3 summarizes the alternatives evaluated through the period 2005 through 2009. The first column in Table 8-3 summarizes the alternatives evaluated using generation optimization software, specifically EGEAS.

The concern and commitment of the City Commission to managing GHG emissions led to a vote to join the Mayors' Climate Protection Agreement in June 2005. As part of that initiative, GRU conducted a carbon inventory, and the decision was made to define the system for which carbon was being managed to the City of Gainesville's operations, which included electric, natural gas, water, and wastewater utilities serving the entire Gainesville community, as well as traffic, recreation, police, fire, and public works.

### *8.3.1 Conservation Cost-Effectiveness Criteria Policy*

Independent studies and reviews of GRU's EGEAS work were conducted by R.W. Beck, ICF Consulting (ICF), and GDS Associates (GDS). The substantial difference in DSM potential resulting from the application of the TRC test, instead of the rate impact measure (RIM) test, was clarified by ICF's DSM potential study. The TRC test for DSM planning was adopted by the City Commission in April 2006. As a result of the input from these consultants and the ongoing discussion about the relative merits of various technologies to manage air emissions, such as gasification, integrated gasification combined cycle (IGCC), and plasma arc, an "All Source Solicitation" was issued in 2006 as a way to garner information on state-of-the-art power generation.

# Table 8-2
# Electric Generation Alternatives Considered
# Preliminary Work in 2003

Source: Technology Assessment Generation (TAG) Guide, an EPRI Product
with Updates Provided by Black & Veatch

**A. Coal - Fueled Technologies**

1. Pulverized Coal (PC)
   - o Conventional PC
     - Subcritical - Regenerable FGD
     - Subcritical - Spray Dryer FGD, PRB Coal
     - Subcritical - Wet Limestone FGD
     - Supercritical - Wet Limestone FGD
   - o Advanced PC
     - Supercritical - State of the Art Power Plant
       - * Advanced Limestone FGD
       - * Spray Dryer FGD, PRB Coal

2. Fluidized Bed Combustion (FBC)
   - o Atmospheric FBC
     - Bubbling Bed
     - Circulating Bed
     - Bubbling Bed, PRB Coal
     - Circulating Bed, PRB Coal
   - o Pressurized FBC
     - Combined Cycle
     - Turbocharged-Circulating Bed
     - Turbocharged-Bubbling Bed

3. Coal Gasification
   - o Integrated-Gasification-Combined-Cycle
   - o Non-Integrated-Gasification-Combine-Cycle
     - GCC on One Site
     - GCC with Gas Plant at Second Site

**B. Nuclear Technology**

4. Pressurized Vessel

5. Boiling Water Reactor

6. Advanced Design

7. Breeder Reactor

**C. Liquid/Gas - Fueled Technologies**

8. Combustion Turbine
   - o Distilled Fuel
     - Conventional
     - Advanced
   - o Natural Gas Fuel
     - Conventional
     - Advanced
   - o Steam Injected
     - 50 MW
     - 150 MW

9. Combustion Turbine - Combined Cycle (CT-CC)
   - o Distilled Fuel
     - Conventional
     - Advanced, Reheat Steam Cycle
   - o Natural Gas Fuel
     - Conventional
     - Advanced, Reheat Steam Cycle

10. Fuel Cells
    - o Phosphoric Acid
      - First gen. Dispersed
      - Second gen. Dispersed
      - Second gen. Central Dispersed
    - o Molten Carbonate - First Gen. Dispersed

**D. Renewable Resource Plants**

11. Geothermal
    - o Binary Plant
    - o Dry Steam Plant

12. Solar Energy Conversion
    - o Solar - Thermal
      - Parabolic Trough/Gas Hybrid
    - o Solar Photovoltaic Central Station
      - Flat Plate
      - High Concentration

13. Wind Turbines
    - High Production Volume

14. Biomass Technologies
    - o Stoker
    - o CFB
    - o Gasifier

15. Municipal Solid Waste
    - o Mass Burn
    - o Refuse-Derived Fuel

**E. Partnerships**

16. Confidentiality Agreements with Each Company
    - o Single Combined Cycle EA class GE, 115 MW
    - o Double Combined Cycle F class GE, 450 MW
    - o Combined Cycle G class Westinghouse, 347 MW
    - o Combined Cycle H class GE, 370 MW

**F. Purchases**

17. Confidentiality Agreements with Each Company
    - o Single Combined Cycle F class GE
    - o Double Combined Cycle F class GE
    - o Combined Cycle G class Westinghouse
    - o Combined Cycle H class GE
    - o Pressurized Circulating Fluidized Bed

**Table 8-3**
**Generation Alternatives Considered (2005-2009)**

| IRP Generator Data - Future Options (vintage September 2005) | Request For Letters of Interest + Others (vintage May 2007) | RFP for Biomass Fueled Generation Facility (Responses Received Dec. 14, 2007) | Binding Proposals for Biomass Plant (Responses Received April 11, 2008) |
|---|---|---|---|
| GreenWave DLC | GRU Self Build 50 MW BFB/STG | Covanta Energy Corporation | Covanta Energy Corporation |
| Photovoltaic | GRU Self Build 100 MW BFB/STG | Envortus Inc. | Nacogdoches Power, LLC |
| GE 7EA SCCT | Allied SynGas Corporation 86.7 - 248 MW British Gas/Lurgi/3 gasifiers/ 2-90 MW CTs/2 HRSG w duct firing/ 125MW STG | Green Power Systems | Sterling Planet |
| Merchant GE 7EA SCCT | Biomass Gas & Electric 75 MW Pyrolysis/CC (GE F6) | Horizon Energy Systems | |
| GE 7FA SCCT | Celunol production of ethanol using waste heat and biomass | Kreb & Sisler | |
| Merchant GE 7FA SCCT | CQ Incorporated 22 MW BFB/STG | Nacogdoches Power, LLC | |
| GE 7EA CCCT | Econo-Power International Corporation | NRG Energy Inc. | |
| Merchant GE 7EA CCCT | Florida Renewable Resource Conservation and Development Council: 78 MW Harvest and Delivery of Woody Biomass resource | Railex Merchant Energy Infrastructure Group | |
| GE 7FA CCCT | (EPIC) 21 to +247 MW Chinese Gasifiers | Sterling Planet | |
| Merchant GE 7FA CCCT | Nacogdoches 100 MW BFB/CFB /STG | Taylor Biomass Energy, LLC | |
| DH1+7FA+HRSG CC | NRG 100-300 MW Plasma Gasification/CC | Timberland Harvesters, LLC | |
| DH CFB SNCR + DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | Green Power Systems 34 MW Plasma Arc / 2 reactors / 4 boilers / 1 steam turbine | | |
| DH CFB SNCR, within 5 yrs | | | |
| DH CFB SNCR, after 5 yrs | | | |
| DH CFB SNCR + DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | | | |
| DH FGD/SCR/PC + DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | | | |
| DH FGD/SCR/PC, within 5 yrs | | | |
| DH FGD/SCR/PC, after 5 yrs | New River Solid Waste Association 0 - 100 MW Solid Waste Landfill | | |

**Table 8-3 (Continued)**
**Generation Alternatives Considered (2005-2009)**

| IRP Generator Data - Future Options (vintage September 2005) | Request For Letters of Interest + Others (vintage May 2007) | RFP for Biomass Fueled Generation Facility (Responses Received Dec. 14, 2007) | Binding Proposals for Biomass Plant (Responses Received April 11, 2008) |
|---|---|---|---|
| 25% share of DH 439MW FGD/SCR/SC + DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | Orlando Utilities Commission, open # of MW, Interested in Any Renewable Energy Technology, willing to swap Coal Capacity | | |
| 25% share of South Florida 439MW FGD/SCR/SC | Progress Energy Florida 50 MW Base Load Capacity: composed of 3400MW of Coal & Nuclear Capacity, plus 300 MW of Renewable Generation | | |
| 25% share of DH 557MW FGD/SCR/SC + DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | Robran Industries, Inc. 185 MW gasification-oxidation rotary kiln and/or Geoplasma reactors / HRSG / rankine-cycle STG / closed-cycle no stack - no atmospheric emissions | | |
| 25% share of South Florida 557MW FGD/SCR/SC | Siemens Power Generation, Inc. 232 MW SFG gasification / SGT6-5000F | | |
| (PC/SC) DH2 retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | Southern Power Company or through a wholly owned subsidiary, 280/98 @ GRU MW One air-blown transport gasifier TRIG / GE 7FA+e, 1x1 + HRSG / STG or 570 / 143 @ GRU MW Gasifier TRIG IGCC, GE 7FA+e, 2x1 | | |
| (CFB) DH2 retrofitted w Low NOx Burners, Dry FGD, SCR, & Fabric Filter | Railex PolyGeneration, LLC - Railex Energy Group, Inc., 260 - 300 MW IGCC polygeneration of power and fuels | | |
| DH IGCC + DH2 retrofitted w Low NOx Burners, Dry FGD, SCR, & Fabric Filter | Timberland Harvesters Inc. 50 MW P. Gasifier/BFB /STG | | |
| DH IGCC + DH2 retrofit retrofitted w Low NOx Burners, Wet FGD, SCR, & Fabric Filter | Whole Tree Energy 100 MW Bottom blown, injection ram, steam generator / STG | | |
| Biomass (wood waste) | | | |

Notes: DLC = direct load control; SCCT = simple cycle combustion turbine; CCCT = combined cycle combustion turbine; DH = Deerhaven; HRSG = heat recovery steam generator; SNCR = selective non-catalytic reduction; FGD = flue gas desulfurization; SCR = selective catalytic reduction; PC = pulverized coal; SC = supercritical; BFB = bubbling fluidized bed; STG = steam turbine generator;

### 8.3.2 Feasibility of Power Purchase Agreement Alternatives

The "All Source Solicitation" issued in late 2006 did not require binding proposals and resulted in a wide range of technologies and contractual structures being proposed. The responses to this solicitation, received in early 2007, are summarized in the third column of Table 8-3. Lessons learned from evaluating the responses and engaging in discovery with each bidder were primarily of a financial and risk management nature. Some of the proposals indicated that the advantages of tax-exempt financing available to municipal utilities did not offer as strong a financial incentive for renewable and innovative technologies as did incentives available to the private sector. This was partially due to reduced spreads between taxable and tax-exempt debt interest rates, but mostly due to the ability to obtain production tax credits and take advantage of depreciation (for entities with sufficient tax liabilities). Another lesson from the "All Source Solicitation" was that there were no commercially viable technologies to remove carbon (although one proposal including an oxygen blown boiler with extensive vapor compression was received).

### 8.3.3 Fossil Fuels Excluded

The decision to not consider additional capacity, including coal and petroleum coke, by the City Commission in May 2007 was driven largely by environmental concerns about climate change, even though studies at the time found coal and petroleum coke options to be among the least cost options. It should be noted that Governor Crist's Executive Orders in 2007 rendered coal and petroleum coke options moot for all intents and purposes. The fuel source that the GRU staff was instructed to pursue by the City Commission was biomass.

### 8.3.4 Competitive Biomass Solicitation

Although GRU had performed three biomass availability studies in the past, it was deemed prudent to take a comprehensive look at the resource assuming competition and modeling transportation costs explicitly. The University of Florida's School of Forest Resources (Dr. Carter, Principle Investigator) was contracted to perform this work, which included geographic information system (GIS) simulation of travel based on detailed maps of vegetation cover and type, and assuming that JEA and the City of Tallahassee also constructed biomass power plants. Completed in the summer of 2007, this work was made available on the Internet during subsequent solicitations.

The final biomass capacity solicitation was designed as a two-step process to ensure maximum participation given that the solicitation requirements were fairly broad. The first step was non-binding and intended to shortlist proposers for the second, binding step; this is summarized in the third column of Table 8-3. Fuels specifications were

limited to biomass, but allowed refuse derived waste. The proposals were evaluated with weighted factors to be applied to a number of factors representing indicative price, financial risk, and environmental emissions. The nine proposals received were shortlisted and the bidders were asked to submit binding proposals. The fourth column of Table 8-3 indicates the three short-listed proposals. The ensuing public discussion of evaluation factors and their weights resulted in a number of factors representing price, financial risk, resource sustainability sensitivity, and local economic impacts. Table 8-4 summarizes the many combinations and permutations of biomass fired generation alternatives that were evaluated throughout the solicitation process.

## 8.4 Biomass Resource Evaluations

GRU commissioned four biomass resource studies to determine if sufficient fuel might be available within reach of a biomass plant constructed within the GRU System.

### *8.4.1 Post – Cunilio Study*

An unsolicited report entitled "Biomass Options for GRU" was prepared in January 1998 by A. Green, T. Cunilio, and S. Peres for the GEAC. The report provided a guide to the energy crop resource base, the technologies possible for use by GRU, and the local professionals involved in the national and local arenas of biomass energy. In 2004 GRU hired Don M. Post and Tom V. Cunilio to perform a resource study to explore the feasibility of burning up to 30 MW of biomass in a 240 MW coal fired CFB that was eventually proposed to the City Commission in January 2005. The study was entitled "Biomass Options for GRU – Part II," and it demonstrated that within Alachua County there is a sustainable supply of all types of waste wood amounting to a minimum of 1,424 tons per day, including timber harvest residuals and urban forestry, but excluding refuse derived fuel (RDF)and stumps.

### *8.4.2 Black & Veatch Study*

The GRU staff also commissioned Black & Veatch to perform a separate study of biomass resource availability in March 2004. In Section 3.2 of a report entitled "Supplementary Study Of Generating Alternatives For Deerhaven Generating Station," Black & Veatch examined the viability of obtaining sufficient woody biomass to sustain a biomass fuel steam generator of 35 MW up to 150 MW. The study involved a review of the Post – Cunilio study described above as well as the US Department of Energy "Oak Ridge National Laboratory (ORNL) Biomass Supply Curves." ORNL has researched the availability and cost of biomass fuels for many years and recently published a study that shows county level resource data for quantities and costs of various

# Table 8-4
# Summary of Biomass Generation Alternatives

| No. | Technology | Technology Status | Location | Initial Rating | Comments |
|---|---|---|---|---|---|
| | | | *Stand Alone Options* | | |
| 1 | Stoker grate combustion | Commercial | Stand-alone | Very good | Most common biomass technology |
| 2 | Bubbling fluidized bed combustion | Commercial | Stand-alone | Good | Generally lower emissions than stoker combustion, but higher cost |
| 3 | Circulating fluidized bed combustion | Commercial | Stand-alone | Fair | More appropriate for larger units |
| 4 | Combustion based cogeneration | Commercial | Stand-alone | Fair | Sites may be limited based on IRP |
| 5 | Gasification close-coupled boiler | Commercial | Stand-alone | Fair | Very few advantages over direct combustion |
| 6 | Gasification with engine | Commercial | Stand-alone | Fair | Limited to smaller applications |
| 7 | Gasification combined cycle | Demonstration | Stand-alone | Fair | Recent difficulties with demonstration projects |
| 8 | Pyrolysis combined cycle | Development | Stand-alone | Fair | Good potential, but still in R&D stage |
| 9 | Pulverized fuel combustion | Commercial | Stand-alone | Poor | Not ideal with wood fuel |
| 10 | Anaerobic digestion | Demonstration | Stand-alone | Poor | Not proven at this scale with this feedstock |
| 11 | Pyrolysis with engine | Demonstration | Stand-alone | Poor | Smaller applications |
| 12 | Small modular biopower | Demonstration | Stand-alone | Poor | Technology still in early stages |
| 13 | Direct fired combustion turbine | Development | Stand-alone | Poor | Far-term technology |
| 14 | Indirect fired combustion turbine | Development | Stand-alone | Poor | Far-term technology |
| 15 | Stirling engine | Development | Stand-alone | Poor | Still under development |
| 16 | Whole-tree-energy | Development | Stand-alone | Poor | Technology development has slowed substantially |
| 17 | Cellulosic ethanol production | Development | Stand-alone | Poor | Far-term technology |
| | | | *Cofiring Options* | | |
| 18 | Direct cofiring: blended/separate feed | Commercial | Unit 1 | Poor | Biomass ash concerns |
| 19 | Direct cofiring: blended/separate feed | Commercial | Unit 2 | Good | Up to 10% of heat input typically considered OK |
| 21 | Direct cofiring: blended/separate feed | Commercial | Unit 3 - CFB | Very good | A new CFB unit could be designed to have built-in fuel flexibility |
| 20 | Direct cofiring: blended/separate feed | Commercial | Unit 3 - PC | Good | Should be somewhat lower cost to integrate direct cofiring in new unit |
| 22 | Direct cofiring: torrefied wood | Development | Unit 1 | Poor | Biomass ash concerns |
| 23 | Direct cofiring: torrefied wood | Development | Unit 2 | Good | Could be easily blended with existing coal at minimal capital cost |
| 25 | Direct cofiring: torrefied wood | Development | Unit 3 - CFB | Poor | Torrefaction is unnecessary step for CFB |
| 24 | Direct cofiring: torrefied wood | Development | Unit 3 - PC | Good | Could be easily blended with existing coal at minimal capital cost. |
| 26 | Indirect cofiring: gasification | Demonstration | Unit 1 | Fair | Potential to totally repower unit |
| 30 | Indirect cofiring: gasification | Demonstration | Unit 2 | Good | Potential to use as reburn gas for NOx control is appealing |
| 38 | Indirect cofiring: gasification | Demonstration | Unit 3 - CFB | Poor | Direct cofiring would be substantially lower cost with few disadvantages |
| 34 | Indirect cofiring: gasification | Demonstration | Unit 3 - PC | Good | Potential to use as reburn gas for NOx control is appealing |
| 27 | Indirect cofiring: pyrolysis | Development | Unit 1 | Fair | Could make use of existing oil-firing equipment |
| 31 | Indirect cofiring: pyrolysis | Development | Unit 2 | Good | Could make use of existing oil-firing equipment |
| 39 | Indirect cofiring: pyrolysis | Development | Unit 3 - CFB | Poor | Direct cofiring would be substantially lower cost with few disadvantages |
| 35 | Indirect cofiring: pyrolysis | Development | Unit 3 - PC | Fair | Could make use of oil-firing equipment |
| 28 | Indirect cofiring: separate boiler | Commercial | Unit 1 | Poor | High capital cost but only limited run hours |
| 32 | Indirect cofiring: separate boiler | Commercial | Unit 2 | Good | Eliminates any negative impacts of biomass on existing equipment |
| 40 | Indirect cofiring: separate boiler | Commercial | Unit 3 - CFB | Poor | Direct cofiring would be substantially lower cost with few disadvantages |
| 36 | Indirect cofiring: separate boiler | Commercial | Unit 3 - PC | Fair | Seemingly better options |
| 29 | Indirect cofiring: separate combustor | Unknown | Unit 1 | Poor | High capital cost but only limited run hours |
| 33 | Indirect cofiring: separate combustor | Unknown | Unit 2 | Fair | Hot flue gas duct would be very large |
| 41 | Indirect cofiring: separate combustor | Unknown | Unit 3 - CFB | Poor | Direct cofiring would be substantially lower cost with few disadvantages |
| 37 | Indirect cofiring: separate combustor | Unknown | Unit 3 - PC | Poor | Hot flue gas duct would be very large |

*Note: Above options may be used simultaneously for multiple units (for example cofiring 15 MW in both Unit 2 and the new Unit 3)*

**Cofiring technology descriptions:**

| | |
|---|---|
| Direct cofiring: blended/separate feed | Biomass is either blended with coal feed prior to firing or injected as a separate feed |
| Direct cofiring: torrefied wood | Torrefied biomass is similar to charcoal. It can be pulverized and is a hydrophobic product. Torrefaction could be done off-site by a third party. |
| Indirect cofiring: gasification | Combustible syn-gas produced by biomass gasifier would be ducted to coal unit, possibly as a reburn gas for NOx control |
| Indirect cofiring: pyrolysis | Pyrolysis produces a synthetic bio-oil. Possibility to make use of existing fuel oil firing system at very low cost. Bio-oil could be produced offsite by third party. |
| Indirect cofiring: separate boiler | Generated steam from biomass boiler to be injected into the main plant steam cycle at an appropriate location |
| Indirect cofiring: separate combustor | Combustion flue gases from separate biomass combustor would be ducted into coal boiler |

biomass fuels. The Black & Veatch study also examined the "National Renewable Energy Laboratory – Urban Wood Waste Assessment." The Black & Veatch study concluded that, based on the ORNL curves, within a 50 mile radius the available resources could support up to 150 MW of biomass fueled capacity on a sustainable basis.

### 8.4.3 ICF Consulting

A report entitled "City of Gainesville Electricity Supply Needs" was commissioned in late 2005 to examine several aspects of the need for electric generating capacity, including DSM potential, IGCC, and a biomass fueled power plant. Chapter 5 of this study was dedicated to fuel resources. ICF Consulting reviewed prior studies, as well as the "EIA Annual Energy Outlook 2006 Biomass Supply Curves." ICF found enough fuel for more than 100 MW of biomass fueled capacity within 35 and 50 mile radiuses.

### 8.4.4 University of Florida, School of Forest Resources and Conservation, Institute of Food and Agricultural Sciences

This study was commissioned by GRU through the University of Florida, School of Forest Resources and Conservation, Institute of Food and Agricultural Sciences (IFAS) in 2007, with Dr. Douglas R. Carter as the principal investigator, and Dr. Matthew Langholtz as the co-principal investigator. The final report was entitled "Biomass Resource Assessment Part I: Availability and Cost Analysis of Woody Biomass For Gainesville Regional Utilities." The study involved detailed GIS simulations of timber operations, and haul trip costs assuming that three 40 MW biomass plants were competing for fuel in the north-central Florida region. The study found that sufficient woody biomass exists within the Gainesville territory for a 100 MW woody biomass generator plant. Part II of this study considered municipal solid waste (MSW), which is not a type of fuel the GREC facility is designed to accommodate and which is not allowed under the GRU PPA with GREC LLC.

## 8.5 Selection of the Proposed GREC Project

GRU's Request for Biomass Proposals (RFP) issued in October 2007 set forth a two-step process to solicit biomass-fueled electric generation. The first step allowed non-binding proposals with indicative pricing to be submitted in order to ensure the maximum competitive participation and the widest range of technologies and business plans. These were ranked based on factors including price, risk control, environmental emissions, applicant qualification, and technical merit. The proposals received from Step 1 of the selection process are listed in the third column of Table 8-3.

On January 28, 2008, the City Commission invited the three top-ranked respondents from Step 1 of the RFP selection process to submit binding proposals for the second step of the process. These three respondents were Nacogdoches Power, LLC (now American Renewables), Covanta Energy, and Sterling Planet, Inc. Binding proposals were due April 11, 2008.

On March 24, 2008, GRU evaluation staff presented a proposed evaluation methodology to the City Commission. Following deliberation and input from City Commissioners, the City Commission approved the 14 overall factors and associated factor weights to be applied in the evaluation of the binding biomass proposals to be received in Step 2 of the RFP process. The 14 factors and factor weights, summarized in Table 8-5, constituted three broader criteria with the following associated weights:

1. Environmental 30 percent
2. Economics 37 percent
3. Risk and Reliability 33 percent

The GRU evaluation team finalized the details of how the factors were to be evaluated prior to the due date for submission of the binding proposals. The methodologies used were of necessity quite different for each factor, but typically involved scoring a number of sub-factors for each of the factors. The RFP and associated addenda included information requests for the data needed to evaluate each sub-factor. The binding proposals were received on April 11, 2008. The three proposals received presented a total of eight options, all of which were fueled 100 percent with biomass. These eight options consisted of the following:

**Covanta Energy (all facilities at the Deerhaven site):**

- 50 MW net PPA.
- 50 MW net GRU Financed and Owned Engineer, Procure, and Construct (EPC).
- 58 MW gross PPA with auxiliary power purchase.
- 58 MW gross GRU EPC with auxiliary power purchase.

**Nacogdoches Power (now American Renewables):**

- PPA for 50 percent of 100 MW net facility at the Deerhaven site.
- PPA for 100 percent of 100 MW net facility at an alternative site (undisclosed).
- PPA for 100 percent of 100 MW net facility at the Deerhaven site.

**Sterling Planet, Inc:**

- PPA for 30 MW net facility at Deerhaven site.

The GRU evaluation team scored the proposed options and determined that the 100 MW PPA with GREC LLC for 100 percent of the output from a biomass-fueled facility at the Deerhaven site was the best long-term option for GRU. Final results and recommendations were presented to the City Commission at open meetings on April 28 and May 12, 2008. At the May 12 meeting, the City Commission voted unanimously to authorize GRU to negotiate a PPA with GREC LLC for 100 percent of the output of a 100 MW net biomass-fueled facility to be constructed and operated by GREC LLC at the Deerhaven site.

**Table 8-5**
**Gainesville City Commission Approved Factor Weights for Binding Responses to GRU Biomass RFP**

| Criteria / Factor | Weight |
|---|---|
| **(1) Environmental: Environmental Attributes Consistent with the Gainesville Community** | **30.00** |
| Environmental Emissions | 10.00 |
| Project Commitment to Sustainable Forest Resource Management | 7.00 |
| Project Site Requirements | 5.00 |
| By-product/Waste Production and Disposition | 8.00 |
| **(2) Economics: Cost Effective Renewable Capacity and/or Energy Benefits** | **37.00** |
| Project All-in Production Cost | 25.00 |
| Project Variable Production Costs | 5.00 |
| Anticipated Project In-Service Date and/or Energy Delivery | 4.00 |
| Local Economic Impact | 3.00 |
| **(3) Risk & Reliability: Enhanced and Reliable Energy Supply** | **33.00** |
| Technology Readiness and Project Reliability | 5.00 |
| Fuel Requirements and Sources | 3.00 |
| Project Size and Design | 5.00 |
| Experience and Resources of Project Developer/Sponsor | 5.00 |
| Proposed Contractual Terms and Conditions | 10.00 |
| Proposer's Financial Strength | 5.00 |
| **Grand Total** | **100.00** |

Note: Each of the above Factors was given a raw numerical score from 1 to 5.

# 9.0 Project Overview

This section discusses the proposed GREC biomass facility and provides information related to the project developers, a description of the facilities, the PPA between GRU and GREC LLC, the supply of fuel to the GREC, resale opportunities for power from the GREC facility that may be available and beneficial to GRU, and the schedule for development and completion of the GREC facility.

It should be noted that elements of the PPA between GRU and GREC LLC are confidential. As such, the information presented throughout this Application is limited to information that is not confidential.

## 9.1 Project Developers

The GREC facility will be designed, constructed, owned, and operated by GREC LLC, a subsidiary of American Renewables, LLC, a private, for-profit renewable power producer that signed a contract to construct a similar facility for Austin Energy (Texas) and recently sold this facility to Southern Power. American Renewables is developing another similar facility in Hamilton County, Florida. American Renewables is jointly owned by affiliates of BayCorp, EMI and Tyr. The entities are described as follows.

- BayCorp is a merchant energy company that owns power assets, as well as natural gas and oil production and development assets. BayCorp owns and operates a hydroelectric generation facility and is developing additional generation in Vermont; through its subsidiary, Great Bay Power Marketing, Inc., BayCorp supplies wholesale power in the New England power market; and through its subsidiary BayCorp Resources, BayCorp owns and operates interests in oil and natural gas development and production projects located throughout Texas.
- EMI is a privately held energy company with more than 30 years of experience in energy conservation and energy development. In 1986, EMI developed, financed, and constructed Alexandria Power Associates, a 15 MW biomass-fired electric generating facility in Alexandria, New Hampshire. Following the Alexandria project, EMI developed six natural gas-fired electric generation projects totaling more than 860 MW of capacity and including the first true independent and merchant power projects in New England. EMI is also currently developing the Cape Wind Project, a 468 MW offshore wind project to be located in Nantucket Sound off the southern coast of Cape Cod, Massachusetts.

- Owned by ITOCHU Corporation, a $52 billion international trading conglomerate and its US based subsidiary, ITOCHU International, Inc., Tyr focuses on acquiring and owning equity interests in North American independent power assets and providing asset management services to facilities in which it is an owner. Tyr's current portfolio includes interests in CalPeak Power (California), Chesapeake Commonwealth Energy (Virginia), and Fox Energy (Wisconsin). Worldwide, ITOCHU owns interests in independent power facilities in Saudi Arabia, Indonesia and Japan in addition to the United States. Tyr's sister company, North American Energy Services, also a subsidiary of ITOCHU International, Inc., is the industry's largest independent, third-party provider of power plant O&M services, providing services to almost 300 MW of biomass fueled power plants across the US.

The GREC's project developers have a long and successful track record of energy and power asset development and operation, as well as a robust development pipeline looking forward. Collectively, the project developers have acquired or developed more than $7.6 billion of energy and infrastructure assets, and have a pipeline or deployment budget of $2.5 billion for US renewable power plants over the next 5 years.

## 9.2 Description of Facilities

The GREC facility will be located within the confines of GRU's existing Deerhaven Power Plant site on property leased from the City of Gainesville (d/b/a GRU). GRU will have title to 100 percent of the plant's output, including all environmental attributes (such as renewable energy credits, carbon offsets, etc.).

The facility will be a new nominal rated 100 MW net (116 MW gross) biomass-fired electric generating facility, consisting of a biomass fuel handling system, a biomass-fired boiler, a condensing steam turbine generator with evaporative cooling towers and auxiliary support equipment. The facility will also utilize a zero liquid discharge (ZLD) system to eliminate industrial wastewater discharges in accordance with the site's current restrictions pursuant to its current certification. The facility will be designed in accordance with standards normally used in the utility industry so that the facility will, with standard O&M practices, be designed to provide full service over its 42 year design life.

The facility will utilize a fluidized bed boiler to produce superheated steam. The boiler will be equipped with a baghouse to control particulate matter. An aqueous ammonia injection selective catalytic reduction (SCR) system will be provided for $NO_x$ control. The slightly more expensive SCR system was considered for purposes of

evaluating the economics of the GREC LLC PPA throughout this Application. Superheated steam from the boiler will be admitted to a single steam turbine with four extractions for feedwater heating. The steam turbine will generate electricity before exhausting axially into the condenser with cooling water provided from the wet evaporative cooling tower.

Electric power will be produced in the steam turbine generator at the nominal generator voltage. The facility will increase the voltage at an on-site substation and transmit the power through aerial transmission lines to the interconnection point with GRU's looped 138 kV transmission system. GRU's transmission system is interconnected with PEF and FP&L. When the steam turbine generator is off-line, station service power will be obtained by backfeeding from GRU's system.

A unique feature of the agreement between GREC LLC and GRU is that it is not a "must take" unit. The unit can be turned down or taken off-line to meet operational or economic requirements. If, however, the unit is dispatched at less than available capacity, the fixed non-fuel energy charges would still be invoiced based on the energy that was available, but not called upon. Therefore, the variable cost for dispatch is the fuel cost and variable operations and maintenance (O&M) charge per MWh. A substantial portion of GRU's agreement with GREC LLC is dedicated to empirically establishing the available capacity of the unit for each season and performance incentives for maintaining that availability. The overall guaranteed annual availability is 95 percent in the four summer months and 90 percent on an annual basis.

## 9.3 Power Purchase Agreement

GRU has entered into a 30 year contract (from the date of completion) to purchase 100 percent of the output of the GREC biomass facility. GRU has been careful to structure the agreement with GREC LLC to ensure that it would not be viewed as a long-term financial liability by bond rating agencies, with the resulting requirements for debt service coverage, etc. Preliminary reviews with Moody's and Standard & Poor's indicate that they will view the agreement as only having limited financial liability related to performance obligation bonds, for example, and as such will not require substantial debt service coverage. The facility will be subject to Alachua County's tangible property taxes. Table 9-1 summarizes the billing elements in the PPA. The facility must be in operation before January 1, 2014 to receive the most favorable benefits of the ARRA, which may commonly be referred to as the HR 1 Stimulus Package, for open-loop biomass energy projects. There is no associated long-term liability of production tax credits ending after 10 years under this scenario.

**Table 9-1**
**Billing Elements of the Power Purchase Agreement Between GRU and GREC LLC**

| Billing Element | Description | Method of Escalation |
|---|---|---|
| Non-Fuel Energy Charges | Paid only for available energy. There will be no fixed capacity charges associated with the generating facility. This charge includes all costs except fuel and variable O&M. | Does not change, fixed 30 years |
| Fuel Charge | Actual cost per delivered ton times a guaranteed heat rate. A target cost is set at the beginning of each year based on the prior year's actual costs and the savings from this target are shared with GREC LLC as are any costs over the target. See the fuel cost discussion. | Market based (probably less than Consumer Price Index [CPI]) |
| Variable O&M | Paid only for energy delivered to GRU. There is no variable O&M obligation if energy is not delivered. | CPI (beginning 2009) |
| Equivalent Taxes | Tangible property taxes will be a direct pass-through on an annual basis. Taxes will depend on the final valuation and assignment of costs to system components (certain items are tax-exempt). Tangible property taxes are depreciated as opposed to real property taxes, which tend to appreciate. | Depreciates over time |

## 9.4 Fuel Handling and Supply

The primary fuels for the GREC will be forest residue, mill residue, pre-commercial tree thinnings, used pallets, and urban wood waste which includes woody tree trimmings that are generated by landscaping contractors, power line clearance contractors, and other non-forestry related sources of woody debris. Supplementary fuels could include herbaceous plant matter, agricultural residues, diseased trees, woody storm debris, whole tree chips, and pulpwood chips. The facility is not designed to use any form of treated wood, municipal solid waste, coal, petroleum coke, oil, or tires. Limited quantities of natural gas will be used for start-up fuel.

The biomass fuel handling system will consist of three truck tippers, two sets of screens and hogs, an automatic stacker/reclaimer system and a manual stacker/reclaimer system. Biomass fuel will be transported by truck to the GREC facility. Fuel will be transported into and out of on-site storage via a series of conveyors. The GREC will have a conveyor leading from the storage piles to the boiler metering bins. From the metering bins, the fuel will be gravity fed into air swept distribution feeders and then blown by combustion air into the boiler.

GREC LLC has spent significant resources working with the forestry industry in north-central Florida, sometimes accompanied by GRU staff. GRU has been advised that GREC LLC is in a position to enter into a number of long-term contracts with favorable pricing, with put and call options exceeding 100 percent of the fuel required for the facility. GREC LLC does not intend to fix the price for 100 percent of the fuel in order to take advantage of opportunity fuels from storms, land development, etc. The cost drivers for forest derived fuel are the grower's premium (10 to 20 percent), diesel fuel (10 to 20 percent), equipment costs, and labor. GREC LLC may be able to extract a tipping fee for some of the fuel, which is credited to the GREC's production cost. Experience around the state suggests that this form of fuel supply is relatively stable, with increases well below the CPI, and will provide an excellent hedge against gas price volatility. GRU will have full audit review of all aspects of fuel procurement and cost. The unique aspects of the GREC related to forest stewardship are described within the strategic considerations discussed in Section 15.0 of this Application.

## 9.5 Power Resale

GRU is seeking to ascertain the level of interest that other utilities might have in becoming a counter party to take a share of the renewable energy output from the GREC for the initial period of operation. GRU envisions structuring an arrangement whereby the counter party(s) will share the costs borne by GRU on a pro rata basis with the addition of wheeling fees and transmission losses required for the delivery of power to the border of GRU's control area and the incidental cost of the risks associated with this wheeling. GRU will consider reselling 50 percent of the facility's output for the initial 10 years of GREC's operation.

## 9.6 Project Schedule

The GREC is planned for commercial operation beginning December 1, 2013. Current estimates of major milestone dates associated with development and construction of the GREC are outlined in Table 9-2.

**Table 9-2**
**GREC Project Schedule**

| Activity | Finish Date |
|---|---|
| Site Activities for Permitting Support Completed | September 11, 2009 |
| File Florida Public Service Commission Need Determination Application | September 18, 2009 |
| Preliminary Engineering Activities Completed | October 23, 2009 |
| File Prevention of Significant Deterioration (PSD) Application | November 30, 2009 |
| File Site Certification Application (SCA) | November 30, 2009 |
| PSC Need Determination Final Order | March 1, 2010 |
| File Gainesville Site Plan Application | March 10, 2010 |
| Gainesville Site Plan Final Approval | May 13, 2010 |
| Site Certification Approval | December 7, 2010 |
| Complete Project Financing | December 15, 2010 |
| Construction Start | December 16, 2010 |
| Initial Synchronization | September 1, 2013 |
| Commercial Operation | December 1, 2013 |

# 10.0 Supply-Side Alternatives

## 10.1 Introduction

Cost and performance estimates have been developed for natural gas and pulverized coal generation technologies that are proven, commercially available, and widely used in the power industry.

Although the combustion turbines and the combined cycle alternatives discussed herein assume a specific manufacturer (General Electric [GE]) and specific models (i.e., aeroderivative and frame combustion turbines), doing so is not intended to limit the alternatives considered solely to GE models. Rather, such assumptions were made to provide indicative cost, output, and performance data. Several manufacturers offer similar generating technologies with similar attributes, and the data presented in this analysis should be considered indicative of comparable technologies across a wide array of manufacturers.

The following subsections provide general descriptions, thermal performance estimates, O&M cost estimates, and capital cost estimates for the following power generation technologies:

- GE LMS100 Simple Cycle Combustion Turbine (SCCT).
- 1x1 GE 7EA Combined Cycle Combustion Turbine (CCCT).
- 125 MW (net) Pulverized Coal (PC).
- 125 MW (net) (PC) with Carbon Capture and Sequestration (CCS).

### *10.1.1 General O&M Basis*

O&M cost estimates are based on vendor estimates and recommendations, and estimated performance information. The cost estimates are divided into fixed and variable O&M costs. Fixed O&M costs, expressed as dollars per unit of net capacity per year ($/kW-yr), do not vary directly with plant power generation and consist of wages and wage related overheads for the permanent plant staff, routine equipment maintenance, and other fees. Variable O&M costs, expressed as dollars per unit of net generation ($/MWh) tend to vary in near direct proportion to the output of the unit. Variable O&M includes costs associated with equipment outage maintenance, utilities, chemicals, reagents, and other consumables. Fuel costs are determined separately and are not included in either fixed or variable O&M costs.

### 10.1.2 General Capital Cost Basis

Overnight capital cost estimates were generated for the technologies listed above. The capital cost estimates are presented in overnight 2009 US dollars. The estimates were developed based on an EPC contracting strategy and consider the use of local Gainesville, Florida labor rates.

The capital cost estimates were generated on a consistent basis. Assumptions used to develop the performance estimates were also used in the development of the capital cost estimates. These assumptions are broken down into the major capital cost estimate components consisting of general assumptions, direct assumptions, and indirect cost assumptions. General assumptions include assumptions that are general in nature and consistently apply to the cost estimates developed for each of the supply-side alternatives considered. Direct costs include the costs associated with the purchase of equipment, equipment erection, equipment supplier's technical advisory services, and contractors' services. General indirect costs include relay checkouts and testing; instrumentation and control equipment calibration and testing; and systems and plant startup, including startup personnel during testing and the initial operation period.

### 10.1.3 Consideration of Owner's Costs

The capital cost estimates developed include both direct and indirect costs. An allowance for possible general owner's cost items, as summarized in Table 10-1, has been included in the cost estimates.

### 10.1.4 Meteorological Conditions

An average annual temperature and relative humidity of 70° F and 72 percent, respectively, were used for developing performance estimates for use in the levelized cost of energy analyses. Additionally, a summer temperature of 98° F (relative humidity of 54.9 percent) was used to develop seasonal performance estimates.

### 10.1.5 Performance Degradation

Power plant output and heat rate performance will degrade with hours of operation because of factors such as blade wear, erosion, corrosion, and increased tube leakage. Periodic maintenance and overhauls can recover much, but not all, of the degraded performance when compared to the unit's new and clean performance. The degradation that cannot be recovered is referred to herein as nonrecoverable degradation, and estimates have been developed to capture its impacts. Nonrecoverable degradation

## Table 10-1
## Possible Owner's Costs

**Project Development**

- Site selection study
- Land purchase/rezoning for greenfield sites
- Transmission/gas pipeline right-of-way
- Road modifications/upgrades
- Demolition
- Environmental permitting/offsets
- Public relations/community development
- Legal assistance
- Provision of project management

**Spare Parts and Plant Equipment**

- Combustion turbine materials, gas compressors, supplies, and parts
- Steam turbine materials, supplies, and parts
- HRSG materials, supplies, and parts
- Balance-of-plant (BOP) equipment/tools
- Rolling stock
- Plant furnishing and supplies

**Plant Startup/Construction Support**

- Owner's site mobilization
- O&M staff training
- Initial test fluids and lubricants
- Initial inventory of chemicals and reagents
- Consumables
- Auxiliary power purchases
- Acceptance testing
- Construction all-risk insurance
- Cost of natural gas not recovered in power sales

**Owner's Contingency**

- Owner's uncertainty and costs pending final negotiation
- Unidentified project scope increases
- Unidentified project requirements
- Costs pending final agreements (i.e., interconnection contract costs)

**Owner's Project Management**

- Preparation of bid documents and the selection of contractors and suppliers
- Performance of engineering due diligence
- Provision of personnel for site construction management

**Taxes/Advisory Fees/Legal**

- Taxes
- Market and environmental consultants
- Owner's legal expenses
- Interconnect agreements
- Contracts (procurement and construction)
- Property

**Utility Interconnections**

- Natural gas service
- Natural gas system upgrades
- Electrical transmission
- Water supply
- Wastewater/sewer

**Financing (included in FCR, but not in the direct capital cost)**

- Financial advisor, lender's legal, market analyst, and engineer
- Loan administration and commitment fees
- Debt service reserve fund

will vary from unit to unit, so specific nonrecoverable output and heat rate factors have been developed and are presented in Table 10-2. The degradation percentages are applied one time to the new and clean performance data for the SCCT and CCCT alternatives, and reflect lifetime aggregate nonrecoverable degradation. Output and performance estimates for the pulverized coal alternative reflect degradation.

**Table 10-2**
**Nonrecoverable Degradation Factors**

| Unit Description | Degradation Factor | |
|---|---|---|
| | Output (%) | Heat Rate (%) |
| GE LMS100 Simple Cycle | 3.2 | 1.75 |
| GE 1x1 7EA Combined Cycle | 2.7 | 1.50 |

## 10.2 GE LMS100 Simple Cycle Combustion Turbine

### *10.2.1 General Description*

The LMS100 is the first intercooled combustion turbine generator (CTG) system developed specifically for the power generation industry, combining the best of two technologies: heavy-duty CTG technology and aeroderivative CTG technology.

The LMS100 features a heavy-duty low-pressure compressor (LPC) derived from GE Power Systems' MS6001FA heavy-duty CTG compressor; its core, which includes the high-pressure compressor (HPC), combustor, and high-pressure turbine (HPT) is derived from GE Aircraft Engines'CF6-80C2 and CF6–80E1 aircraft engines. The design of the new two-stage intermediate-pressure turbine (IPT) and new five-stage power turbine is based on the latest aeroderivative CTG technology. The compressed air from the LPC is cooled in either an air-to-air or air-to-water heat exchanger (intercooler) and ducted to the HPC. The cooled flow requires less work from the HPC, increasing overall efficiency and power output. The cooler LPC exit temperature air, used for turbine cooling, allows higher firing temperatures, resulting in increased power output and overall efficiency. The LMS100 has the following characteristics:

- High full- and part-load efficiency.
- Low hot-day lapse rate.
- High availability.
- Low maintenance cost.
- Designed for cycling applications.
- Ten minutes to full power.

### 10.2.2 Preliminary Thermal Performance Estimates

Preliminary thermal performance and emissions estimates were developed for the GE LMS100 SCCT for both average and summer design conditions corresponding to 70° F/72 percent relative humidity and 98 °F/54.9 percent relative humidity, respectively, as provided in Table 10-3.

### 10.2.3 O&M Cost Estimates

**10.2.3.1 O&M Assumptions.** The assumptions for fixed and variable O&M costs are as follows:

(1) The O&M estimates are in 2009 US dollars.

(2) The GE LMS100 simple cycle unit is estimated to start approximately 100 times per year and operate approximately 875 hours per year (10 percent capacity factor).

(3) The location was assumed to be the Deerhaven Generating Plant site.

(4) Plant staff wage rates are based on an operator salary of $66,000 per year.

(5) The payroll burden rate used was 40 percent. The payroll burden is intended to capture the costs for payroll taxes and benefits provided by the utility on behalf of the employees, in addition to direct salary. Not included in the burden rate are any costs for corporate services such as payroll, accounting, legal, and corporate tax administration.

(6) Property insurance and property taxes are not included.

(7) Office and administrative expenses are estimated to be 5 percent of the total staff salary.

(8) Estimated employee training cost and incentive pay/bonuses are included.

(9) Routine equipment maintenance costs are estimated based on Black & Veatch project experience and manufacturer input.

(10) Contract services include costs for services not directly related to power production.

(11) The variable O&M cost analysis is based on a repeating maintenance schedule over the life of the plant and costs are estimated through at least one major overhaul of equipment.

(12) Combustion turbine borescope inspections, combustion inspections, hot gas path inspections, and major engine overhauls are based on original equipment manufacturer (OEM) pricing and recommended repair and replacement intervals.

(13) SCR is included for $NO_x$ control.

(14) SCR uses anhydrous ammonia.

**Table 10-3**
**GE LMS100 Simple Cycle Performance and Emissions Estimates**

| Parameter | Ambient Condition | |
|---|---|---|
| | Average Day | Summer Design |
| **Meteorological Conditions** | | |
| Average Ambient Temperature, °F | 70 | 98 |
| Average Ambient Relative Humidity, percent | 72 | 54.9 |
| **Estimated Thermal Performance** | | |
| Load Condition, percent | 100 | 100 |
| Inlet Cooling Method [2] | Evaporative | Evaporative |
| CTG Water Injection | Yes | Yes |
| Gross CTG Output, MW | 102.3 | 92.9 |
| Auxiliary Load, MW | 2.7 | 2.6 |
| New and Clean Net Power Output, MW | 99.6 | 90.3 |
| New and Clean Net Plant Heat Rate (HHV), Btu/kWh | 9,099 | 9,328 |
| Degraded Net Power Output, MW | 96.4 | 87.4 |
| Degraded Net Plant Heat Rate (HHV), Btu/kWh | 9,258 | 9,491 |
| **Estimated Emissions** [3] | | |
| $NO_x$ as $NO_2$, lb/MBtu | 0.0089 | 0.0090 |
| $SO_2$, lb/MBtu | 0.0011 | 0.0011 |
| $CO_2$, lb/MBtu | 114.8 | 114.8 |

[1] Performance and emissions values provided are based on fuel gas as 100 percent methane with a sulfur content of 0.5 grains/100 standard cubic feet at a pressure of 400 pounds per square inch gage and a temperature of 77 °F. Values provided are based on the use of standard GE LMS100 combustors.
[2] Evaporative cooling efficiency is assumed to be 85 percent.
[3] Emissions values include the effects of SCR rated for 2.5 parts per million volumetric at 15%$O_2$, $NO_x$, and CO catalyst rated for 10 parts per million volumetric at 15% $O_2$ CO. No emissions controls are included for $CO_2$.

(15) Costs associated with an oxidation catalyst are included.

(16) Water treatment costs are included for cycle makeup, cooling tower makeup and service water where needed.

(17) The following were assumed for costs:

- $400/ton for anhydrous ammonia.
- $0.95/1,000 gallons for raw water.
- $3.00/1,000 gallons for demineralized water.
- $4.94/1,000 gallons for sewage charge.

***10.2.3.2 O&M Estimate.*** The fixed and nonfuel variable costs, based on the assumptions listed above, are provided in Table 10-4 and are expressed in thousands of 2009 US dollars.

**Table 10-4**
**GE LMS100 O&M Cost Estimates**

| Parameter | $ 2009 ($000) |
|---|---|
| **Fixed Costs** | |
| Labor | 1,302.4 |
| Maintenance | 86.4 |
| Other Expenses [1] | 179.7 |
| *Total Annualized Fixed Costs* | *1,568.5* |
| **Variable Costs** | |
| Outage Maintenance | 314.3 |
| Utilities | 15.0 |
| Chemical Usage | 25.4 |
| *Total Annual Variable Costs* | *354.8* |
| **O&M Cost Summary** | |
| **Annual Net Generation, MWh [2, 3]** | **84,446** |
| **Fixed Costs per net unit of Capacity, $/kW-yr [2]** | **16.27** |
| **Variable Costs per net unit of Output, $/MWh [2, 3]** | **4.20** |

[1] Other expenses include office and administrative expenses, training, and bonus and incentive pay.
[2] Based on average day performance conditions presented in Table 10-3.
[3] Based on a 10 percent capacity factor.

### 10.2.4 Preliminary Capital Cost Estimates

The following subsections provide the general, direct, and indirect capital cost assumptions.

#### 10.2.4.1 General Capital Cost Assumptions.

(1) The site is the Deerhaven Generating Plant site.

(2) Protection or relocation of existing fish and wildlife habitat; threatened and endangered species; or historical, cultural, and archaeological artifacts is not included.

(3) The site has sufficient area available to accommodate construction activities including, but not limited to, offices, lay-down, and staging.

(4) Spread footings are assumed for all equipment foundations. Stabilization of the existing subgrade is not anticipated.

(5) Construction power is available at the site boundary.

(6) Natural gas supply is assumed to be a pipeline connection at the site boundary.

(7) Natural gas will be available at the site boundary at the required volume and pressure according to the CTG OEM requirements. Fuel oil will be delivered by truck to the storage tank. The fuel oil storage facility is capable of 48 hours of full load operation.

#### 10.2.4.2 Direct Cost Assumptions.

(1) The plant will feature one dual-fueled GE LMS100 CTG. The primary fuel will be natural gas, and the backup fuel will be No. 2 fuel oil. The cost of unloading and delivery to the project site is included.

(2) The CTG includes a standard sound enclosure. A gantry or bridge crane for servicing the CTG is not included.

(3) An inlet air evaporative cooling system has been included.

(4) SCR has been included for $NO_x$ control. The CTG will also use a water injection system for $NO_x$ control and power augmentation. CTG combustors will be of the standard type.

(5) An oxidation catalyst is included for carbon monoxide (CO) control.

(6) The cost of the stack has been included in the cost estimate.

(7) A continuous emissions monitoring system (CEMS) has been included in the cost estimate for monitoring stack emissions.

(8) The source of service water will be groundwater. Demineralized water will be provided by onsite contract demineralizer trailers.

(9) Field erected tanks consisting of the following:
- Service/fire water storage tank.
- Fuel oil storage tank.
- Demineralized water storage tank.

(10) Fire protection will consist of the major equipment vendor's standard fire suppression system. Fire protection for major transformers will be water deluge system.

(11) The buildings are pre-engineered.

(12) A sanitary sewer system is included.

(13) A plant communications system has been included in the cost estimate.

(14) Plant heat rejection will be accomplished through a closed cycle cooling system which includes all necessary heat exchangers and fin-fan coolers.

#### *10.2.4.3 Indirect Cost Assumptions.*

(1) General indirect costs include all necessary services required for checkouts, testing services, and commissioning.

(2) An allowance for insurance has been included in the cost estimate. Insurance includes builder's risk and general liability.

(3) Engineering and related services costs are included.

(4) Field construction management services include field management staff with supporting staff personnel, field contract administration, field inspection and quality assurance, and project control.

(5) Technical direction and management of start-up and testing; cleanup expense for the portion not included in the direct-cost construction contracts; safety and medical services, guards and other security services; insurance premiums, performance bond; and liability insurance for equipment and tools are included.

(6) Contractors' contingency and profit are included in the estimate.

(7) Transportation costs for delivery to the job site are included in the base plant estimate.

(8) Spare parts for startup and use during operation are included. Major hot gas path parts are not included.

***10.2.4.4 Capital Cost Estimate.*** The preliminary capital cost estimate, based on the assumptions previously discussed, is provided in Table 10-5.

**Table 10-5**
**GE LMS100 Capital Cost Estimate**

| Component | $ 2009 ($000) | $ 2009 $/kW [1] |
|---|---|---|
| Purchase Contracts | 56,821 | 629 |
| Construction Contracts | 11,725 | 130 |
| *Total Direct Costs* | *68,646* | *760* |
| *Total Indirect Costs* | *20,501* | *227* |
| **Total EPC Capital Costs** | **89,047** | **923.6** |
| **Total Including Owner's Costs** | **111,309** | **1,154.5** |

[1] Values presented are based on net plant output at average day ambient conditions.

## 10.3 1x1 GE 7EA Combined Cycle Combustion Turbine

### *10.3.1 General Description*

The GE PG7121EA (7EA) model is a highly reliable, mid-size modular CTG developed specifically for 60 hertz (Hz) applications. With design emphasis placed on energy efficiency, availability, performance, and maintainability, the GE 7EA is a proven technology with approximately 750 units installed or on order worldwide, with tens of millions of accumulated hours. The simple, medium sized design of the GE 7EA offers flexibility in plant layout and easy, low cost addition of increments of power when phased capacity expansion is necessary. The GE 7EA is fuel flexible, and can operate on natural gas, liquefied natural gas (LNG), distillate, and treated residual oil. The GE 7EA can be used for SCCT and CCCT, and industrial and cogeneration application.

In a 1x1 combined cycle configuration, one heat recovery steam generator (HRSG), one STG, and one GE 7EA CTG form the unit configuration. The STG for the GE 7EA CCCT unit is nominally rated at 50 MW gross output, and is a single flow, condensing type with intermediate-pressure admission. The generator is designed for three-phase, 60 cycle operation at a 90 percent power factor.

### 10.3.2 Thermal Performance Estimates

Thermal performance and emissions estimates were developed for the 1x1 GE 7EA CCCT for both average and summer design conditions corresponding to 70 °F/72 percent relative humidity and 98 °F/54.9 percent relative humidity, respectively, as provided in Table 10-6.

### 10.3.3 Preliminary O&M Cost Estimates

***10.3.3.1 O&M Assumptions.*** The assumptions for fixed and variable O&M costs are as follows:

(1) The O&M estimates are in 2009 US dollars.

(2) The 1x1 GE 7EA combined cycle unit is estimated to start approximately 50 times per year and operate approximately 5,250 hours per year (60 percent capacity factor).

(3) The location was considered to be the Deerhaven Generating Plant site.

(4) Plant staff wage rates are based on an Operator salary of $66,000 per year.

(5) Payroll burden rate used was 40 percent. The payroll burden is intended to capture the costs for payroll taxes and benefits provided by the utility on behalf of the employees, in addition to direct salary. Not included in the burden rate are any costs for corporate services such as payroll, accounting, legal, and corporate tax administration.

(6) Property insurance and property taxes are not included.

(7) Office and administrative expenses are estimated to be 5 percent of the total staff salary.

(8) Estimated employee training cost and incentive pay/bonuses are included.

(9) Routine equipment maintenance costs are estimated based on Black & Veatch project experience and manufacturer input.

(10) Contract services include costs for services not directly related to power production.

(11) The variable O&M cost analysis is based on a repeating maintenance schedule over the life of the plant and costs are estimated through at least one major overhaul of equipment.

(12) Combustion turbine borescope inspections, combustion inspections, hot gas path inspections, and major engine overhauls are based on OEM pricing and recommended repair and replacement intervals.

**Table 10-6**
**1x1 GE 7EA Combined Cycle Performance and Emissions Estimates**

| Parameter | Ambient Condition | |
|---|---|---|
| | Average Day | Summer Design |
| **Meteorological Conditions** | | |
| Average Ambient Temperature, °F | 70 | 98 |
| Average Ambient Relative Humidity, percent | 72 | 54.9 |
| **Estimated Thermal Performance** [1] | | |
| Load Condition, percent | 100 | 100 |
| Inlet Cooling Method [2] | Evaporative | Evaporative |
| Steam Cycle Heat Rejection Method | Wet Mechanical Draft | Wet Mechanical Draft |
| CTG Water Injection | No | No |
| Gross CTG Output, MW | 81.0 | 74.8 |
| Gross STG Output, MW | 44.4 | 42.6 |
| Total Gross Output, MW | 125.5 | 117.4 |
| Auxiliary Load, MW | 3.3 | 3.2 |
| New and Clean Net Power Output, MW | 122.2 | 114.2 |
| New and Clean Net Plant Heat Rate (HHV), Btu/kWh | 7,794 | 7,866 |
| Degraded Net Power Output, MW | 118.9 | 111.1 |
| Degraded Net Plant Heat Rate (HHV), Btu/kWh | 7,911 | 7,984 |
| **Estimated Emissions** [3] | | |
| $NO_x$ as $NO_2$, lb/MBtu | 0.0090 | 0.0090 |
| $SO_2$, lb/MBtu | 0.0011 | 0.0011 |
| $CO_2$, lb/MBtu | 114.8 | 114.8 |

[1] Performance and emissions values provided are based on fuel gas as 100 percent methane with a sulfur content of 0.5 grains/100 standard cubic feet at a pressure of 400 pounds per square inch gage and a temperature of 77 °F. Values provided are based on the use of GE 7EA dry low $NO_x$ (DLN) combustors.
[2] Evaporative cooling efficiency is assumed to be 85 percent.
[3] Emissions values include effects of SCR rated for 2.5 parts per million volumetric at 15% $O_2$, $NO_x$, and CO catalyst rated for 10 parts per million volumetric at 15% $O_2$ CO. No emissions controls are included for $CO_2$.

(13) STG, HRSG, and other BOP maintenance costs are based on Black & Veatch project experience and vendor data and recommendations.

(14) SCR included for $NO_x$ control.

(15) SCR uses anhydrous ammonia.

(16) Costs associated with an oxidation catalyst are included.

(17) Water treatment costs are included for cycle makeup, cooling tower makeup and service water where needed.

(18) The following were assumed for costs:

- $400/ton for anhydrous ammonia.
- $0.95/1,000 gallons for raw water.
- $3.00/1,000 gallons for demineralized water.
- $4.94/1,000 gallons for sewage charge.

***10.3.3.2 O&M Estimate.*** The fixed and variable costs, based on the assumptions listed above, are provided in Table 10-7 and are expressed on thousands of 2009 US dollars.

### *10.3.4 Preliminary Capital Cost Estimates*

The following subsections provide the general, direct, and indirect capital cost assumptions.

#### *10.3.4.1 General Capital Cost Assumptions.*

(1) The site is the Deerhaven Generating Plant site.

(2) Protection or relocation of existing fish and wildlife habitat; threatened and endangered species; or historical, cultural, and archaeological artifacts is not included.

(3) The site has sufficient area available to accommodate construction activities including, but not limited to, offices, laydown, and staging.

(4) Pilings are included under major equipment. Spread footings were assumed for all other foundations. Further stabilization of the existing subgrade is not included.

(5) Construction power is available at the site boundary.

(6) Natural gas supply is assumed to be a pipeline connection at the site boundary.

(7) Natural gas will be available at the site boundary at the required volume and pressure according to the CTG OEM requirements. No. 2 fuel oil will be delivered by truck to a fuel oil storage tank sized for five full load days of operation of the unit.

**Table 10-7**
**GE 1x1 7EA O&M Cost Estimates**

| Parameter | $ 2009 ($000) |
|---|---|
| **Fixed Costs** | |
| Labor | 2,497.5 |
| Maintenance | 138.0 |
| Other Expenses [1] | 329.0 |
| *Total Annualized Fixed Costs* | *2,964.5* |
| **Variable Costs** | |
| Outage Maintenance | 1,811.6 |
| Utilities | 351.3 |
| Chemical Usage | 216.8 |
| *Total Annual Variable Costs* | *2,379.7* |
| **O&M Cost Summary** | |
| **Annual Net Generation, MWh [2, 3]** | **677,020** |
| **Fixed Costs per net unit of Capacity, $/kW-yr [2]** | **24.93** |
| **Variable Costs per net unit of Output, $/MWh [2, 3]** | **3.51** |

[1]Other expenses include office and administrative expenses, training, and bonus and incentive pay.
[2]Based on average day performance conditions presented in Table 10-6.
[3]Based on a 65 percent capacity factor.

### *10.3.4.2 Direct Cost Assumptions.*

(1) The plant will feature one dual fueled GE 7EA CTG, one HRSG, and one condensing STG. The primary fuel will be natural gas, and the backup fuel will be No. 2 fuel oil. The cost of unloading and delivery to the project site is included.

(2) The CTG includes a standard enclosure. A gantry or bridge crane for servicing the CTG and STG is included.

(3) An inlet air evaporative cooling system has been included.

(4) The HRSG does not include duct firing. An oxidation catalyst for CO control and SCR equipment to control $NO_x$ emissions are included with the HRSG pricing.

(5) CEMS has been included in the cost estimate for monitoring stack emissions.

(6) The source for cooling tower makeup and cycle makeup will be ground water. Onsite water treatment includes a pretreatment system followed by a reverse osmosis and demineralization system for cycle makeup treatment.

(7) Field erected tanks consisting of the following are included:

- Demineralized water storage tank.
- No. 2 fuel oil storage tank.
- Condensate storage tank.
- Raw water / fire water storage tank.

(8) Automatic fire protection will consist of the CTG OEM supplied standard $CO_2$ fire suppression system; water deluge of the transformers; dry-pipe fire protection of the cooling tower; wet-pipe sprinkler system in the buildings, except in the control room, which will have fire detection equipment only; and hydrant protection for site.

(9) Major buildings included in the costs estimate are as follows:

- A central control/electrical building is included for the site that is sized to enclose a control room, battery room, motor control center, meal room and toilets, locker room, and various offices.
- The estimate includes an administration/workshop/warehouse building, which will provide administration offices, storage and workshop areas, instrument shop, a locker room, and a drawing room.
- - A water treatment building is included that is sufficient for the enclosure of the water treatment equipment and fire water pumps.
- All buildings will be pre-engineered metal structures.

(10) A sanitary waste treatment (septic) system is included.

(11) A wet, mechanical draft cooling tower will provide cycle heat rejection.

(12) A wastewater collection system is included.

(13) An emergency diesel generator for safe shutdown is included.

### *10.3.4.3 Indirect Cost Assumptions.*

(1) General indirect costs include all necessary services required for checkouts, testing services, and commissioning.

(2) An allowance for insurance has been included in the cost estimate. Insurance includes builder's risk and general liability.

(3) Engineering and related services costs are included.

(4) Field construction management services include field management staff with supporting staff personnel, field contract administration, field inspection and quality assurance, and project control.

(5) Technical direction and management of startup and testing; cleanup expense for the portion not included in the direct-cost construction contracts; safety and medical services, guards and other security services; insurance premiums, performance bond; and liability insurance for equipment and tools are included.

(6) Contractors' contingency and profit are included in the estimate.

(7) Transportation costs for delivery to the job site are included in the base plant estimate.

(8) Spare parts for startup and use during operation are included. Major hot gas path parts are not included.

***10.3.4.4 Capital Cost Estimate.*** The preliminary capital cost estimate, based on the assumptions provided above, is provided in Table 10-8.

**Table 10-8**
**GE 1x1 7EA Combined Cycle Capital Cost Estimate**

| Component | $ 2009 ($000) | $ 2009 $/kW [1] |
|---|---|---|
| Purchase Contracts | 71,604 | 627 |
| Construction Contracts | 39,081 | 342 |
| *Total Direct Costs* | *110,686* | *969* |
| *Total Indirect Costs* | *43,416* | *380* |
| **Total EPC Capital Costs** | **154,102** | **1,296** |
| **Total Including Owner's Costs** | **192,628** | **1,620** |

[1]Values presented are based on net plant output at average day ambient conditions.

## 10.4 Pulverized Coal

Currently, it is uncertain whether a coal unit of any type could be permitted in Florida, and certainly, recent experience has indicated that new coal units cannot be permitted in Florida. In spite of this uncertainty, GRU has included a pulverized coal unit for purposes of evaluating its cost compared to the GREC. The three major coal technologies that could be considered are pulverized coal, fluidized bed, and integrated coal gasification. In addition, a size compatible with GRU's system was selected. The 125 MW pulverized coal unit was selected for several reasons. From a size standpoint, there are significant economies of scale associated with coal units resulting in a desire to have the largest unit possible. The 125 MW size is slightly larger than the GREC, but the 125 MW unit will have lower output than the GREC if CCS is required. In this size range, fluidized bed units are generally competitive with pulverized coal units, but in general pulverized coal units have slightly better heat rates, reducing $CO_2$ emissions and currently, there is more experience with pulverized coal units in meeting the lowest possible emission rates for pollutants. Current efforts for integrated coal gasification units have focused on the 7F combustion turbine technology, resulting in much larger units. In addition, integrated coal gasification units have generally been more costly than pulverized coal units. Other technologies such as oxycombustion have yet to become commercial.

Because of the uncertainty relating to permitting requirements, two versions of the pulverized coal unit have been evaluated. The first is the 125 MW pulverized coal unit with emissions controls to reduce the emission of $SO_2$, $NO_x$, mercury (Hg), and particulates to the lowest reasonable levels. The second version is the same 125 MW coal unit with CCS. Because CCS is not currently considered a commercial process in Florida, the estimates developed for it encompass greater uncertainty than for the standard pulverized coal unit. The following presents the details of the pulverized coal alternative.

With pulverized coal technology, coal that is sized to roughly 20 mm (3/4 inch) top size is fed to pulverizers that finely grind the coal to a size so that no less than 70 percent of the coal passes through a 200 mesh screen (70 microns). This pulverized coal, suspended in the primary air stream supplied by forced draft fans, is pneumatically transported to coal burners. At the burner, this mixture of primary air and coal is further mixed with secondary air, and with the presence of sufficient heat for ignition, the coal burns in suspension with the expectation that combustion will be complete before the burner flame contacts the backwall or sidewalls of the furnace. Current pulverized fuel combustion technology also includes features to minimize unintended products of combustion. Low $NO_x$ burners or air and fuel staging can be used to reduce $NO_x$, and carefully controlling air-fuel ratios can reduce CO emissions.

As a result of the high combustion temperature of pulverized coal at the burners, the furnace enclosure is constructed of membrane waterwalls to absorb the radiant heat of combustion. This heat absorption in the furnace is used to evaporate the preheated boiler feedwater that is circulated through the membrane furnace walls. The steam from the evaporated feedwater is separated from the liquid feedwater and routed to a series of additional heat transfer surfaces in the steam generator.

Once the products of pulverized coal combustion (ash and flue gas) have been cooled sufficiently by the waterwall surfaces so that the ash is no longer molten but in solid form, heat transfer surfaces, predominantly of the convective type, absorb the remaining heat of combustion. These convective heat transfer surfaces include the superheaters, reheaters, and economizers located within the steam generator enclosure downstream of the furnace. The final section of boiler heat recovery is in the air preheater, where the flue gas leaving the economizer surface is further cooled by regenerative or recuperative heat transfer to the incoming combustion air.

Although steam generating surfaces are designed to preclude the deposition of molten or sticky ash products, on-line cleaning systems are provided to enable the removal of ash deposits as they occur. These on-line cleaners are typically soot blowers that utilize either high-pressure (HP) steam or air to dislodge ash deposits from heat transfer surfaces or, in cases with extreme ash deposition, utilize HP water to remove molten ash deposits from evaporative steam generator surfaces. The characteristics of the coal, such as ash content and ash chemical composition, dictate the type, quantity, and frequency of use of these on-line ash cleaning systems. Ash characteristics also dictate the steam generator design regarding the maximum flue gas temperatures that can be tolerated entering convective heat transfer surfaces. The design must ensure that ash in the flue gas stream has been sufficiently cooled so that it will not rapidly agglomerate or bond to convective heat transfer surfaces. In the case of very hard and erosive ash components, flue gas velocities must be sufficiently slow so that the ash does not rapidly erode heat transfer surfaces.

With pulverized coal combustion technology, the majority of the solid ash components in the coal are carried in the flue gas stream all the way through the furnace and convective heat transfer components to enable collection with particulate removal equipment (electrostatic precipitators or fabric filters) downstream of the air preheaters. Typically, no less than 80 percent of the total ash is carried out of the steam generator for collection downstream. Roughly 15 percent of the total fuel ash is collected from the furnace as bottom ash, and 5 percent is collected in hoppers located below the steam generator economizer and regenerative air heaters.

### 10.4.1 Thermal Performance Estimates

Thermal performance and emissions estimates were developed for a 125 MW (net) subcritical pulverized coal unit at average day conditions corresponding to 70 °F/ 72 percent relative humidity as provided in Table 10-9. Performance for pulverized coal generating units is relatively insensitive to ambient conditions, and therefore only average ambient condition performance estimates were developed.

**Table 10-9**
**125 MW (net) Subcritical PC Performance and Emissions Estimates**

| Parameter | Value |
|---|---|
| **Meteorological Conditions** | |
| Average Ambient Temperature, °F | 70 |
| Average Ambient Relative Humidity, percent | 72 |
| **Assumed Coal Quality** | |
| Carbon, percent | 63.61 |
| Hydrogen, percent | 4.9 |
| Sulfur, percent | 0.67 |
| Nitrogen, percent | 1.37 |
| Oxygen, percent | 7.27 |
| Moisture, percent | 6.5 |
| Chlorine, percent | 0.09 |
| Ash, percent | 15.59 |
| Calorific Value (HHV), Btu/lb | 11,800 |
| **Estimated Thermal Performance** | |
| Load Condition, percent | 100 |
| Steam Cycle Heat Rejection Method | Wet Mechanical Draft |
| Gross STG Output, MW | 139.7 |
| Auxiliary Load, MW | 14.7 |
| Net Power Output, MW | 125 |
| Net Plant Heat Rate (HHV), Btu/kWh | 10,000 |
| Net Plant Thermal Efficiency (HHV), percent | 34.1 |
| **Estimated Emissions** [(1)] | |
| $NO_x$, lb/MBtu | 0.050 |
| $SO_2$, lb/MBtu | 0.060 |
| Hg, lb/MBtu | 1.27 E-6 |
| $CO_2$, lb/MBtu | 205.0 |

[(1)] Emissions estimates are based on the use of an SCR system and low $NO_x$ burners for $NO_x$ control, a wet FGD system for $SO_2$ control, activated carbon injection for Hg control, and a baghouse for $PM_{10}$ control. No emissions controls are included for $CO_2$.

### *10.4.2 O&M Cost Estimates*

***10.4.2.1 O&M Assumptions.*** The assumptions for fixed and variable O&M costs are as follows:

(1) The O&M estimates are in 2009 US dollars.

(2) The plant will operate with a capacity factor of 85 percent and have minimal starts.

(3) The location is the Deerhaven Generating Plant site.

(4) Plant staff wage rates are based on an perator salary of $66,000 per year.

(5) The payroll burden rate used was 40 percent. The payroll burden is intended to capture the costs for payroll taxes and benefits provided by the utility on behalf of the employees in addition to direct salary. Not included in the burden rate are any costs for corporate services such as payroll, accounting, legal, and corporate tax administration.

(6) Property insurance and property taxes are not included.

(7) Office and administrative expenses are estimated to be 5 percent of the total staff salary.

(8) Estimated employee training cost and incentive pay/bonuses are included.

(9) Routine equipment maintenance costs are estimated based on Black & Veatch project experience and manufacturer input.

(10) Contract services include costs for services not directly related to power production.

(11) The variable O&M cost analysis is based on a repeating maintenance schedule over the life of the plant, and costs are estimated through at least one major overhaul of equipment.

(12) STG, boiler, and other BOP maintenance costs are based on Black & Veatch project experience and vendor data and recommendations.

(13) SCR is included for $NO_x$ control.

(14) Activated Carbon Injection (ACI) was included for Hg control.

(15) SCR uses anhydrous ammonia.

(16) A wet scrubber using limestone was included for $SO_2$ control.

(17) A fabric filter baghouse system was included for particulate control.

(18) Water treatment costs are included for cycle makeup, cooling tower makeup and service water, where needed.

(19) The following were assumed for costs:

- $400/ton for anhydrous ammonia.
- $0.95/1,000 gallons for raw water.
- $3.00/1,000 gallons for demineralized water.

- $4.95/1,000 gallons for sewage charge.
- $28/ton for limestone.
- $6/ton for ash disposal.
- $100/bag for baghouse bag.
- $50/cage for baghouse cage.

***10.4.2.2 O&M Estimate.*** The fixed and variable costs, based on the assumptions listed above, are provided in Table 10-10 and are expressed on thousands of 2009 US dollars.

**Table 10-10**
**125 MW (net) PC O&M Cost Estimates**

| Parameter | $ 2009 ($000) |
|---|---|
| **Fixed Costs** | |
| Labor | 6,376 |
| Maintenance | 1,116 |
| Other Expenses [1] | 774 |
| *Total Annualized Fixed Costs* | *8,266* |
| **Variable Costs** | |
| Outage Maintenance | 730 |
| Utilities | 919 |
| Chemical Usage | 536 |
| Ash and FGD Byproduct Disposal | 465 |
| Desulfurization Equipment | 252 |
| Particulate Removal | 153 |
| SCR | 685 |
| ACI | 858 |
| *Total Annual Variable Costs* | *4,598* |
| **O&M Cost Summary** | |
| **Annual Net Generation, MWh [2, 3]** | **930,750** |
| **Fixed Costs per net unit of Capacity, $/kW-yr [2]** | **66.12** |
| **Variable Costs per net unit of Output, $/MWh [2, 3]** | **4.94** |

[1]Other expenses include office and administrative expenses, training, and bonus and incentive pay.
[2]Based on average day performance conditions presented in Table 10-9.
[3]Based on an 85 percent capacity factor.

### 10.4.3 Capital Cost Estimates

The following subsections provide the general, direct, and indirect capital cost assumptions.

#### 10.4.3.1 General Capital Cost Assumptions.

(1) The plant site is the Deerhaven Generating Plant site.

(2) The site has sufficient area available to accommodate construction activities including, but not limited to, offices, laydown, and staging.

(3) Pilings are included under major equipment. Spread footings were assumed for all other foundations. Further stabilization of the existing subgrade is not included.

(4) Construction power is available at the site boundary.

(5) The protection or relocation of existing fish and wildlife habitat; threatened and endangered species; or historical, cultural, and archaeological artifacts is not expected and, therefore, is not included.

(6) Initial inventory of coal, limestone, anhydrous ammonia, and diesel fuel are excluded from the capital cost estimate, but are included in the owner's cost estimate.

(7) Fuel considered will be of similar quality to the fuel presented in Table 10-9.

(8) Offsite development is not included.

#### 10.4.3.2 Direct Cost Assumptions.

(1) The plant would feature one 125 MW (net) unit with one subcritical pulverized coal steam generator (boiler) and one condensing STG.

(2) The subcritical boiler would be drum type, balanced draft, single reheat, and fueled with pulverized coal. Ignition fuel would be No. 2 fuel oil. Steam soot blowers would be used. The boiler would be equipped with three pulverizers, with one serving as a spare. The boiler related equipment such as draft fans, breeching, and structural steel were included in this estimate. The boiler would be fully enclosed.

(3) The STG would be rated at 125 MW (net), and would be inclusive of a standard sound enclosure. The generator would be hydrogen cooled; an allowance has been included for bulk hydrogen and $CO_2$ gas storage systems. The turbine would be a 3,600 revolution per minute (rpm), tandem compound two flow (TC2F), single-reheat machine.

(4) One each of motor driven forced draft (FD) and induced draft (ID) fans is included. One motor driven primary air (PA) fan would be provided per pulverizer.

(5) $NO_x$ emissions would be controlled by an SCR system. $SO_2$ emissions would be controlled by a wet FGD. Fabric filter equipment would limit particulate emissions.

(6) Anhydrous ammonia will be provided for use in the SCR system.

(7) Steam vent silencers are not included.

(8) Low $NO_x$ burners are included.

(9) The fire water system includes a diesel fire water pump, motor driven fire water pump, and a jockey fire water pump.

(10) The boiler feed system includes two half-capacity motor driven boiler feed pumps.

(11) The water source will be groundwater.

(12) The feedwater heater cycle design will include three low-pressure (LP) feedwater heaters, a deaerating feedwater heater, and two HP feedwater heaters for a six heater cycle.

(13) Material handling systems are included, with an allowance for a coal handling system and a limestone handling system.

(14) A clarifier is included for the pretreatment system. A demineralizer and condensate polisher is also included in the pulverized coal estimates. The other standard chemical equipment required on a new site is also included. This includes cycle sampling and analysis equipment, wastewater treatment equipment, and a site sanitary treatment system.

(15) Field erected tanks consist of the following:

- Fuel oil storage tank.
- Service/fire water storage tanks.
- Condensate tank - stainless steel.
- Demineralized water storage tank.
- Neutralization tank.

(16) Major solid waste disposal design considerations include the following:

- Bottom ash and pulverizer rejects would be trucked from the plant area to an ash disposal area.
- A pressure type pneumatic fly ash transport system, including a fly ash storage silo, will be provided.
- Trucks and landfill area mobile equipment are not included in these estimates. Rolling stock is included in the owner's costs.
- The dewatered sludge for the wet limestone FGD cases is assumed to be trucked to the ash disposal area.

(17) A multi-cell, rectangular, fiberglass mechanical draft, counterflow, cooling tower is included. Cooling tower fans are assumed to be single speed, non-reversing. The circulating water system would include two 50 percent nominal capacity vertical pumps.

(18) CEMS is included.

(19) A concrete chimney is included.

(20) A bridge crane for servicing the STG is included.

(21) Two full capacity air compressors would be provided to supply service and control air. Two central air receivers are included, with miscellaneous air receivers in various plant locations of significant air consumption. Two full capacity heatless air dryers are included to provide control air. All air to non-heated plant areas is from the dried control air supply.

(22) A diesel driven generator is included for safe shutdown power.

(23) The condenser would be a single-pass, two-shell, dual pressure condenser. Condenser tubing would be stainless steel.

(24) Three half-capacity, vertical wet suction, can-type, condensate pumps are included.

(25) Two full-capacity mechanical condenser vacuum pumps are included.

(26) The estimates include a diesel main fire pump, motor driven fire pump, boiler area booster fire pump, jockey pump, and a boiler area jockey pump.

(27) Fuel oil storage and pumping facilities are included.

(28) One generator step-up (GSU) transformer is included.

(29) Two main auxiliary transformers are included.

(30) One generator breaker is included.

(31) An allowance for a substation has not been included in the cost estimate.

(32) Assumptions on major structures include the following:

- Construction facilities.
- Administration building.
- Plant warehouse maintenance building.
- Control center building.
- Water treatment building.

(33) Piling is assumed for major equipment and buildings only.

(34) A single No. 2 fuel oil fired auxiliary boiler is included.

(35) Building heating, ventilation, and air conditioning (HVAC) allowance is included.

(36) Concrete circulating water pipe is assumed. Termination piping at the condenser and cooling tower would be coated carbon steel.

(37) The steam generator building would include a single elevator.

(38) Office furniture, maintenance warehouse bins and shelving, laboratory equipment and furnishings, and machine shop equipment are included in the owner's cost.

***10.4.3.3 Indirect Cost Assumptions.***

(1) General indirect costs include all necessary services required for checkouts, testing services, and commissioning.

(2) An allowance for insurance has been included in the cost estimate. Insurance includes builder's risk and general liability.

(3) Engineering and related services costs are included.

(4) Field construction management services include field management staff with supporting staff personnel, field contract administration, field inspection and quality assurance, and project control.

(5) technical direction and management of start-up and testing; cleanup expense for the portion not included in the direct-cost construction contracts; safety and medical services, guards and other security services; insurance premiums, performance bond; and liability insurance for equipment and tools are included.

(6) Contractors' contingency and profit are included in the estimate.

(7) Transportation costs for delivery to the job site are included in the base plant estimate.

(8) Spare parts for startup and operation are included. Major hot gas path parts are not included.

***10.4.3.4 Capital Cost Estimate.*** The capital cost estimate, based on the assumptions provided above, is provided in Table 10-11.

**Table 10-11**
**125 MW (net) PC Capital Cost Estimate**

| Component | $ 2009 ($000) | $ 2009 $/kW [1] |
|---|---|---|
| Purchase Contracts | 241,516 | 1,932 |
| Construction Contracts | 109,198 | 874 |
| *Total Direct Costs* | *350,714* | *2,806* |
| *Total Indirect Costs* | *148,198* | *1,186* |
| **Total EPC Capital Costs** | **498,912** | **3,991** |
| **Total Including Owner's Costs** | **623,640** | **4,989** |

[1]Values presented are based on net plant output at average ambient conditions.

## 10.5 Pulverized Coal with Carbon Capture and Sequestration

$CO_2$ capture for pulverized coal power generation would typically take place "post-combustion" based on the current state of technology development. In post-combustion capture, $CO_2$ is removed from the flue gas after combustion, then compressed and transported by high pressure pipeline to a sequestration facility. Since the volume of gas to be treated is very large and the concentration of $CO_2$ in the flue gas is relatively low, a chemical solvent is required for absorption. Oxy-fuel combustion is another technology that is being developed for PC power generation, however this technology is still in the early stages of development and is significantly less developed than post-combustion processes.

Based on currently developed post-combustion technology, the most likely solvent that would be used would be an amine-based chemical solvent. Ammonia solution is another solvent option that is currently under development, but is currently less developed than amine-based solvents for $CO_2$ removal. It should be noted that there are currently no power plants in the US that capture $CO_2$ using an amine-based or other process at the scale of a 125 MW coal plant or larger.

The assumed $CO_2$ capture plant process consists of flue gas preparation, $CO_2$ absorption, $CO_2$ stripping (solvent regeneration), and $CO_2$ compression. The flow process would begin at the flue gas discharge from the plant emissions controls equipment, where a blower with a cooler would be used to pass the flue gas upward through an absorber. Cool amine solution would be distributed evenly downward through the absorber onto packing material, allowing the solvent to selectively capture

$CO_2$ from the gas. The resulting flue gas would be discharged from the top of the absorber to the atmosphere. The $CO_2$-rich solvent would be collected at the bottom of the absorber, pre-heated via an amine/amine heat exchanger, and pumped into the top of a stripper. $CO_2$ would be stripped from the solvent by steam from a reboiler. The resulting high-purity $CO_2$ stream would then be compressed and transported to storage.

Energy requirements for amine-based $CO_2$ removal include a significant amount of low-pressure steam to strip $CO_2$ from the solvent, and electricity for the blowers and fans necessary for flue gas circulation through the capture process. Significant additional energy is required for $CO_2$ compression and cooling water circulation.

As $SO_2$ will degrade amine-based solvents, some enhancement of the limestone FGD system would be required compared to the non-$CO_2$ capture case in order to further reduce $SO_2$ levels to less than 10 ppm.

Because the use of $CO_2$ capture technology has not been demonstrated in the power industry at a significant scale, there is inherent risk in implementing $CO_2$ capture in its current state of development. It is expected that improvements and optimizations will be forthcoming from current and future development work. At this time, capital and operating costs are very high, but opportunities exist to reduce these costs somewhat as the process is optimized through demonstration and operating experience.

Once captured, $CO_2$ may be stored by means of geological sequestration. Long-term sequestration of $CO_2$ in significant quantities has yet to be proven as a definitive technology and may not be feasible in some geographic regions. Currently there are three options for the long-term geologic sequestration of $CO_2$; conventional oil and gas reserves for enhanced oil recovery (EOR), coal seams for enhanced coal bed methane (ECBM) production, and storage in deep saline reservoirs. In the US, deep saline reservoirs appear to be the best suited geologic sink for long-term carbon sequestration. Information from the Southeast Regional Carbon Sequestration Partnership (SECARB) appears to indicate that the best possibility for sequestration near the Gainesville area would be in the saline aquifer regions in the southern part of Florida. For purposes of this cost estimate, it has been assumed that a 100-mile pipeline length would be required extending to the south of the power plant in order to reach an appropriate and feasible sequestration site. Significantly more investigation and development would be required to ultimately locate an appropriate site.

Table 10-12 provides estimated impacts to selected cost and performance data provided in Section 10.4 for the 125 MW subcritical PC plant. As stated in Section 10.4, since carbon capture and sequestration for pulverized coal power plants is not yet considered a commercial process, the estimates developed for it encompass greater uncertainty than for a standard pulverized coal unit.

**Table 10-12**
**Estimated Impacts of Addition of Carbon Capture and Sequestration to Subcritical PC Plant Performance and Cost**

| Parameter | Value |
|---|---|
| *Estimated Performance* | |
| Assumed Carbon Capture Percentage | 85-90 |
| Net Plant Output, MW | 94 |
| Net Plant Heat Rate (HHV), Btu/kWh | 13,300 |
| *Estimated Capital Cost* | |
| Total EPC capital cost increase for $CO_2$ capture and compression equipment, ($000's) 2009 | 350,000 |
| EPC Capital cost of 100-mile $CO_2$ pipeline to sequestration site, ($000's) 2009 | 60,000 |
| EPC cost to develop sequestration site | Not included |
| *Non-Fuel O&M Costs* | |
| Total fixed and variable O&M costs for $CO_2$ capture equipment ($ 2009, thousands), per year | 15,100 |

# 11.0 Evaluation Methodology

To compare the cost-effectiveness of GRU's PPA with GREC LLC discussed in Section 9.0 of this Application to the supply-side alternatives discussed in Section 10.0 of this Application, levelized cost of energy (LCOE) analyses were performed. The LCOE analyses calculate the all-in (capital, fixed and variable O&M, and fuel costs), levelized cent/kWh cost of alternatives based on assumed capacity factors and the cost and performance characteristics of the alternatives. The process of levelization produces a cents/kWh cost for each alternative that has the same present value as the stream of variable, year-by-year busbar costs; therefore, alternatives can be compared to one another based on the levelized costs. The LCOE analyses take into consideration the economic parameters and fuel price projections presented previously in this Application and, therefore, all LCOE analyses are internally consistent. The LCOE analyses have been performed over the period 2014 through 2043, which represents the term of GRU's PPA with GREC LLC.

The remainder of this section presents more description of how the LCOE analyses were performed and how the fuel and $CO_2$ emissions allowance price projections used in the LCOE analyses were developed.

## 11.1 Description of the Levelized Cost of Energy Analyses

As described previously, the economics of the proposed GREC were compared to the economics of alternative generating technologies based on LCOE analyses. The LCOE analyses account for all costs associated with GRU's PPA with GREC LLC, and similarly account for all costs associated with the alternative generating technologies. Costs associated with the GREC PPA include those discussed in Section 9.0 of this Application. Costs associated with the alternative generating technologies include capital costs, fuel costs, and O&M costs. As discussed in Section 12.0 of this Application, additional sensitivity cases were evaluated to reflect potential costs associated with future regulation of $CO_2$ emissions. The levelized cost per kWh is the parameter used for comparing the economics of GRU's PPA with GREC LLC to the generating unit alternatives.

## 11.2 Fuel and $CO_2$ Emissions Allowance Price Forecasts

Section 7.0 presents the fuel and $CO_2$ emissions allowance price forecasts used throughout this Application, including price forecasts for various sensitivity cases. The fuel and $CO_2$ emissions allowance price forecasts presented in Section 7.0 were developed in constant 2007 dollars through the year 2030. For purposes of the economic analyses presented in Section 12.0 and discussed throughout this Application, the projections were extrapolated beyond 2030, based on the average annual escalation rate over the last 5 years of each price projection. The $CO_2$ emissions allowance price projections were converted from metric to short tons. The resulting price projections were then converted from constant 2007 dollars to nominal dollars using the 2.5 percent general inflation rate discussed in Section 6.0. The resulting fuel and $CO_2$ price projections are summarized in Table 11-1.[1]

[1] The columns of Table 11-2 labeled *HR* 2454 and *HR 2454 Lim Alt/No Int Offsets* correspond to the cases considered in the EIA's analysis of HR 2454, which is discussed in Section 7.0 of this Application.

## Table 11-1
## Fuel and $CO_2$ Emissions Allowance Price Projections

| Year | Natural Gas (Nominal $/MBtu) | | | | | Coal (Nominal $/MBtu) | | | | | $CO_2$ (Nominal $/ton) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Reference | High Price | Low Price | HR 2454 Basic | HR 2454 Lim Alt/No Int Offsets | Reference | High Price | Low Price | HR 2454 | HR 2454 Lim Alt/No Int Offsets | HR 2454 Basic | HR 2454 Lim Alt/No Int Offsets |
| 2014 | 8.38 | 8.94 | 7.31 | 8.63 | 9.70 | 3.17 | 3.22 | 3.09 | 3.13 | 3.19 | 22.31 | 65.56 |
| 2015 | 8.82 | 9.56 | 7.70 | 9.11 | 10.79 | 3.25 | 3.33 | 3.19 | 3.21 | 3.23 | 24.56 | 72.17 |
| 2016 | 9.30 | 10.07 | 8.22 | 9.57 | 11.35 | 3.34 | 3.41 | 3.28 | 3.29 | 3.31 | 27.04 | 79.45 |
| 2017 | 9.69 | 10.54 | 8.61 | 9.85 | 11.78 | 3.39 | 3.46 | 3.33 | 3.33 | 3.35 | 29.76 | 87.46 |
| 2018 | 10.16 | 11.02 | 9.03 | 10.14 | 12.30 | 3.41 | 3.49 | 3.35 | 3.36 | 3.35 | 32.76 | 96.28 |
| 2019 | 10.73 | 11.43 | 9.62 | 10.45 | 12.69 | 3.51 | 3.59 | 3.44 | 3.47 | 3.45 | 36.07 | 105.99 |
| 2020 | 11.27 | 11.79 | 10.59 | 10.69 | 12.91 | 3.60 | 3.68 | 3.53 | 3.58 | 3.53 | 39.70 | 116.68 |
| 2021 | 11.90 | 12.26 | 11.71 | 10.73 | 12.96 | 3.68 | 3.76 | 3.60 | 3.67 | 3.66 | 43.71 | 128.45 |
| 2022 | 12.37 | 12.76 | 12.28 | 10.90 | 13.55 | 3.76 | 3.85 | 3.68 | 3.77 | 3.76 | 48.12 | 141.41 |
| 2023 | 12.43 | 13.09 | 12.20 | 11.15 | 14.02 | 3.86 | 3.95 | 3.77 | 3.87 | 3.88 | 52.97 | 155.67 |
| 2014 | 12.78 | 13.31 | 12.33 | 11.45 | 14.19 | 3.97 | 4.05 | 3.86 | 3.98 | 3.95 | 58.31 | 171.37 |
| 2025 | 12.75 | 13.21 | 12.15 | 11.37 | 14.09 | 4.10 | 4.18 | 3.99 | 4.08 | 4.05 | 64.19 | 188.65 |
| 2026 | 13.24 | 13.65 | 12.58 | 11.72 | 14.75 | 4.23 | 4.30 | 4.11 | 4.19 | 4.17 | 70.67 | 207.67 |
| 2027 | 13.82 | 14.12 | 13.04 | 11.94 | 15.13 | 4.36 | 4.42 | 4.23 | 4.30 | 4.31 | 77.79 | 228.62 |
| 2028 | 14.69 | 15.08 | 14.01 | 12.52 | 15.46 | 4.47 | 4.53 | 4.33 | 4.40 | 4.46 | 85.64 | 251.67 |
| 2029 | 15.40 | 15.98 | 14.75 | 13.11 | 15.76 | 4.58 | 4.65 | 4.44 | 4.47 | 4.55 | 94.27 | 277.05 |
| 2030 | 16.22 | 16.85 | 15.25 | 13.63 | 16.14 | 4.71 | 4.78 | 4.55 | 4.54 | 4.79 | 103.78 | 304.99 |
| 2031 | 17.06 | 17.76 | 16.00 | 14.16 | 16.50 | 4.84 | 4.91 | 4.67 | 4.64 | 4.97 | 114.25 | 335.75 |
| 2032 | 17.95 | 18.72 | 16.78 | 14.70 | 16.88 | 4.98 | 5.04 | 4.79 | 4.73 | 5.14 | 125.77 | 369.61 |
| 2033 | 18.88 | 19.73 | 17.61 | 15.27 | 17.26 | 5.11 | 5.18 | 4.92 | 4.83 | 5.33 | 138.45 | 406.89 |
| 2034 | 19.87 | 20.80 | 18.48 | 15.86 | 17.66 | 5.25 | 5.32 | 5.04 | 4.93 | 5.52 | 152.42 | 447.92 |
| 2035 | 20.90 | 21.93 | 19.38 | 16.47 | 18.06 | 5.39 | 5.46 | 5.18 | 5.03 | 5.71 | 167.79 | 493.10 |
| 2036 | 21.99 | 23.11 | 20.34 | 17.10 | 18.47 | 5.54 | 5.61 | 5.31 | 5.14 | 5.92 | 184.71 | 542.83 |
| 2037 | 23.13 | 24.36 | 21.34 | 17.76 | 18.89 | 5.69 | 5.76 | 5.45 | 5.24 | 6.13 | 203.34 | 597.57 |
| 2038 | 24.34 | 25.68 | 22.39 | 18.45 | 19.32 | 5.85 | 5.91 | 5.59 | 5.35 | 6.34 | 223.84 | 657.83 |
| 2039 | 25.61 | 27.06 | 23.49 | 19.16 | 19.76 | 6.01 | 6.07 | 5.74 | 5.46 | 6.57 | 246.42 | 724.18 |
| 2040 | 26.94 | 28.53 | 24.65 | 19.90 | 20.21 | 6.17 | 6.24 | 5.88 | 5.57 | 6.80 | 271.27 | 797.21 |
| 2041 | 28.34 | 30.07 | 25.86 | 20.66 | 20.67 | 6.34 | 6.40 | 6.04 | 5.69 | 7.05 | 298.63 | 877.61 |
| 2042 | 29.82 | 31.69 | 27.13 | 21.46 | 21.14 | 6.51 | 6.58 | 6.19 | 5.81 | 7.30 | 328.74 | 966.12 |
| 2043 | 31.37 | 33.41 | 28.47 | 22.29 | 21.63 | 6.69 | 6.75 | 6.36 | 5.93 | 7.56 | 361.90 | 1,063.55 |

# 12.0 Economic Evaluation

As discussed in Section 11.0 of this Application, LCOE analyses were performed to provide a basis for comparison of the economics of GRU's PPA for capacity and energy from the proposed GREC facility to the economics of the generating unit alternatives. Numerous evaluations were conducted in order to consider various fuel price projections including and excluding the potential impact of possible future regulations of $CO_2$ emissions, the impact of variations to the capital costs of the generating unit alternatives, and to compare the economics of the GREC LLC PPA to a pulverized coal unit that included the necessary equipment for CCS. The remainder of this section describes each of the cases evaluated and presents the corresponding LCOE for the GREC PPA compared to the other alternatives.

## 12.1 Overview of Cases Considered

Projections of fuel and $CO_2$ emissions allowance prices and estimates of generating unit costs and performance characteristics have been presented in previous sections of this Application, along with information related to the GREC LLC PPA. To develop a robust basis for comparing the economics of the GREC LLC PPA to the economics of the generating unit alternatives, a number of different cases were considered. These cases are described as follows:

- The *No $CO_2$* case considers the reference case fuel price projections summarized in Section 11.0 of this Application as well as the generating unit alternative cost and performance estimates presented in Section 10.0.
- The *No $CO_2$ – High Fuel Price* case considers the high fuel price projections summarized in Section 11.0 of this Application as well as the generating unit alternative cost and performance estimates presented in Section 10.0.
- The *No $CO_2$ – Low Fuel Price* case considers the low fuel price projections summarized in Section 11.0 of this Application as well as the generating unit alternative cost and performance estimates presented in Section 10.0.
- The *No $CO_2$ – High Capital Cost* case considers the reference case fuel price projections summarized in Section 11.0 of this Application as well as a 20 percent increase to the generating unit alternative capital cost estimates presented in Section 10.0.

- The *No $CO_2$ – Low Capital Cost* case considers the reference case fuel price projections summarized in Section 11.0 of this Application as well a 20 percent decrease to the generating unit alternative capital cost estimates presented in Section 10.0.
- The *HR 2454 Basic $CO_2$* case considers the $CO_2$ emissions allowance and fuel price projections corresponding to the EIA's analysis of HR 2454 for the *Basic* case (discussed in Section 7.0 and summarized in Section 11.0 of this Application) as well as the generating unit alternative cost and performance estimates presented in Section 10.0.
- The *HR 2454 High $CO_2$* case considers the $CO_2$ emissions allowance and fuel price projections corresponding to the EIA's analysis of HR 2454 for the *Limited Technology/No International Offsets* case (discussed in Section 7.0 and summarized in Section 11.0 of this Application) as well as the generating unit alternative cost and performance estimates presented in Section 10.0.

The alternative cases summarized in the preceding bulleted list need to be viewed in proper context to the proposed GREC facility. That is, because the price terms of the GREC LLC PPA are fixed, they are not subject to the fuel price and capital cost variations that are considered in the LCOE analyses of the generating unit alternatives. Further, given that the proposed GREC biomass unit will have net $CO_2$ emissions of zero, cases that consider potential regulation of $CO_2$ emissions and associated allowance prices do not impact the LCOE of the GREC LLC PPA.

## 12.2 Results of the LCOE Analyses

Table 12-1 summarizes the results of all of the LCOE analyses that were performed, with results presented as percent differences compared to the LCOE of the GREC LLC PPA.

**Table 12-1**
**LCOE Matrix**
**(Differences Compared to the LCOE of the GREC PPA)**

| Case | Generating Unit Alternative | | | | |
|---|---|---|---|---|---|
| | GREC LLC PPA | Simple Cycle LMS100 | 1x1 7EA Combined Cycle | Pulverized Coal (no CCS) | Pulverized Coal (with CCS) |
| No $CO_2$ | Base | 103% | 11% | -14% | 48% |
| No $CO_2$ – High Fuel Price | Base | 108% | 16% | -14% | 49% |
| No $CO_2$ – Low Fuel Price | Base | 96% | 5% | -15% | 47% |
| No $CO_2$ – High Capital Cost | Base | 118% | 15% | -6% | 66% |
| No $CO_2$ – Low Capital Cost | Base | 88% | 8% | -22% | 31% |
| HR 2454 Basic $CO_2$ | Base | 125% | 31% | 56% | 81% |
| HR 2454 High $CO_2$ | Base | 210% | 103% | 196% | 104% |

## 12.3 Summary of the LCOE Analyses Results

Analysis of Table 12-1 and Table 12-2 indicates the following:

- The LCOE of the GREC LLC PPA is lower in cost than the natural gas alternatives for all of the cases.
- The LCOE of the natural gas alternatives range from approximately 5 percent to 210 percent higher than the GREC LLC PPA.
- The LCOE of the GREC LLC PPA is lower in cost than the pulverized coal alternative without CCS for cases reflecting cost associated with future regulations of $CO_2$ emissions. The LCOE of the pulverized coal alternatives in these cases ranges from 56 percent to 196 percent higher than the LCOE of the GREC LLC PPA.
- The LCOE of the pulverized coal unit that includes CCS is higher than the LCOE of the GREC LLC PPA, ranging from 31 percent to 104 percent higher in LCOE.
- Overall, the LCOE of the GREC LLC PPA is the lowest among the natural gas and coal alternatives in 23 of the 28 cases considered.

# 13.0 Demand-Side Management and Supply-Side Efficiency

As discussed previously in this Application, GRU does not forecast a need for capacity to maintain reserve margin requirements until 2023 under its base case load forecast. The GREC biomass facility proposed herein offers significant benefits to GRU as discussed throughout this Application, despite the timing of the projected need for capacity to maintain reserve margin requirements. Given the timing of the projected need for capacity, GRU has not specifically performed any analyses to demonstrate that there are no conservation or (DSM measures that may mitigate the need for the GREC biomass facility. However, GRU has invested significant effort in developing the DSM programs currently offered to its customers. The remainder of this section describes GRU's current DSM programs, renewable energy projects that have been encouraged by GRU, and efficiency improvements to supply-side resources that have helped to reduce demand and energy requirements.

## 13.1 Planning Criteria and Program Goals

Since 1980, GRU has offered incentives and services as DSM tools to encourage energy conservation and demand reduction. DSM programs are available for all retail customers, including commercial and industrial customers. These programs, since their inception in 1980, have resulted in cumulative energy savings of 151 GWh and cumulative peak demand savings of 30 MW. Through 2008, and are projected to achieve 366 GWh in cumulative energy savings and 108 MW in cumulative peak demand savings through 2025.

Prior to 2006, GRU applied the RIM test to evaluate the cost-effectiveness of DSM programs. In 2006, GRU implemented the TRC test as an alternative measure to assess a conservation program's value. GRU looked at all available options for conservation programs, systematically analyzed their cost-effectiveness, and deployed many new conservation programs. GRU offers a wide variety of energy conservation rebates and incentives and is regarded as the energy conservation leader in Florida.

In 2005, ICF was hired to provide independent consultation on options for meeting the electric supply needs of the Gainesville community. ICF foresaw the need for additional electric generation in the coming years, and its report analyzed four alternatives that would best meet this need. These alternatives included various electric generation types, fuel types, and levels of DSM.

One alternative proposed by ICF included "Maximum DSM" coupled with a 75 MW biomass plant. The "Maximum DSM" component included a plan for year-by-year energy and demand reduction schedule to be achieved through new DSM programs. The year-by-year energy and demand savings has become the yardstick by which GRU measures progress with DSM.

Upon review and consideration of ICF's report, on April 12, 2006, the City Commission instructed staff as follows:

> *"1. Include the Total Resource Cost test as a consideration to pursue all cost effective and feasible demand side measures including demand response, energy efficiency, load management, and incentive rate design options. Ensure that the needs of low-income customers are addressed in demand-side management programs.*
>
> *2. Have GRU staff conduct a thorough examination of all DSM options and present a plan to the commission to develop and implement all cost effective DSM and demand response measures..."*

Per the Gainesville City Commission's direction, new DSM programs are now analyzed using the TRC test in addition to the RIM test. The TRC test differs slightly from the RIM test in that the TRC test measures the net costs of the DSM program as a resource option based on the total costs of the program, including both the participants' and the utility's costs, whereas the RIM test includes the impact on utility rates.

In 2009, GRU offered 23 rebate and incentive programs to encourage energy and peak demand reductions. Participation in these programs is expected to decrease peak demand by 2.5 MW and decrease total energy consumption by 17 GWh in 2009. GRU's conservation results to date and goals for the future are shown in Table 13-1.

**Table 13-1**
**Demand-Side Management Impacts[1]**

| Calendar Year | Energy Reduction (GWh) | | Summer Demand Reduction (MW) | |
|---|---|---|---|---|
| | Goal per ICF Study | GRU Actual/Planned | Goal per ICF Study | GRU Actual/Planned |
| 1980 | | 0 | | 0 |
| 1981 | | 1 | | 0 |
| 1982 | | 1 | | 1 |
| 1983 | | 2 | | 1 |
| 1984 | | 8 | | 3 |
| 1985 | | 16 | | 5 |
| 1986 | | 25 | | 7 |
| 1987 | | 30 | | 8 |
| 1988 | | 35 | | 10 |
| 1989 | | 39 | | 11 |
| 1990 | | 44 | | 12 |
| 1991 | | 49 | | 13 |
| 1992 | | 55 | | 14 |
| 1993 | | 61 | | 16 |
| 1994 | | 67 | | 17 |
| 1995 | | 72 | | 18 |
| 1996 | | 76 | | 19 |
| 1997 | | 80 | | 19 |
| 1998 | | 84 | | 20 |
| 1999 | | 89 | | 20 |
| 2000 | | 93 | | 21 |
| 2001 | | 97 | | 21 |
| 2002 | | 102 | | 22 |
| 2003 | | 106 | | 22 |
| 2004 | | 109 | | 23 |
| 2005 | | 113 | | 23 |
| 2006 | 125 | 117 | 27 | 24 |
| 2007 | 129 | 131 | 29 | 27 |
| 2008 | 134 | 151 | 30 | 30 |
| 2009 | 144 | 169 | 34 | 33 |
| 2010 | 158 | 181 | 38 | 37 |
| 2011 | 174 | 193 | 44 | 42 |
| 2012 | 193 | 206 | 50 | 48 |
| 2013 | 213 | 218 | 57 | 53 |
| 2014 | 234 | 230 | 65 | 59 |
| 2015 | 256 | 242 | 72 | 65 |
| 2016 | 273 | 255 | 77 | 69 |
| 2017 | 290 | 267 | 82 | 73 |
| 2018 | 307 | 279 | 88 | 78 |
| 2019 | 323 | 292 | 95 | 82 |
| 2020 | 340 | 304 | 102 | 86 |
| 2021 | 346 | 317 | 104 | 91 |
| 2022 | 351 | 329 | 106 | 95 |
| 2023 | 356 | 341 | 107 | 99 |
| 2024 | 362 | 354 | 109 | 103 |
| 2025 | 367 | 366 | 111 | 108 |

[1] The data presented for 1980 to 2008 is historical data, and the data presented for 2009 through 2025 is forecasted data.

## 13.2 Retail Rate Design

During the fiscal year 2007 budget process, the City Commission set a policy to decrease load growth by 60 percent through a robust DSM plan. A component of that plan was the design of rates to support the conservation policy. Prior to this process, GRU's residential electric rate consisted of a monthly customer charge, two blocks with a break at 750 kWh, and the fuel adjustment. GRU's electric rate for small commercial customers with less than 50 kW of monthly peak demand (GSN) consisted of a monthly customer charge, two blocks with a break at 1,500 kW, and the fuel adjustment. In 2007, a third block was added to residential rates, resulting in a first tier for 0 to 250 kWh priced at $0.028 per kWh, the second for 251 to 750 kWh priced at $0.067 per kWh, and the third for all energy used over 750 kWh priced at $0.102 per kWh. The first tier was priced below cost, and the third tier was priced at almost twice cost to discourage use at the higher levels. The first tier of 0 to 1,500 kWh for customers in the GSN category is priced at $0.070 per kWh and $0.103 per kWh for all energy used above that amount. Tools, in the form of education and conservation programs with rebate incentives, were given to customers to allow them to better achieve the savings. This structure is still in place today. The utility has seen a decrease in the average monthly use per household from 936 kWh in fiscal year 2006 to 838 kWh in fiscal year 2008 as a result of conservation efforts, price elasticity, and the economic downturn.

## 13.3 Existing Residential DSM Programs

In fiscal year 2009, GRU offered 17 incentive and rebate programs to encourage energy conservation. These programs are shown in Table 13-2.

GRU continues to review the efforts of conservation leaders in the industry and has conducted fact-finding trips to California, Texas, Vermont, and New York to maximize these efforts. GRU plans to continue to expand its DSM programs as a way to cost-effectively meet customer needs and hedge against potential future carbon tax or cap-and-trade programs.

In fiscal year 2010, GRU plans to implement home energy reports for residential customers as a method to align behavioral changes with energy conservation. These reports provide a comparison of personal household energy consumption against energy consumption of households of similar type in their neighborhood. The reports give consumers feedback as to how they compare to similar households and provide tips on conserving energy and information on GRU's rebate programs. This type of motivational tool has shown consistent and cost-effective energy and demand reductions for utilities in California and Washington.

**Table 13-2**
**DSM Services Offered to Residential Consumers in 2009**

| | |
|---|---|
| 1 | High Efficiency Central Air Conditioning (Rebates) |
| 2 | High Efficiency Room Air Conditioning (Rebates) |
| 3 | Central Air Conditioner Maintenance (Rebates) |
| 4 | Reflective Roof Coating for Mobile Homes (Rebates) |
| 5 | Solar Water Heating (Rebates) |
| 6 | Solar PV (Rebates with Net Metering) |
| 7 | Natural Gas Appliance (Rebates) |
| 8 | Home Performance with the Federal Energy Star Program (Rebates) |
| 9 | Energy Star Building Practices of the EPA (Incentives) |
| 10 | Green Building Practices (Incentives) |
| 11 | Heating/Cooling Duct Repair (Rebates) |
| 12 | Variable Speed Pool Pumps (Rebates) |
| 13 | Energy Efficiency for Low-Income Households (Grants) |
| 14 | Attic and Raised-Floor Insulation (Rebates) |
| 15 | Refrigerator Buy Back (Rebates) |
| 16 | Compact Fluorescent Light Bulbs (Giveaways) |
| 17 | Energy Efficiency Low-Interest Loans (Interest Buy Down) |

## 13.4 Existing Non-Residential DSM Programs

In fiscal year 2009, GRU offered six incentive and rebate programs to encourage energy conservation among non-residential customers. These programs are shown in Table 13-3.

The custom business rebate encompasses a broad spectrum of projects, promoting creativity in energy reduction measures that do not otherwise fit a conventional rebate program. For rebate eligibility, an independent analysis of the efficiency measure is created by a professional engineer or certified energy auditor. Dependent upon the demand reduction, total energy savings, customer cost, and life cycle of the project, GRU will pay a rebate of up to 50 percent of the project cost, up to a maximum of $40,000. In fiscal year 2008, the custom business rebate was GRU's most cost-effective program for energy and demand reductions.

| Table 13-3<br>DSM Services Offered to Non-Residential Customers in 2009 | |
|---|---|
| 1 | Solar Water Heating (Rebates) |
| 2 | Solar PV (Net Metering) |
| 3 | Natural Gas for Water Heating and Space Heating (Rebates) |
| 4 | Vending Machine Motion Sensors (Giveaways) |
| 5 | Efficient Exit Lighting (Rebates) |
| 6 | Custom Business Rebates for Energy Efficiency Retrofits (Rebates) |

## 13.5 Public Infrastructure

The South Energy Center (SEC) is GRU's newest generation asset. Located at the new Shands at UF Cancer Hospital site, this innovative facility is the first CHP plant of its type in the southeast. The SEC provides 100 percent of the power, steam, chilled water, and medical gas needs of the hospital. Steam is generated as a byproduct of power production; steam required by the hospital is provided via underground pipes, while surplus steam is used to power a steam turbine centrifugal chiller. The unique design is 75 percent efficient (contributing to GRU's energy efficiency goals) and greatly reduces emissions compared to traditional generation contributes to GRU's energy conservation goals. The site also offers expansion capability to provide services to other nearby public facilities.

GRU has plans to complete feasibility studies for other potential CHP sites, distributed chilled water, and thermal storage. If implemented, these facilities will service publicly owned entities.

GRU has supported City of Gainesville infrastructure improvements such as light emitting diode (LED) stoplights and LED crosswalk signals. GRU successfully partnered with the City of Gainesville in pursuing federal funds for a demonstration PV array atop the GRU Administration Building and LED pedestrian lighting at several city owned facilities. GRU continues to upgrade generation assets in pursuit of maximum efficiency and minimal emissions; for example, a major retrofit recently completed on GRU's Deerhaven Unit 2 will significantly reduce $SO_2$ and $NO_x$ emissions.

## 13.6 Measurement and Verification

GRU places considerable resources into DSM programs. Therefore, it is important that GRU measures and verifies the savings of these programs to ensure that resources are allocated correctly. In 2008, GRU collaborated with an independent consultant to provide third-party measurement and verification of four of GRU's most consequential residential programs. The results from this study were then used to reallocate funds and resources to programs that yielded the best value.

In fiscal year 2008, GRU installed data recorders at approximately 130 residential sites throughout Gainesville. These data recorders track kW, VARS, and time continuously and transmit their data, via a modem, to GRU's server once a week. Using software and the data from the recorders, GRU is able to isolate major appliance energy usage on an individual and collective basis to better understand how customers use their appliances and what impact they have on GRU's system. These data recorders are also used to create peak coincidence factors, which aid in determining high efficiency appliance efficacy.

Through measurement and verification, GRU has found that the demand and energy savings from the High Efficiency Central Air Conditioning program are much higher than anticipated; the demand and energy savings for the Duct Sealing and Attic Insulation programs are slightly higher than anticipated; and the demand and energy savings for the Refrigerator Recycling program are lower than anticipated. GRU plans to continue third-party measurement and verification of other DSM programs in fiscal year 2010.

## 13.7 Renewable Energy

GRU continues to offer standardized interconnection procedures and compensation for excess energy production for both residential and non-residential customers who install distributed resources and offers rebates to residential customers for the installation of PV generation. The solar FIT has replaced PV rebates as the incentive for non-residential customers to implement distributed solar generation.

Grants and voluntary customer contributions have made several renewable projects possible within GRU's service area. A combination of customer contributions and State and Federal grants allowed GRU to add its 10 kW PV array at the Electric System Control Center in 1996. GRU secured grant funding through the Department of Community Affairs' PV for Schools Educational Enhancement Program for PV systems that were installed at two middle schools in 2003.

## 13.8 Supply-Side Efficiency Improvements

GRU has several programs to improve the adequacy and reliability of the transmission and distribution systems, which will also result in decreased energy losses. These include the installation of distribution capacitors, purchase of high efficiency distribution transformers, and reconductoring of the feeder system.

### *13.8.1 Transformers*

For the past 18 years, GRU has been purchasing overhead and underground transformers with a higher efficiency than the National Electrical Manufacturers Association (NEMA) TP-1 Standard. Higher efficiency means fewer kW losses or power lost as a result of the design of the transformer. Since 1988, there have been 18,073 high-efficiency transformers installed on GRU's distribution system. A study was initiated to compare the kW losses of GRU's transformer design to a design based on NEMA TP-1 Efficiency Standard for Transformers. The results of this investigation showed that relative to the standard design, GRU experienced the following savings:

- Average Annual Demand Loss Savings 2.8 MW
- Average Annual Energy Saved 24,900 MWh
- Peak Demand Savings 6.2 MW

### *13.8.2 Reconductoring*

GRU has been continuously improving the feeder system by reconductoring feeders from 4/0 copper to 795 MCM aluminum overhead conductor. Also, in specific areas, the feeders have been installed underground using 1,000 MCM underground cable. The following is a comparison of the resistance for the types of conductors used on GRU's electric distribution system:

- 795 MCM Aluminum Overhead Conductor 0.13 ohms/mile
- 1,000 MCM Aluminum Underground Cable 0.13 ohms/mile
- 4/0 Copper Overhead Conductor 0.31 ohms/mile

Calculations with average loading on the conductors show the total savings due to moving from 4/0 copper to an aluminum conductor (795 or 1000 MCM) as follows:

- Average Annual Demand Savings 2.4 MW
- Average Annual Energy Saved 21,000 MWh
- Peak Demand Savings 7.9 MW

### 13.8.3 Capacitors

GRU strives to maintain an average power factor of 0.98 by adding capacitors where necessary on each distribution feeder. Without these capacitors, the average uncorrected power factor would be 0.92.

The percentage of loss reduction can be calculated as shown:

- % Loss Reduction = $[1-(\text{Uncorrected pf/Corrected pf})^2] \times 100$
- % Loss Reduction = $[1-(0.92/0.98)^2] \times 100$
- % Loss Reduction = 11.9

In general, overall system losses have stabilized near 4 percent of net generation, as reflected in the forecasted relationship of total energy sales to net energy for load.

# 14.0 Transmission System Impacts

The GREC facility will be interconnected to the existing GRU system. In August 2009, GRU completed and submitted to FRCC the combined Feasibility and Impact Studies for the GREC interconnection to the GRU system. The FRCC Transmission Working Group (TWG) and Stability Working Group (SWG) evaluated the proposed interconnection and determined that the proposed interconnection of the GREC to serve GRU's load is reliable, adequate and does not adversely impact the FRCC Region. The FRCC Planning Committee subsequently approved the interconnection on September 8, 2009.

GRU's Feasibility and Impact Studies referenced above followed the "fast track regional assessment" provision of the "TSR and GISR Regional Deliverability Evaluation Process" because the capacity of the proposed generating unit is less than 200 MW. Base and study cases were created and shared with other Florida utilities and the FRCC staff for review in accordance with the Deliverability Evaluation Process referenced above. The studies were performed by simulating the following conditions:

- Steady-State Analysis:
  - Base cases representing:
    1. Summer peak conditions for 2013 through 2018.
    2. Winter peak conditions for 2013/2014.
  - Study cases developed by modeling GREC connected to the Alachua-Deerhaven 138 kV line.
- Short Circuit Analysis:
  - Base case representing summer 2013 from the 2008 FRCC Short Circuit Databank.
  - Study case developed by modeling GREC at full output.
- Stability Analysis (dynamic simulations):
  - Base cases represented summer 2016 at 100 percent and 50 percent of peak load conditions.
  - Study case developed by modeling GREC at maximum capability.

All cases with GREC interconnected to the GRU system were reviewed by the TWG and SWG with the following findings:

- The system remained within all required thermal and voltage limits.
- All fault currents remained within the capability limits of all circuit breakers.
- The regional system was stable with controlled load loss as allowed by the North American Electric Reliability Corporation (NERC) Reliability Standards.

# 15.0 Strategic Considerations

The GREC will provide numerous benefits to GRU from an economic, environmental, and regulatory perspective. This section discusses several strategic considerations taken into account by GRU in making its decision to pursue the PPA with GREC LLC.

## 15.1 Long-Term Production Cost Benefits

The pricing structure in GRU's PPA with GREC LLC is roughly two-thirds fixed over the 30 year term of the PPA, and the remaining variable portion is not nearly as volatile as natural gas or even spot coal prices. GRU's long-term average cost per MWh from the GREC facility is affected by the degree to which the unit is dispatched at full available capacity. The guaranteed heat rate of the GREC and the expected delivered fuel cost (the unit's incremental dispatch cost) places the facility toward the top of GRU's merit order dispatch profile (even ignoring the value of renewable energy credits [RECs], possible future carbon credits, or other potentially valuable environmental attributes), and GRU anticipates dispatching the unit to the limit of its availability.

## 15.2 Rate Implications

Although the fully loaded cost of the output from the GREC may initially be higher than conventional combined cycle capacity, over the term of the PPA, the unit cost will become more economical, even without consideration of the long term benefit provided as replacement capacity for units that are scheduled to be retired. The point in time at which this crossover in relative ranking of price occurs depends on the cost of natural gas and the economic value of RECs and possible future carbon credits. Until that occurs, the PPA with GREC LLC will result in upward pressure on GRU's fuel adjustment charges.

GRU has discussed this situation with the City Commission in the form of a risk assessment (independent of the fuel and $CO_2$ emissions allowance price projections discussed previously in this Application), measured as the effect on a 1,000 kWh residential bill. Table 15-1 summarizes the risk assessment presented to the City Commission on May 7, 2009, prior to the unanimous vote to approve the project. These results translate to the percentages shown in Table 15-2. The City Commission decided that these short-term cost increases were more than offset by the long-term benefits to ratepayers and the community.

**Revised Table 15-1**
**Biomass Plant Risk Assessment[1]**

| Natural Gas Price Forecast | Value of Environmental Attributes | Impact on 1,000 kWh Residential Bill (/Month) | |
|---|---|---|---|
| | | 2014 | 2019 |
| Low | $0.00/MWh | $12.78 | $8.50 |
| | $12.00/MWh | $10.56 | $6.40 |
| Base | $0.00/MWh | $10.56 | $5.12 |
| | $12.00/MWh | $8.34 | $3.02 |
| High | $0.00/MWh | $8.34 | $1.75 |
| | $12.00/MWh | $6.12 | $(0.47) |

[1]No adjustment for the value of avoided capacity. Value of environmental attributes includes combined REC and $CO_2$ offset values.

**Table 15-2**
**Biomass Plant Risk Assessment[1]**

| Scenario | Increase of 1,000 kWh Residential Bill | |
|---|---|---|
| | 2014 | 2019 |
| Low Natural Gas Price | 5.8% | 2.5% |
| Base Case | 4.3% | 0.5% |
| High Natural Gas Price | 2.7% | -1.6% |

[1] No adjustment for the value of avoided capacity. Includes $12.00/MWh value for RECs and $CO_2$ offsets.

The above risk assessment assumes that GRU resells 50 percent of the GREC's output for the period 2014 through 2023. Four municipal organizations in Florida have expressed interest in purchasing this output, and GRU was involved in related discussions at the time this Application was filed.

## 15.3 Long-Term Firm Capacity Benefits

The PPA with GREC LLC will add value to GRU's generation portfolio initially by materially improving the age distribution of the System's generation fleet. Figure 15-1 illustrates GRU's generation capacity versus unit age, which clearly indicates that fully two-thirds of the capacity is 28 years of age or older. As presented in Section 5.0 of this Application, GRU anticipates needing additional capacity by 2023, with the shortfalls increasing through time due to load growth, but primarily by the retirement of older units. Capacity from the PPA with GREC LLC is projected to satisfy GRU's reserve margin capacity requirements through 2032 based on the base case load forecast discussed in Section 4.0 of this Application.

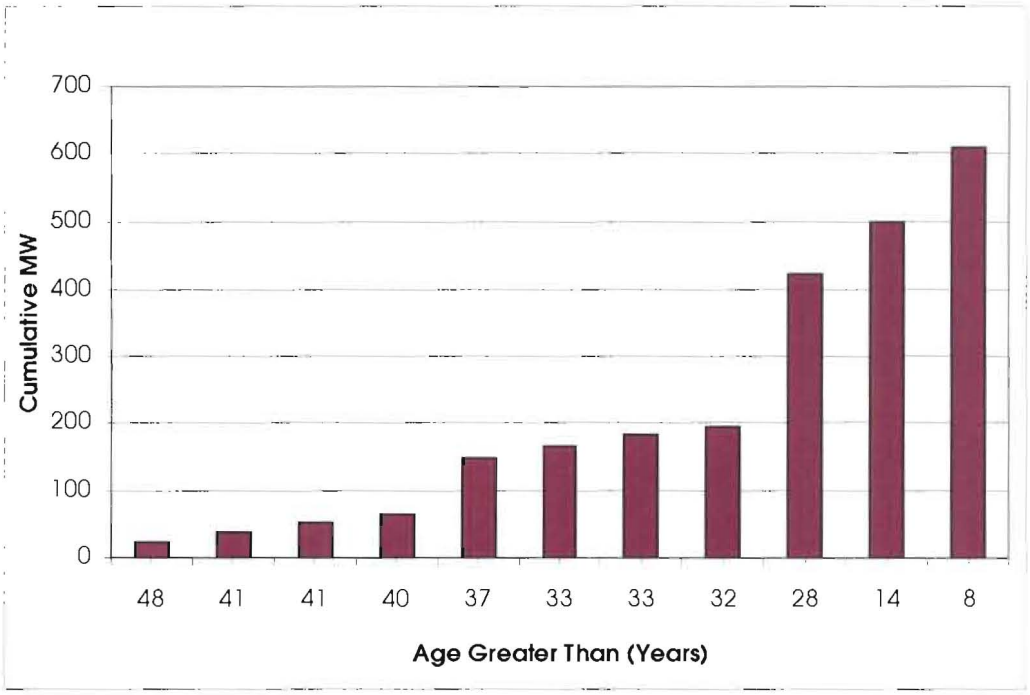



**Figure 15-1**
**Existing Generation Capacity versus Age**

The capacity provided by the GREC will significantly improve generating system reliability because of GRU's unique situation of having a single unit (Deerhaven Unit 2) that is very large relative to GRU's peak demand and reserve margin. The capacity from Deerhaven Unit 2 currently represents 50 percent of GRU's 2009 projected system peak demand and loss of this unit represents a significant economic cost and reduced reliability to GRU's system. The GREC's capacity significantly improves this reliability issue from both a firmness of capacity perspective and from the perspective of exposure to high costs of replacement power, since Deerhaven Unit 2 is the lowest cost fossil fuel

generator on GRU's system. This is especially important because Deerhaven Unit 2 will be 33 years old when the GREC begins commercial operation and, if not retired, will be 63 years old by the end of the PPA between GRU and GREC LLC. As coal fueled generating units age, the probability of major extended unit outages increases.

## 15.4 Regulatory Hedge Benefits

Even assuming that GRU keeps only 50 percent of the output of the GREC, the System will be able to produce 21 percent of its energy requirements from renewable energy by 2014. This includes renewable energy from the G2 landfill gas to energy project and the energy from the solar FIT program. This amount of renewable energy is sufficient to meet any of the renewable energy portfolio standards that have been seriously considered at a state or federal level to date. The accompanying carbon credits will provide a very valuable hedge against future carbon constraint legislation as well.

## 15.5 Fuel Price Volatility Reduction

The commodity price paid to growers for timber harvest residuals is expected to be relatively independent of commodity price swings in the paper pulp and chip and saw markets. To some extent, these markets are inversely related; for example, when paper pulp markets become soft, growers are incentivized to thin their stands (fuel for the GREC) to grow larger trees for the chip and saw market. The most volatile cost for the production and delivery of fuel is the cost of diesel fuel, which represents roughly 5 to 10 percent of the total fuel cost. As a result, the fuel cost for the GREC is expected to be much less volatile than conventional fossil fuels and to escalate much more slowly. Furthermore, the GREC has the advantage of being able to take advantage of opportunity fuels, such as debris from hurricanes, forest fires, ecosystem restoration, land clearing, and insect invasions.

## 15.6 Fuel Diversification Benefits

Currently, GRU relies on a single rail carrier for coal and one major pipeline for natural gas. Oil supplies are received in a fairly diverse manner, but represent a small fraction of GRU's energy production. The GREC will greatly add to the diversity of GRU's fuel supply, providing benefits in terms of diversity of transportation, mitigating fuel price volatility, and contributing to Florida's overall energy independence. By 2014, the GREC is expected to provide 18.7 percent of GRU's energy supply, even assuming 50 percent of the capacity is resold to another utility. By 2023, following the expected expiration of any initial power resale, this fraction will increase substantially. The GREC

will receive fuel deliveries from a number of different directions and a very redundant fleet of third party owned processing equipment and trucks.

## 15.7 Forest Stewardship Programs

Once the City Commission selected GREC LLC as the leading respondent to the RFP process in May 2008, a vibrant public debate ensued. At issue was how to minimize the potential for the fuel acquisition process to reduce ecosystem biodiversity in the region. An ad hoc advisory committee of forestry and ecosystem experts from both industry and academia was assembled to address this issue, which resulted in two significant results.

The first is a set of very stringent minimum standards for forest-derived fuel acquisition that are part of the PPA between GREC LLC and GRU. Examples of these standards include: acquiring material from timber operations performed according to the Florida Division of Forestry best management practices; not utilizing stumps (which would promote soil erosion); not utilizing material derived from the conversion of natural forest to a plantation forest; not utilizing fuel derived from non-native species unless harvested as part of a forest restoration project; source certification and accountability by truckload; and requiring suppliers to attend an annual sustainability and best practices seminar organized by the GREC procurement staff.

The second is what may be the first utility-sponsored Forest Stewardship Incentive Plan in the US. This plan provides a supplemental payment per ton of fuel delivered for growers operating under an approved independent forest certification program that provides a level of biological protection substantially better than the Division of Forestry best management practices. Currently, two such programs are approved and will earn the grower an additional $0.50 per ton or $1.00 per ton depending on the program. Once the grower receives certification, it will be issued a contract by GRU that will entitle it to the incentive payment and will remain in effect as long as the certification is kept current. The administration of the program is subject to City Commission policy and GRU staff, while GREC LLC will administer the day-to-day operation of the program. Incentive payments are at the sole expense of GRU.

## 15.8 Other Benefits for the Community

Other aspects of the GREC contribute to the well-being of the Gainesville area in terms of jobs, cleaner air, and utility rates. Not the least of these benefits is the contribution that the GREC will make to supporting Gainesville's ethics for recycling and GHG reduction. Some of the tangible benefits associated with the GREC facility include:

- Less exposure to construction and operating risk.
- Creation of over 500 new jobs in the region.
- Substantial reduction in open burning of waste biomass.
- Zero surface water discharge of industrial wastewater.
- Reducing landfill requirements.
- Promoting ecosystem restoration (removal of undesirable vegetation).
- Promoting the removal of hazardous fire fuel adjacent to urban development.
- Supporting a major regional industry – Silviculture.

# 16.0 Consequences of Delay

This section discusses the consequences of delaying commercial operation of the GREC biomass facility beyond its planned December 2013 commercial operation date. Delay of the facility would result in economic, reliability, and potential regulatory consequences.

## 16.1 Economic Consequences

There are a number of economic consequences associated with the delay of the GREC. The most important economic consequence of delay is that if the project is not in commercial operation by January 1, 2014, it will not be eligible to obtain the Renewable Energy Grant contained in H.R. 1 (ARRA 2009) Sec. 1603. The increase in GRU's cost of power from not obtaining the Renewable Energy Grant will be $8.10/MWh, amounting to $6.4 million per year.

In addition to the costs resulting from not obtaining the Renewable Energy Grant, the GREC PPA contains a clause to adjust the nonfuel energy charge by escalation indices to the time of construction commencement. Based on the escalation rate of 2.5 percent assumed in this Application, the cost of delay is $29.6 million per year of delay.

Another economic consequence of delay is that if the GREC is delayed, it will not be available to displace replacement power costs for GRU's Deerhaven 2 during outages.

In addition to the above direct economic consequences of delay, there are numerous indirect consequences of delay. The GREC will directly employ an estimated 44 people in the operation of the project, with an estimated payroll of $4 million per year. In addition, an estimated 400 to 500 people will be employed to obtain the fuel supply, with an estimated payroll of $18 million per year. The GREC will employ more than 400 people at peak construction, with an estimated payroll of $1.5 million per week during the peak construction period. Over the entire construction cycle, construction payroll will total approximately $48.8 million. These indirect benefits will be postponed with a delay in the construction and operation of GREC. Most of these indirect benefits will be in the Gainesville region.

## 16.2 Reliability Consequences

The GREC is not required for GRU to maintain its 15 percent planning reserve criterion for several years. However, there are significant reliability benefits to GRU's system associated with the operation of the GREC, and delay of the GREC would also delay those benefits. GRU's system is unique because Deerhaven Unit 2's generating capacity comprises 50 percent of GRU's peak demand. Outages of Deerhaven Unit 2 have a marked effect on GRU's system reliability. The addition of the GREC significantly increases GRU's system reliability; consequently, delay in the operation of the GREC reduces GRU's system reliability.

## 16.3 Potential Regulatory Consequences

Currently, there are proposed legislation and regulations at both the federal and state levels to impose RPS and regulation of $CO_2$ emissions. Wood waste biomass is the lowest cost dispatchable generating alternative for meeting both of these requirements. Unfortunately, the supply of wood waste is finite, and economics dictate that the generating plant needs to be located near the source of fuel to minimize transportation costs. The first plants sited in an area will essentially claim the surrounding fuel supply. If the GREC is delayed, the opportunity arises for other projects to be built that would utilize the GREC's sources of fuel. It is vitally important for the GREC to proceed on schedule to allow GRU to meet the potential legislation and regulations in a reliable and cost-effective manner.

# 17.0 Financial Analysis

The successful completion and operation of the proposed GREC biomass facility will depend on many factors, including, but not limited to, the following:

- The experience and financial capability of the project developers who will own, operate, and maintain the plant.
- The strength/quality of the PPA.
- The credit quality of the PPA counterparty.
- The experience of construction contractors and the strength/quality of the construction contracts.

The project developers intend to pursue a traditional project financing approach for the GREC, which will involve senior long-term debt and additional equity as necessary. The senior bank debt will be secured by first priority liens on substantially all of the assets and commercial agreements of the GREC, as well as a pledge of the equity in the GREC. Additional equity will flow into the project as needed from both strategic and tax-motivated equity investors.

In addition to the project developers' experience, an important aspect of the ability to finance the facility is the credit quality of the counterparty purchasing the plant's output, in this case GRU. This section discusses the experience and financial capability of both parties to this transaction.

## 17.1 Project Developers

The GREC facility will be designed, constructed, owned and operated by GREC LLC, a subsidiary of American Renewables, LLC, a private, for-profit renewable power producer that signed a contract to construct a similar facility for Austin Energy (Texas) and recently sold this facility to Southern Power. American Renewables is developing another, similar facility in Hamilton County, Florida. American Renewables is jointly owned by affiliates of BayCorp, EMI, and Tyr. The entities are described as follows:

- BayCorp is a merchant energy company that owns power assets, as well as natural gas and oil production and development assets. BayCorp owns and operates a hydroelectric generation facility and is developing additional generation in Vermont; through its subsidiary, Great Bay Power Marketing, Inc., Baycorp supplies wholesale power in the New England power market; and through its subsidiary BayCorp Resources, Baycorp owns and operates interests in oil and natural gas development and production projects located throughout Texas.

- EMI is a privately held energy company with more than 30 years of experience in energy conservation and energy development. In 1986, EMI developed, financed, and constructed Alexandria Power Associates, a 15 MW biomass-fired electric generating facility in Alexandria, New Hampshire. Following the Alexandria project, EMI developed six natural gas-fired electric generation projects totaling more than 860 MW of capacity and including the first true independent and merchant power projects in New England. EMI is also currently developing the Cape Wind Project, a 468 MW offshore wind project to be located in Nantucket Sound off the southern coast of Cape Cod, Massachusetts.
- Owned by ITOCHU Corporation, a $52 billion international trading conglomerate and its US based subsidiary, ITOCHU International, Inc., Tyr focuses on acquiring and owning equity interests in North American independent power assets and providing asset management services to facilities in which it is an owner. Tyr's current portfolio includes interests in CalPeak Power (California), Chesapeake Commonwealth Energy (Virginia), and Fox Energy (Wisconsin). Worldwide, ITOCHU owns interests in independent power facilities in Saudi Arabia, Indonesia and Japan in addition to the United States. Tyr's sister company, North American Energy Services, also a subsidiary of ITOCHU International, Inc., is the industry's largest independent, third-party provider of power plant O&M services, providing services to almost 300 MW of biomass-fueled power plants across the US.

The GREC's project developers have a long and successful track record of energy and power asset development and operation, as well as a robust development pipeline looking forward. Collectively, the project developers have acquired or developed more than $7.6 billion of energy and infrastructure assets, and have a pipeline or deployment budget of $2.5 billion for US renewable power plants over the next 5 years.

## 17.2 GRU's Financial Capability

As discussed throughout this Application, GRU has entered into a 30 year PPA with GREC LLC for capacity, energy, and environmental attributes from the proposed GREC biomass facility. Given that this transaction is structured as a PPA rather than GRU obtaining an equity share in the facility, the annual costs for GRU's participation are not tied to an investment in a self-build asset, and as such, the ability to finance construction of a new generating unit is not being contemplated in this Application. However, for informational purposes, because GRU is the counterparty to the PPA upon

which GREC LLC will obtain project financing, the remainder of this section discusses GRU's current financial position.

GRU management has been diligent in its maintenance of reserve balances and financial indicators, and its rates are considered to be competitive in the Florida market. The superiority of financial management at GRU has been recognized by both Standard & Poor's and Moody's, as indicated by their issuing bond ratings of AA and Aa2, respectively. As one of the top 13 highest rated municipal utilities among more than 400 municipal utilities rated in the country, GRU stands out with these superior ratings. GRU has maintained a total debt service coverage ratio of 2.0 times, a fixed charge coverage of 1.5 times, and an equity ratio of 20 to 30 percent in the fiscal year ending 2009. These economic indicators are projected to continue to improve in later years. All of these ratios are well within the range of other organizations with the same bond ratings from Standard & Poor's and Moody's that GRU has been issued.

G 141059
NO_____

THE GAINESVILLE SUN

Published Daily and Sunday
GAINESVILLE, FLORIDA
STATE OF FLORIDA
COUNTY OF ALACHUA

Before the undersigned authority appeared Ernest Blake III
Classified Legals Coordinator
Who on oath says that he is.....of THE GAINESVILLE SUN, a daily newspaper published at Gainesville in Alachua County, Florida, that the attached copy of advertisement, being
LEGAL ADVERTISEMENT, City of Gainesville, GRU

NOTICE OF COMMISSION HEARING AND PREHEARING
FLORIDA PUBLIC SERVICE COMMISSION, DOCKET NO. 090451-EM

In the matter of .....

in the.....Court, was published in said newspaper in the issues of

November 30th

..... 2009

Affidavit further says that the said THE GAINESVILLE SUN is a newspaper published at Gainesville, in said Alachua County, Florida, and that the said newspaper has heretofore been continuously published in said Alachua County, each day, and has been entered as second class mail matter at the post office in Gainesville, in Said Alachua County, Florida, for a period of one year next preceding the first publication of the attached copy Of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount for publication in the said newspaper.

Sworn to and subscribed before me this
30 day of NOV A.D., 2009

(seal) Notary Public

CECILE S. FEAGLE
MY COMMISSION # DD668075
EXPIRES August 05, 2011



FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 28
COMPANY GRU/GREC LLC
WITNESS Notice of Publication
DATE 12/16/09

mattress, desk, cot, power washer, Speakers, lamps, luggage, boxes, tubs. Unit 430- Alfred Holmes Jr., big TV, bicycle, misc. furniture, scanner.

I-75 Business Park & Self Storage, Inc 4500 SW 41st Blvd., Gainesville, FL 32608

Dated these 23rd and 30th days of November 2009.
#A000599948

**NOTICE OF SALE**

Notice is hereby given that pursuant to the Florida Self Storage Facility Act Statutes (Section 83.801 - 83.809). AFFORDABLE SELF STORAGE, INC will sell for CASH to the highest bidder at 1132 S Main St. Gainesville, County of Alachua, Florida, at 10:30 AM. on the 15th day of DECEMBER 2009, and continuing day to day thereafter until sold, the household goods and misc. contents of the following:

UNIT: 41 ERIC WASHINGTON - HOLD GOODS
UNIT: 156 LULLA MOORE - HOUSEHOLD GOODS
UNIT: 157 LULLA MOORE - HOUSEHOLD GOODS
UNIT: 164 MARY ANN WALKER - HOUSEHOLD GOODS.
UNIT: 172 JERMEKA JOHNSON - HOUSEHOLD GOODS

AFFORDABLE SELF STORAGE, INC. 1132 S Main St. Gainesville, FL 32601 352-378-7575

Dated this 30th day of NOVEMBER 2009 and 3rd day of DECEMBER and the 7th day of DECEMBER 2009.
#A000601483

**NOTICE OF MEETING**

The School Board of Alachua County's One-Mill Oversight Committee will hold a meeting on December 8, 2009, 4 p.m., Kirby-Smith Center Conference Room E, 620 E. University Ave, Gainesville.

# 1200 ANNOUNCEMENTS

**Indigo Farms Veterinary Services Grand Opening**

Affordable veterinary care for your pets in the comfort and convenience of your own home. 10% senior and student discounts. Flexible hours to meet your busy schedule. (386) 963-5038, vetservices@incigofarms.org

# 1250 BURIAL LOTS, ETC.

**BURIAL SITES** (2) - Forrest Meadows East Section D, lot 256, sites 1 & 2. Value $1,895 each. Now $2,600 for two. (352) 378-2367
Web ID: 94579

**CEMETERY LOTS** (2) - Side by side. Forest Meadows West. Current value $3,200. Asking $2,600. (352) 745-0114
Web ID: 96597

# 1275 CLUB MEMBERSHIP

**GWA wrestling**
Youth Wrestling Club at GHS
Gainesville Takedown Club - Youth Wrestling Tues & Thur 6:30-8pm beginning Nov. 10th at GHS Wrestling room - 1900 NW 13th Street. Contact: Ryland Wagner - 316.5054, Ryland152@hotmail.com

# 1600 SPECIAL NOTICES

**AIRLINES ARE HIRING** – Train for high paying Aviation Maintenance Career. FAA approved program. Financial aid if qualified – Housing available. CALL Aviation Institute of Maintenance (866)349-5367

**ATTEND COLLEGE ONLINE** from Home. *Medical, *Business, *Paralegal, *Computers, *Criminal Justice. Job placement assistance. Computer available. Financial Aid if qualified. Call (800)443-5186. www.CenturaOnline.com

**Get Dish -FREE Installation- $19.99/mo HBO & Showtime FREE-Over 50 HD Channels FREE Lowest Prices-No Equipment to Buy! Call Now for full Details- (877) 227-2986**

**Get Dish -FREE Installation- $19.99/mo HBO & Showtime FREE-Over 50 HD Channels FREE Lowest Prices-No Equipment to Buy! Call Now for full Details- (877) 301-1683**

# NOTICE OF COMMISSION HEARING TO BE HELD IN TALLAHASSEE AND NOTICE OF PUBLIC HEARING TO BE HELD IN GAINESVILLE FLORIDA PUBLIC SERVICE COMMISSION DOCKET NO. 090451-EM

## JOINT PETITION TO DETERMINE NEED FOR GAINESVILLE RENEWABLE ENERGY CENTER IN ALACHUA COUNTY, BY GAINESVILLE REGIONAL UTILITIES AND GAINESVILLE RENEWABLE ENERGY CENTER, LLC

NOTICE IS HEREBY GIVEN that a administrative hearing will be held before the Florida Public Service Commission in the above docket regarding the joint petition of Gainesville Regional Utilities and Gainesville Renewable Energy Center, LLC ("Applicants") for determination of need for the Gainesville Renewable Energy Center electrical power plant in Alachua County, at the following time and place:

Wednesday, December 16, 2009 9:30 AM
Room 148, Betty Easley Conference Center
4075 Esplanade Way
Tallahassee, Florida

**PURPOSE AND PROCEDURE**

The purpose of this hearing will be for the Commission to take final action to determine the need, pursuant to Section 403.519, Florida Statutes, for the Applicants' proposed renewable energy electrical power plant in Alachua County, Florida. This proceeding shall: (1) allow the Applicants to present evidence and testimony in support of their petition for determination of need for the proposed renewable energy electrical power plant; (2) permit any intervenors to present testimony and exhibits concerning this matter; (3) permit members of the public who are not parties to the need determination proceeding the opportunity to present testimony concerning this matter; and (4) allow for such other purposes as the Commission may deem appropriate.

The proceedings will be governed by the provisions of Chapter 120, Florida Statutes; Section 403.519, Florida Statutes; and Chapters 25-22 and 28-106, Florida Administrative Code.

Under Section 403.519, the Commission is the sole forum for the determination of need for the proposed electrical power plant. In making its determination, the Commission must take into account the need for electric system reliability and integrity, the need for fuel diversity and supply reliability, the need for adequate electricity at a reasonable cost, and whether the proposed plant is the most cost-effective alternative available. In addition, the Commission must expressly consider any renewable energy sources and technologies or conservation measures taken by or reasonably available to GRU which might mitigate the need for the plant. The Commission may consider other matters within its jurisdiction which it deems relevant. The Commission's determination of need for the proposed plant shall create a presumption of public need and necessity and shall serve as the Commission's report required by subsection 403.507(4)(a), Florida Statutes. An order entered by the Commission pursuant to this hearing shall constitute final agency action.

Only issues relating to the need for the proposed power plant will be heard at this hearing. Separate public hearings will be held before the Division of Administrative Hearings at a later date to consider environmental and other impacts of the proposed plant and associated facilities.

Members of the public, who are not parties to the need determination proceeding, will have an opportunity to present testimony in Tallahassee regarding the need for the proposed plant. All members of the public who wish to offer testimony should be present at the beginning of the hearing, 9:30 AM, Wednesday, December 16, 2009. All witnesses will be sworn in and will be subject to cross-examination at the conclusion of their testimony. By providing public testimony, a person does not become a party to the proceeding. Anyone wishing to become a party to this need determination proceeding should file an appropriate petition pursuant to Rule 25-22.039, Florida Administrative Code, with the Office of Commission Clerk, at the address listed below. Copies of the petition shall be sent by mail to all parties. Those wishing to intervene in this proceeding, unless appearing on their own behalf, must be represented by an attorney or other person who can be determined to be a qualified representative pursuant to Chapter 120, Florida Statutes, and Rule 28-106.106, Florida Administrative Code. Petitions for leave to intervene must be filed at least five (5) days before the final hearing, must conform with Rule 28-106.201(2), Florida Administrative Code, and must include allegations sufficient to demonstrate that the intervenor is entitled to participate in the proceedings as a matter of constitutional or statutory right or pursuant to Commission rule, or that the substantial interests of the intervenor are subject to determination or will be affected through the hearing.

Written comments regarding the need for the proposed plant and associated facilities may be sent to the Commission at the following address:

Office of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850
Re: Docket No. 090451-EM

**GENERAL LOCATION AND PROJECT DESCRIPTION**

GRU and GREC LLC propose the construction of one new unit, to be known as the Gainesville Renewable Energy Center, which will consist of a nominal 100 megawatt (MW) net capacity steam unit designed to use clean woody biomass as its fuel supply. The plant will be located on GRU's existing Deerhaven Power Plant site within the City of Gainesville's corporate limits in Alachua County, Florida. The projected in-service date for the Gainesville Renewable Energy Center is December 1, 2013. The unit will be owned and operated by GREC LLC. GRU will receive power from the unit under a 30-year power purchase agreement with GREC LLC. All of the generation capacity from the unit will be committed to GRU for retail sale to its customers.

**PUBLIC HEARING**

NOTICE IS HEREBY GIVEN that a public hearing will be held:

Wednesday, December 9, 2009, 6:00 p.m.
Gainesville City Hall
City Commission Auditorium
200 East University Avenue
Gainesville, Florida 32601

The purpose of this public hearing is to allow members of the public, who are not parties to the need determination proceeding, an opportunity to present public testimony in Gainesville regarding the need for the proposed plant prior to the commencement of the hearing in Tallahassee on December 16, 2009. The procedure at this public hearing shall be as follows. The Applicants will present a brief summary of the need for the proposed plant and then members of the public may present sworn testimony. All witnesses shall be subject to cross-examination at the conclusion of their testimony. Members of the public who wish to present testimony are urged to appear promptly at the scheduled hearing time since the hearing may be adjourned early if no witnesses are present to testify.

**JURISDICTION**

This Commission is vested with jurisdiction over the subject matter of this proceeding by Section 403.519, Florida Statutes.

A copy of the Applicants' petition for determination of need and supporting exhibits is available for public inspection during normal business hours at the following location:

Florida Public Service Commission
Office of Commission Clerk
4075 Esplanade Way
Room 110 – Betty Easley Conference Center
Tallahassee, Florida

Any person requiring some accommodation at this hearing because of a physical impairment should call the Office of Commission Clerk at (850) 413-6770, at least 48 hours prior to the hearing. Any person who is hearing or speech impaired should contact the Florida Public Service Commission by using Florida Relay Service, which can be reached at 1-800-955-8771 (TDD).

**EMERGENCY CANCELLATION OF MEETING**

If a named storm or other disaster requires cancellation of a hearing, Commission staff will attempt to give timely, direct notice to parties. Notice of cancellation will also be provided on the Commission's website (http://www.psc.state.fl.us/) under the Hot Topics link found on the home page. Cancellation can also be confirmed by calling the Office of the General Counsel at (850) 413-6199.


CLASSIFIED (352)372-4222 | CLASSIFIED REAL ESTATE | Jobs | gainesville.com | monster | CLASSIFIED@gainesville.com/BuildYourOwn
Place an ad: PH 372-4222 or 1-800-443-4245, FX 338-3131 or build your own ad on-line • go to gainesville.com/BuildYourOwn
More Jobs. More Places. More Easily.
gainesville.monster.com
2D | THE GAINESVILLE SUN | MONDAY, NOVEMBER 30, 2009

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 29
COMPANY GRU/GREC LLC
WITNESS 12/9/09 PowerPoint Presentation
DATE 12/16/09

# Protecting GRU's Customers With Fuel Diversity, Renewable Energy, And Power Purchase Contract Design

Presentation to the
Florida Public Service Commission
By the
Gainesville City Commission
December 9, 2009

# Introduction
# And
# Biomass Project Overview

Mayor Pegeen Hanrahan

# Issues Affecting Our Customers

- Concern about climate change
- Highly volatile natural gas and coal prices
- Pending legislation and regulations
  - Carbon emission constraints
  - Renewable energy portfolio standards
- Our need to replace generation capacity
- Sky rocketing costs for new capacity

# Our Business Case

- Stabilize long term costs
- Buy sustainable fuel from local region
- Reduce carbon emissions
- Reduce air pollution in the region
- Be competitive in the market
- Positioned for new regulations

# Biomass Power Plant Overview

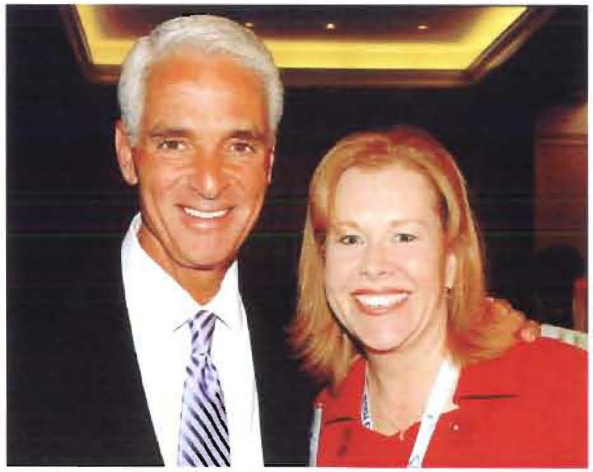
- 100 MW (net) power plant on Deerhaven site
  - Particulate, $NO_X$ control, and zero surface water discharge
- Fuel
  - Clean woody material
  - Ash 100% recycled
- Contract
  - Pay for performance (to reduce risk)
  - 30 years fixed pricing (except fuels)
- American Renewables (www.amrenewables.com)
  - Will own and operate the facility
  - D/B/A Gainesville Renewable Energy Center LLC (GREC)
- GRU Opted for 100% of Output
  - More than needed initially
  - 50 MW to be resold to third party for 10 years

# Climate Change

- Our resolution to meet the Kyoto Protocol reflects key local community values
  - Climate change is real
  - Man's activities contribute to it
  - We can make a difference
- Reducing carbon emissions is good business
  - Cost-effective demand side management programs
  - Spend money locally, not out of state
  - Create jobs and opportunities in Gainesville
- We accept a long term payback

# We Are In Step With Florida's Climate Policy

- Governor Christ's Executive Orders
  - Directed FDEP to develop GHG limits on utilities
  - Called for a Renewable Portfolio Standard (RPS)
  - Created the Florida Climate Change Action Team
- RPS Legislation[a]
  - FPSC to develop recommendation
- Florida's Climate Action Team
  - Energy from renewable sources
  - Biomass for electric production



a. RPS – Renewable Portfolio Standard

# Biomass Power Reduces Greenhouse Gas Emissions

- Biomass would rot anyway, generating methane[a] as well as $CO_2$
  - Methane is a green house gas 23 times more potent than $CO_2$
  - Carbon already part of the atmospheric cycle
- Biomass power avoids fossil fuels, reduces methane, and is domestically and internationally accepted as being carbon neutral or better
  - International Panel on Climate Change (IPCC)
  - United Nations Framework Convention on Climate Change
  - The U.S. Climate Registry
  - The U.S. Environmental Protection Agency (USEPA)
  - Regional Greenhouse Gas Initiative (RGGI)
- $CO_2$ from diesel fuel used for biomass collection is small
  - Biomass still carbon neutral or better

a. Source: Biomass Power and Conventional Fossil Systems – Comparing Energy Balance, Greenhouse Gas Emissions, and Economics. June, 2004 U.S. DOE National Renewable Energy Laboratory

# Community Involvement Process

Commissioner John F. Donovan

# Our Customers Were Involved In Making The Plan

- Our customers are our friends and neighbors
- Extensive public participation in formal Integrated Resource Planning Process
  - Started 2002
  - 37 televised City Commission Meetings
  - Dozens of well attended workshops and presentations
  - Numerous media stories
- Studies & presentations posted on our web site
- Notice of potential rate effects was mailed out to all 93,000 customers

# June 2009 Customer Bulletin

June 2009 • 23.9

the customer
answers & insights

Innovation

## Renewable Biomass Energy Coming to Gainesville

With the unanimous approval of the Gainesville City Commission, GRU has entered into a 30-year contract to provide biomass-fueled energy to Gainesville. The Gainesville Renewable Energy Center (GREC), an American Renewables project company, will build, own and operate the 100-megawatt plant on GRU's Deerhaven property. GRU will purchase and own 100 percent of the energy produced.

*The Gainesville City Commission, representatives of American Renewables and involved citizens present at the approval of the contract*

The biomass plant will burn waste wood from north central Florida's enormous timber industry, as well as urban tree-trimmings. GRU and GREC have created strict standards that suppliers must follow to protect the region's forests.

from anticipated increasing fossil-fuel prices.

Gainesville Mayor Pegeen Hanrahan said, "We are fighting climate change through the increased use of renewable energy sources, energy efficiency and the reduction of greenhouse gases. We have also strengthened our energy independence and are supporting hundreds of jobs in our region."

There will be no impact on customer bills until the plant comes online in 2013. Then customers will see a small increase in the fuel adjustment, but early in the contract the cost of producing biomass energy is expected to become less expensive than fossil-fuel alternatives.

The project will create up to 350

Planning

## GRU to Present Proposed Budget to City Commission

In July, Gainesville's City Commission will consider GRU's budget for fiscal year 2010. If approved, it will include proposed utility rates that will take effect in October.

GRU

There will be no impact on customer bills until the plant comes online in 2013. Then customers will see a small increase in the fuel adjustment, but early in the contract the cost of producing biomass energy is expected to become less expensive than fossil-fuel alternatives.

The project will create up to 350 construction jobs, 45 facility jobs and nearly 500 forestry-related jobs. For more information, visit www.gru.com.

significant savings. Each degree higher than 78 can decrease your bill 4 percent

- Using ceiling

# Key City Commission Decisions

- Kyoto Protocol Resolution
  - June 27, 2005
- Total Resource Cost Test for Conservation Programs
  - April 12, 2006
- Biomass and PPA for Future Energy Supply
  - June 18, 2007
- Competitive Solicitation
  - October 8, 2007
- Selection of American Renewables' Proposal
  - May 12, 2008
- Unanimous approval of contract
  - May 7, 2009

# Our Energy Plan

- Reduce carbon emissions
  - Promote energy efficiency
  - Deploy renewable energy
- Develop available renewable energy resources
  - Solar thermal and photovoltaic
  - Biomass
- Capture financial incentives for renewable energy
  - Taxable third party power purchase agreements (PPA)
    - Solar feed in tariff
    - GREC contract
- Structure GREC PPA to hedge against the financial impacts of:
  - Greenhouse gas regulations
  - Renewable portfolio standards
  - Construction, operation and maintenance risks

# Focus On Energy Efficiency

Commissioner William Thomas Hawkins

# Wise Energy Use Is A Top Priority

- GRU customers have the lowest electrical use per customer of any generating utility in Florida
  - 831 kWh per month[a]
- Our rebate programs embrace a wide range of retrofit technologies
  - Solar thermal
  - Solar photovoltaic
  - Natural gas for hot water, clothes drying, cooking, space heating
  - High efficiency HVAC, lighting, building envelopes
- Assistance for new construction as well

a. Source: Gainesville Regional Utilities 2009 Ten Year Site Plan

# Our Residential Energy Conservation Programs

1. High Efficiency Central Air Conditioning (Rebates)
2. High Efficiency Room Air Conditioning (Rebates)
3. Central Air Conditioner Maintenance (Rebates)
4. Solar Water Heating (Rebates)
5. Solar PV (Rebates with Net Metering)
6. Natural Gas Appliance (Rebates)
7. Home Performance with the Federal Energy Star Program (Rebates)
8. Energy Star Building Practices of the EPA (Incentives)
9. Green Building Practices (Seminars)
10. Heating/Cooling Duct Repair (Rebates)
11. Variable Speed Pool Pumps (Rebates)
12. Energy Efficiency for Low-Income Households (Grant)
13. Attic and Raised-Floor Insulation (Rebates)
14. Refrigerator Buy Back (Rebates)
15. Compact Fluorescent Light Bulbs (Direct Install)
16. Energy Efficiency Low-Interest Loans (Interest Buy Down)

# Commercial And Supply Side Conservation Programs

1. **Solar Water Heating (Rebates)**
2. **Solar PV (Net Metering)**
3. **Natural Gas for Water Heating and Space Heating (Rebates)**
4. **Vending Machine Motion Sensors (Giveaways)**
5. **Custom Business Energy Efficiency Retrofits Rebates**
   - **Rebates of 50% of costs up to $100,000 for:**
     - **HVAC**
     - **Motors**
     - **Lighting**
     - **Refrigeration**
     - **Any other energy saving measure**
6. **Integrated Energy Systems**
   - **South Energy Center**
     - **Electricity**
     - **Steam**
     - **Chilled Water**
7. **Supply Side Efficiency**
     - **Transformers**
     - **Generation heat rate**
     - **Reconductoring**

# GRU Is A Conservation Leader

(Will Reduce Load Growth 60%)

| Year | Energy Reduction (MWh/Yr) | Summer Peak Demand Reduction (MW) |
|---|---|---|
| 2008 (actual) | 151,000 | 30 |
| 2014 | 230,000 | 59 |
| 2019 | 292,000 | 82 |

a. Ongoing third party measurement and verification program
b. Set based on analysis of cost-effectiveness using Total Resource Cost economic criterion.

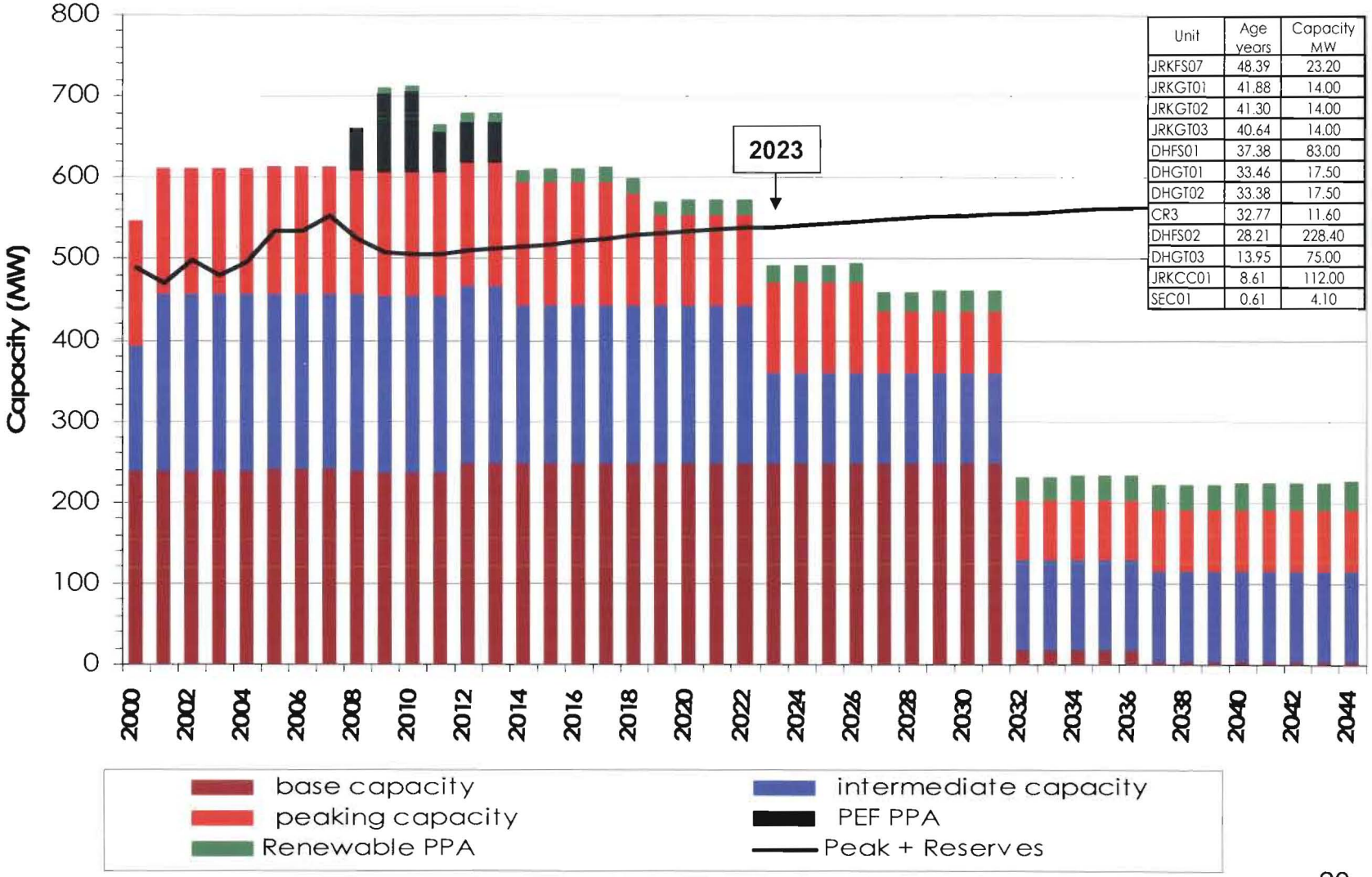
Source: GREC Need Determination Application, pg 13-3 9/18/09

# We Will Need The Capacity

Mayor Pro-Tem and Commissioner

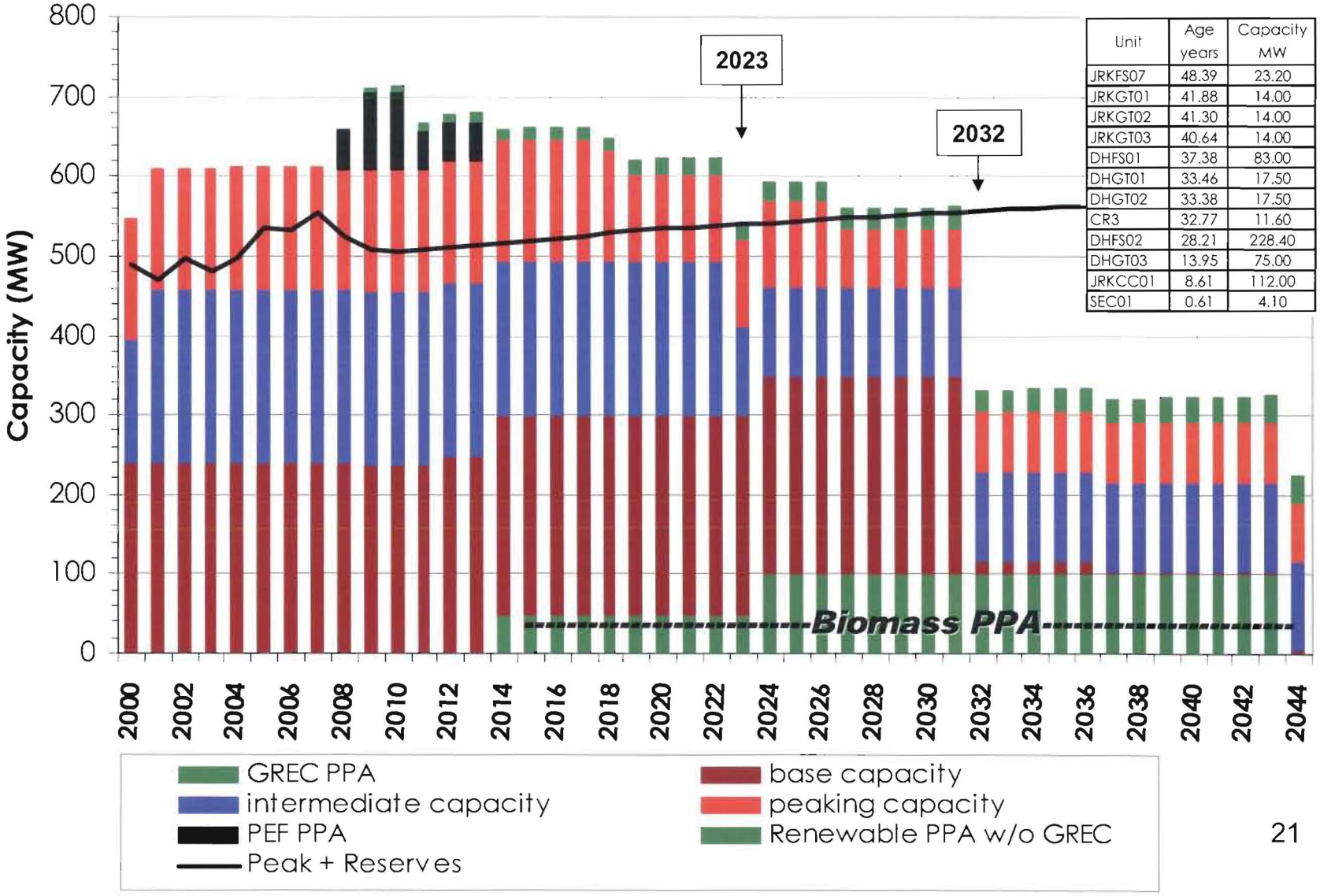
Scherwin Henry

# We Have An Aging Generation Fleet




| Unit | Age years | Capacity MW |
|---|---|---|
| JRKFS07 | 48.39 | 23.20 |
| JRKGT01 | 41.88 | 14.00 |
| JRKGT02 | 41.30 | 14.00 |
| JRKGT03 | 40.64 | 14.00 |
| DHFS01 | 37.38 | 83.00 |
| DHGT01 | 33.46 | 17.50 |
| DHGT02 | 33.38 | 17.50 |
| CR3 | 32.77 | 11.60 |
| DHFS02 | 28.21 | 228.40 |
| DHGT03 | 13.95 | 75.00 |
| JRKCC01 | 8.61 | 112.00 |
| SEC01 | 0.61 | 4.10 |

# GREC Will Provide Capacity Through 2032




| Unit | Age years | Capacity MW |
|---|---|---|
| JRKFS07 | 48.39 | 23.20 |
| JRKGT01 | 41.88 | 14.00 |
| JRKGT02 | 41.30 | 14.00 |
| JRKGT03 | 40.64 | 14.00 |
| DHFS01 | 37.38 | 83.00 |
| DHGT01 | 33.46 | 17.50 |
| DHGT02 | 33.38 | 17.50 |
| CR3 | 32.77 | 11.60 |
| DHFS02 | 28.21 | 228.40 |
| DHGT03 | 13.95 | 75.00 |
| JRKCC01 | 8.61 | 112.00 |
| SEC01 | 0.61 | 4.10 |

# Fuels And Risk Management

General Manager Robert E. Hunzinger

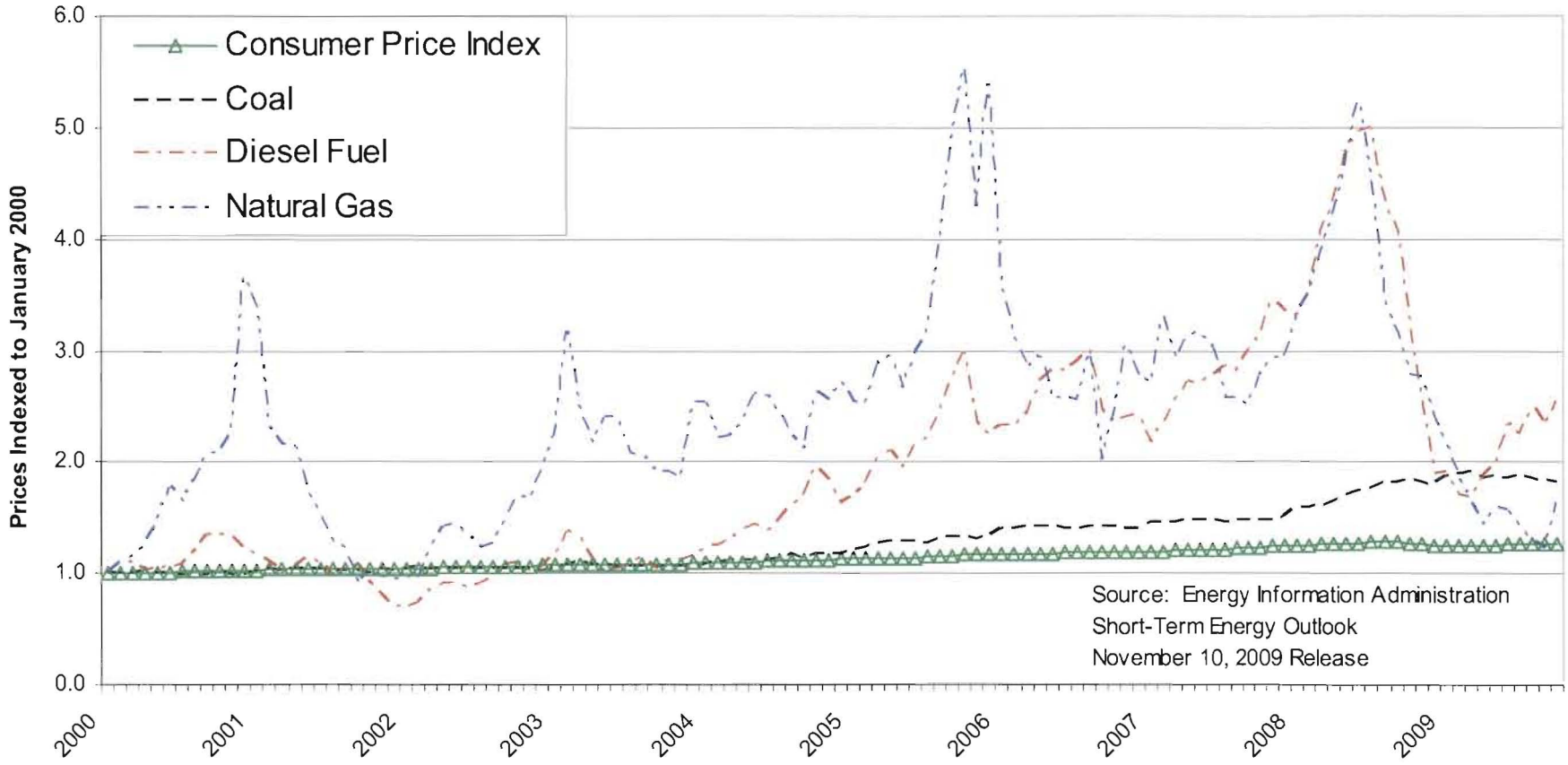
# Power Purchase Contract Structured To Manage Risk

- Capture Financial Incentives Not Available to Municipal Utilities
  - Tax exempt vs. taxable interest spreads less than past years
  - 30% ITC/renewable energy grant or production tax credits
  - Tax liability value of depreciation
- 30 year fixed price (except fuel)
- Structured to off load risk
  - No payment until GREC is operational
  - No construction cost over-run risks
  - Only pay for power made available
  - No liability for extraordinary repairs

# Power Purchase Contract Structured To Manage Risk (continued)

- Assured Sustainable Fuel Supply
  - Strict fuel procurement standards to protect soil and forests
  - Forest Certification incentive payments to promote forest management practices even more environmentally sensitive than current best management practices
- Fuel Price Risk
  - Portfolio of long term put and call contracts
  - Advantageous opportunity fuels
  - Stable pricing
    - Indexed 85-90% CPI
    - Very favorable compared to volatile natural gas and fuel oil prices
  - Gain/loss sharing formula

# Biomass Fuel Supply Pricing Will Be Driven By CPI Indexed Contracts



# Potential Biomass Fuel Sources

- **Forestry Residues**
  - Slash and cull trees
  - Pre-commercial thinning
- **Wood Processing Residue**
  - Round-offs, end cuts
  - Sawdust, shavings
  - Reject lumber
- **Other Waste Materials**
  - Discarded pallets and packaging wood
- **Urban Wood Residue**
  - Wood and brush from clearing, tree trimming & landscaping
- **Opportunity Fuels**
  - Storm debris
  - Agricultural waste

# Fuel Procurement Areas

- Typical procurement areas within a 75-mile radius around the site
- Allows for about a maximum 100-mile haul distance which is the practical limit for hauling logging residues and chips
- Traffic studies[a] show that the estimated 130 to 150 trucks per day plus employee cars will not effect the level of service of roadway networks.

a. From Gainesville Renewable Energy Center Application for Site Certification, filed 11/30/09 with the FDEP.

# Risk We Keep

- Regulatory Changes
  - Environmental standards
- Regulatory Delays
  - Not getting approvals in time for ITC/renewable energy grant
- Price Received For 50 MW Resale
  - Firm baseload capacity is very valuable
  - Four municipal utilities have indicated serious interest

# Biomass Plant: Economical Over Long Term[a]

- Short term effect on typical residential bill

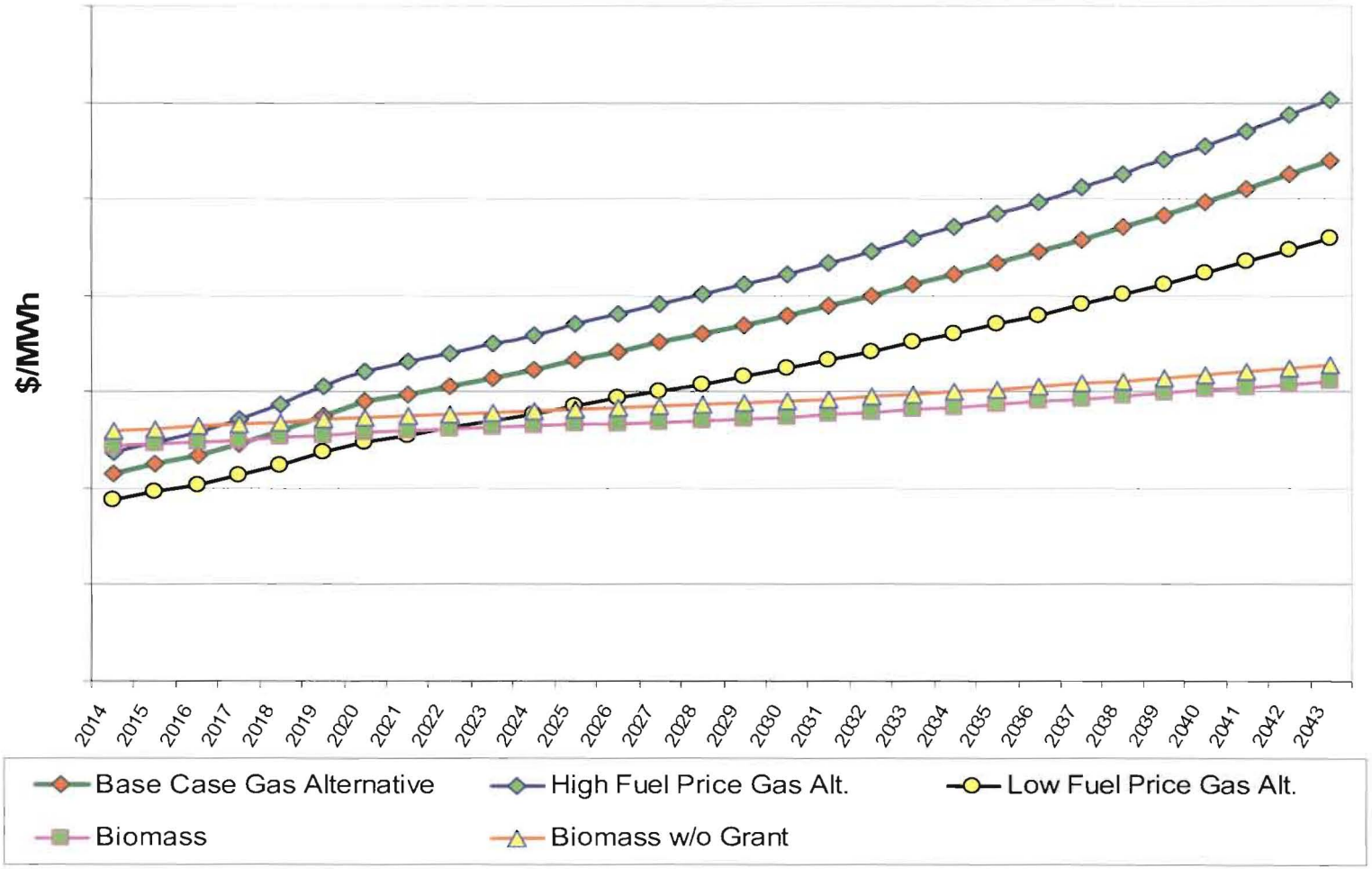
| | 2014 | 2019 |
|---|---|---|
| High Fuel Prices | 2.7% | -1.6% |
| Base Case | 4.3% | 0.5% |
| Low Fuel Prices | 5.8% | 2.5% |

(negative value indicates bill reduction)

- Long term – reduced bills
  - Avoided Capacity Benefit
  - Increasing Fossil Fuel Prices
- Does not include benefits if carbon legislation passes

a. From City Commission meeting May 7, 2009. Based on 1,000 kWh monthly bill

# Biomass - A Long Term Savings[a]




a. From City Commission meeting May 7, 2009

# Effective Hedge Against New Regulations

## Estimated Carbon Cost Effects of HB 2454
## 1000 kWh Monthly Bill ($/Month)

| Scenario[a] | 2014 | 2019 |
|---|---|---|
| No Biomass Plant | $32.78 | $52.52 |
| Net Cost/Savings With Biomass Plant | $3.58 | -$1.39 |

a. Data taken from GRU's response to FPSC Interrogatory question 60. Uses AEO 2009 "basic" estimates of carbon offset values as provided on page 11-3 of GRU's Need Determination Application, 9/18/09.

# Conclusion

Commissioner Lauren Poe

# Project Benefits

- Creates over 500 new jobs in the region
- Adds over $5,500,000/year to local tax base in tangible property taxes
  - Excluding City of Gainesville tax revenues
  - Initially half from out of county participants
- Offsets potential cost of carbon taxes or cap and trade programs
- Offsets potential RPS compliance cost

# Project Benefits
(Continued)

- Direct utility bill effects
  - Avoided fuel costs
  - Avoided capacity costs
- Indirect utility bill effects
  - Improved reliability
  - Price stability
- Community benefits
  - Cleaner air from less open burning
  - Contributes to local economy, energy independence, sustainability, and reduced $CO_2$

# Project Benefits
(Continued)

- 100% recyclable wood ash
- Reduced landfill requirements
- Promotes ecosystem restoration, fire fuel hazard reduction, and supports silviculture
- Achieves our carbon reduction goals

# Summary

- Policy direction
  - Diversify supply
- Public input
  - Lengthy and transparent process
- Renewables / environmental goals
  - Kyoto targets
- Sustainable supply with local benefits
- Fixed pricing
  - Life cycle economically beneficial
  - Low marginal dispatch cost

Thank You

RESOLUTION NO. 050132

PASSED June 27, 2005

**A Resolution of the City Commission of the City of Gainesville, Florida; endorsing the United States Conference of Mayors' Climate Protection Agreement; authorizing the Mayor to support the Agreement; providing directions to the Clerk of the Commission; and providing an immediate effective date.**

**WHEREAS,** the U.S. Conference of Mayors has previously adopted strong policy resolutions calling for cities, communities and the federal government to take actions to reduce global warming pollution; and

**WHEREAS,** the Inter-Governmental Panel on Climate Change (IPCC), the international community's most respected assemblage of scientists, has found that climate disruption is a reality and that human activities are largely responsible for increasing concentrations of global warming pollution; and

**WHEREAS,** recent, well-documented impacts of climate disruption include average global sea level increases of four to eight inches during the 20th century; a 40 percent decline in Arctic sea-ice thickness; and nine of the ten hottest years on record occurring in the past decade; and

**WHEREAS,** climate disruption of the magnitude now predicted by the scientific community will cause extremely costly disruption of human and natural systems throughout the world including: increased risk of floods or droughts; sea-level rises that interact with coastal storms to erode beaches, inundate land, and damage structures; more frequent and extreme heat waves, more frequent and greater concentrations of smog; and

**WHEREAS,** on February 16, 2005, the Kyoto Protocol, an international agreement to address climate disruption, went into effect in the 141 countries that have ratified it to date; 38 of those countries are now legally required to reduce greenhouse gas emissions on average 5.2

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 30
COMPANY GRU/GREC LLC
WITNESS Executed Climate Change Agreement
DATE 12/16/09

percent below 1990 levels by 2012; and

**WHEREAS,** the United States of America, with less than five percent of the world's population, is responsible for producing approximately 25 percent of the world's global warming pollutants; and

**WHEREAS,** the Kyoto Protocol emissions reduction target for the U.S. would have been 7 percent below 1990 levels by 2012; and

**WHEREAS,** many leading US companies that have adopted greenhouse gas reduction programs to demonstrate corporate social responsibility have also publicly expressed preference for the US to adopt precise and mandatory emissions targets and timetables as a means by which to remain competitive in the international marketplace, to mitigate financial risk and to promote sound investment decisions; and

**WHEREAS,** state and local governments throughout the United States are adopting emission reduction targets and programs and that this leadership is bipartisan, coming from Republican and Democratic governors and mayors alike; and

**WHEREAS,** many cities throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements, reduced traffic congestion, improved transportation choices, and economic development and job creation through energy conservation and new energy technologies; and

**WHEREAS,** mayors from around the nation have signed the U.S. Mayors Climate Protection Agreement which, as amended at the 73rd Annual U.S. Conference of Mayors meeting, reads:

The U.S. Mayors Climate Protection Agreement

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation,

methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2)a flexible, market-based system of tradable allowances among emitting industries; and

C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.
2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;
4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production; and supporting the use of waste to energy technology;
5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
6. Purchase only Energy Star equipment and appliances for City use;
7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
10. Increase recycling rates in City operations and in the community;
11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and
12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF GAINESVILLE, FLORIDA;**

**Section 1.** The City Commission of the City of Gainesville endorses the U.S. Mayors Climate Protection Agreement and urges mayors from around the nation to join this effort.

**Section 2.** The Mayor is authorized to support the U.S. Mayors Climate Protection Agreement on behalf of the City Commission.

**Section 3.** The Clerk of the Commission is authorized and directed to send copies of this Resolution to the U.S. Mayors Climate Protection Agreement, c/o the City of Seattle, Office of Sustainability and Environment.

**Section 4.** This Resolution shall be effective immediately upon adoption.

**PASSED AND ADOPTED** this 27th day of June, 2005.

Pegeen Hanrahan, Mayor

ATTEST:

Kurt Lannon,
Clerk of the Commission

APPROVED AS TO FORM AND LEGALITY:

Marion J. Radson, City Attorney

JUN 29 2005

*City of Gainesville CRA Project Coordinator Matt Dube' gave a presentation.*

RECOMMENDATION *City Commission adopt the proposed resolution to designate the University Corners site as a state Brownfield Area.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Nielsen, that this matter be Adopted (Resolution). The motion carried by the following vote:**

Votes: Aye: Pegeen Hanrahan, Warren Nielsen, Craig Lowe and Jack Donovan
Absent: Chuck Chestnut, Edward Braddy and Rick Bryant

050130_200506271300.pdf

**050132** **UNITED STATES CONFERENCE OF MAYORS' CLIMATE PROTECTION AGREEMENT (B)**

**A Resolution of the City Commission of the City of Gainesville, Florida; endorsing the United States Conference of Mayors' Climate Protection Agreement; authorizing the Mayor to support the Agreement; providing directions to the Clerk of the Commission; and providing an immediate effective date.**

*Chair Hanrahan recognized Citizens Bill Schilling and Rob Brinkman who spoke to the matter.*

RECOMMENDATION *The City Commission adopt the proposed resolution.*

**A motion was made by Commissioner Lowe, seconded by Commissioner Nielsen, that this matter be Adopted (Resolution). The motion carried by the following vote:**

Votes: Aye: Pegeen Hanrahan, Warren Nielsen, Rick Bryant, Craig Lowe and Jack Donovan
Absent: Chuck Chestnut and Edward Braddy

050132_200506271300.pdf

## PLAN BOARD PETITIONS

## DEVELOPMENT REVIEW BOARD PETITIONS

## SCHEDULED EVENING AGENDA ITEMS

**040424** **Bar Closing Times - Discussion with University of Florida Student Government (B)**

*MOTION: Commissioner Bryant moved and Commissioner Nielsen seconded to table this item.*
*(VOTE: 6-0, Commissioner Chestnut, Absent, MOTION CARRIED)*

EXHIBIT NO. 31

DOCKET NO: 090451-EM

WITNESS: Regan/Bachmeier

PARTY: GRU/GREC LLC

DESCRIPTION: Monthly Rate Impact per 831 kWh bill (2 pages)

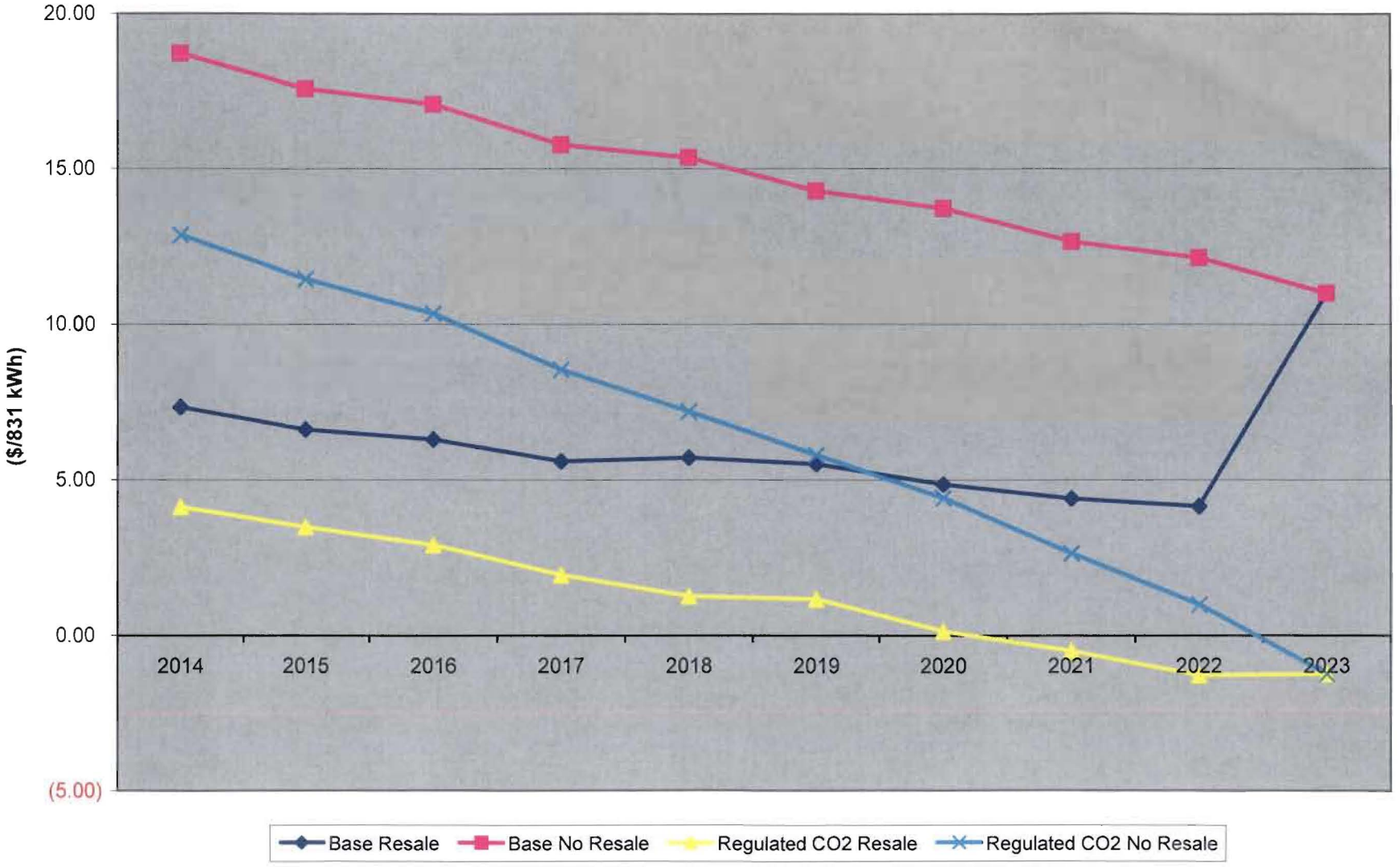
PROFFERED BY: STAFF

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 090451-EM EXHIBIT 31
COMPANY GRU/GREC LLC
WITNESS Monthly Rate Impact per kWh bill
DATE 12/16/09

| Price Differential from No New Construction till 2023 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Res. Price ($/831kWh) | | | | System Avg Cost(c/kWh) | | | |
| | Base | | Regulated CO2 | | Base | | Regulated CO2 | |
| | Resale | No Resale | Resale | No Resale | Resale | No Resale | Resale | No Resale |
| 2014 | 7.33 | 18.72 | 4.13 | 12.87 | 0.88 | 2.25 | 0.50 | 1.55 |
| 2015 | 6.62 | 17.58 | 3.48 | 11.45 | 0.80 | 2.12 | 0.42 | 1.38 |
| 2016 | 6.30 | 17.08 | 2.91 | 10.34 | 0.76 | 2.05 | 0.35 | 1.24 |
| 2017 | 5.59 | 15.78 | 1.95 | 8.54 | 0.67 | 1.90 | 0.23 | 1.03 |
| 2018 | 5.72 | 15.36 | 1.26 | 7.20 | 0.69 | 1.85 | 0.15 | 0.87 |
| 2019 | 5.50 | 14.29 | 1.16 | 5.79 | 0.66 | 1.72 | 0.14 | 0.70 |
| 2020 | 4.85 | 13.72 | 0.14 | 4.41 | 0.58 | 1.65 | 0.02 | 0.53 |
| 2021 | 4.41 | 12.66 | (0.49) | 2.64 | 0.53 | 1.52 | (0.06) | 0.32 |
| 2022 | 4.16 | 12.14 | (1.28) | 1.00 | 0.50 | 1.46 | (0.15) | 0.12 |
| 2023 | 11.00 | 11.00 | (1.24) | (1.24) | 1.32 | 1.32 | (0.15) | (0.15) |
| 2024 | 13.49 | 13.49 | 0.20 | 0.20 | 1.62 | 1.62 | 0.02 | 0.02 |
| 2025 | 6.99 | 6.99 | (7.42) | (7.42) | 0.84 | 0.84 | (0.89) | (0.89) |
| 2026 | 6.87 | 6.87 | (7.97) | (7.97) | 0.83 | 0.83 | (0.96) | (0.96) |
| 2027 | 5.93 | 5.93 | (10.47) | (10.47) | 0.71 | 0.71 | (1.26) | (1.26) |
| 2028 | 4.81 | 4.81 | (12.98) | (12.98) | 0.58 | 0.58 | (1.56) | (1.56) |
| 2029 | 3.32 | 3.32 | (16.19) | (16.19) | 0.40 | 0.40 | (1.95) | (1.95) |
| 2030 | 1.74 | 1.74 | (19.34) | (19.34) | 0.21 | 0.21 | (2.33) | (2.33) |
| 2031 | (9.78) | (9.78) | (18.76) | (18.76) | (1.18) | (1.18) | (2.26) | (2.26) |
| 2032 | (10.02) | (10.02) | (16.64) | (16.64) | (1.21) | (1.21) | (2.00) | (2.00) |
| 2033 | (11.55) | (11.55) | (17.84) | (17.84) | (1.39) | (1.39) | (2.15) | (2.15) |
| 2034 | (13.00) | (13.00) | (20.50) | (20.50) | (1.56) | (1.56) | (2.47) | (2.47) |
| 2035 | (15.08) | (15.08) | (22.13) | (22.13) | (1.81) | (1.81) | (2.66) | (2.66) |
| 2036 | (16.83) | (16.83) | (25.45) | (25.45) | (2.03) | (2.03) | (3.06) | (3.06) |
| 2037 | (19.00) | (19.00) | (26.89) | (26.89) | (2.29) | (2.29) | (3.24) | (3.24) |
| 2038 | (21.04) | (21.04) | (28.83) | (28.83) | (2.53) | (2.53) | (3.47) | (3.47) |
| 2039 | (23.18) | (23.18) | (30.55) | (30.55) | (2.79) | (2.79) | (3.68) | (3.68) |
| 2040 | (25.48) | (25.48) | (34.50) | (34.50) | (3.07) | (3.07) | (4.15) | (4.15) |
| 2041 | (27.80) | (27.80) | (36.18) | (36.18) | (3.35) | (3.35) | (4.35) | (4.35) |
| 2042 | (30.17) | (30.17) | (40.18) | (40.18) | (3.63) | (3.63) | (4.83) | (4.83) |
| 2043 | (32.73) | (32.73) | (42.20) | (42.20) | (3.94) | (3.94) | (5.08) | (5.08) |

Source: Interrogatory #54 (Richard Bachmeier)

## Monthly Rate Impact (per 831 kWh bill)




Source: Interrogatory #54 (Richard Bachmeier)