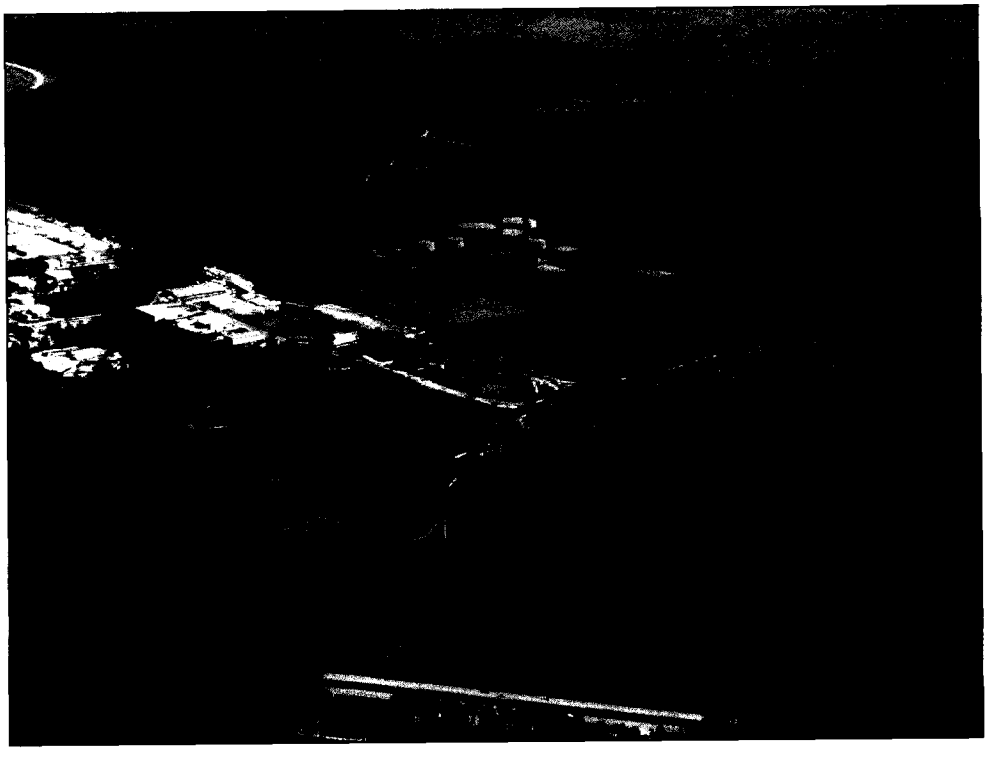
Florida Electrical Power Plant Siting Act
Need for Power Application

Greenland Energy Center
Combined Cycle Conversion Project



Submitted by:

JEA

Building Community®

September 2008

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF DONALD C. GILBERT

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is Donald C. Gilbert. My business address is 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA. My title is Manager, Electric System Planning.

Q. Please describe your responsibilities in that position.

A. I am responsible for planning activities including generation, transmission, and distribution related to JEA's electric system. It is my responsibility to ensure that JEA will be able to continue to reliably serve retail electric load at a reasonable cost.

Q. Please state your educational background and professional experience.

A. I received my Bachelor of Electrical Engineering degree from the Georgia Institute of Technology in 1982. I am a licensed professional engineer in the State of Florida, with more than 30 years of experience in the electric utility

industry, including 4 years in Georgia Power Company's corporate planning, 3 years in JEA's corporate planning, 20 years in JEA's system operations, and 4 years as current manager of JEA's Electric System Planning.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to provide a description of JEA's existing system and the need for the Greenland Energy Center (GEC) combined cycle conversion, demonstrate that the GEC combined cycle conversion will not adversely impact JEA's transmission system, discuss JEA's efforts to add nuclear generation to our portfolio, and to demonstrate that JEA will be able to finance the GEC combined cycle conversion.

Q. Are you sponsoring any exhibits as part of your pre-filed testimony?

A. Yes. I am sponsoring Exhibit No. ___ [DCG-1], which is a copy of my resume, and Exhibit No. __[DCG-2], which summarizes JEA's existing generating facilities.

Q. Are you sponsoring any sections of the GEC Need for Power Application, Exhibit No. __ [GEC-1]?

A. Yes. I am sponsoring all of Section 3.0 with the exception of Section 3.9, Section 10.0, and Section 19.0. All of these sections were prepared under my direct supervision.

Q. Please describe JEA.

A. JEA is the eighth largest municipally owned electric utility in the United States in terms of number of customers. JEA's electric service area covers all of Duval County and portions of Clay and St. Johns Counties. JEA's service area covers approximately 900 square miles and serves more than 400,000 customers. JEA's generating system consists of three financially separate components: the Electric System, the bulk power system St. Johns River Power Park Units 1 and 2 (the Power Park or SJRPP), and the bulk power system Robert W. Scherer Electric Generating Plant (Scherer Unit 4). The Electric System includes the Brandy Branch, Northside, and Kennedy generating stations. The total summer net capacity of the Electric System, SJRPP, and Scherer Unit 4 is 3,370 MW and the total winter net capacity is 3,620 MW. These resources are summarized in Exhibit No. __[DCG-2].

Q. Please summarize JEA's need for the conversion of the two simple cycle 7FA combustion turbine units at the Greenland Energy Center to a 2x1 combined cycle configuration.

A. As discussed in detail in the Need for Power Application and testimony of other witnesses, JEA needs the GEC combined cycle conversion to maintain system reliability. The GEC combined cycle conversion will improve system reliability and integrity by providing firm capacity to help satisfy future capacity requirements. The GEC combined cycle conversion is JEA's most cost-effective alternative, providing customers with adequate electricity at a

reasonable cost. The GEC combined cycle conversion will further diversify JEA's fuel mix. Peoples Gas System will reliably supply natural gas transportation capacity to GEC. The location of GEC provides for additional transmission system reliability and improved system efficiency.

Q. Does JEA utilize purchase power contracts as part of its power supply portfolio?

A. Yes. JEA has a contract with Southern Company for the purchase of 207 megawatts (MW) of coal fired capacity and energy through May 2010 (Southern UPS). JEA also has contracted with Constellation Energy Commodities Group, Inc. for peaking capacity of 75 MW, 150 MW, and 150 MW for the winter seasons of 2008, 2009, and 2010, respectively.

JEA continues to encourage and evaluate opportunities for cogeneration. Cogeneration facilities reduce the demand on JEA's system and/or provide additional capacity. JEA currently purchases power from four customer-owned qualifying facilities for a total installed summer capacity of 17 MW and a winter capacity of 19 MW. These service territory qualifying facilities are Anheuser-Busch, Baptist Hospital, Ring Power Landfill, and St. Vincent's Hospital.

Q. Please discuss The Energy Authority.

A. JEA is a member of The Energy Authority (TEA), which actively trades energy with a large number of counterparties throughout the United States. TEA is generally able to acquire capacity and energy from other market participants

when members, including JEA, require additional resources. JEA does not have any currently active firm purchases through TEA.

Q. Does JEA plan to retire any existing generating units?

A. Yes. JEA is planning to retire Kennedy CT 3 in the first quarter of 2009.

Q. Please describe JEA's transmission system.

A. The JEA transmission system consists of 728 circuit-miles of bulk power transmission facilities operating at four voltage levels: 69 kV, 138 kV, 230 kV, and 500 kV. The 500 kV transmission lines are jointly owned by JEA and FPL and complete the path from FPL's Duval substation (to the west of JEA's system) to the Florida interconnect at the Georgia Integrated Transmission System. The 230kV and 138 kV transmission system provides a backbone around JEA's service territory, with one river crossing in the north and no river crossings in the south, leaving an open loop. The 69 kV transmission system extends from JEA's core urban load center to the northwest, northeast, east, and southwest to fill in the area not covered by the 230 kV and 138 transmission backbone. In addition to these main transmission lines, JEA also owns and operates five 230 kV tie-lines and a 138 kV transmission loop.

Q. Has the Florida Reliability Coordinating Council (FRCC) reviewed the GEC combined cycle conversion with respect to the transmission system?

A. Yes. The FRCC's Transmission Working Group (TWG) and Stability Working Group (SWG) evaluated whether the addition of the GEC may cause any

thermal overloads and voltage limitations, instability or inadequately damped response to system disturbances, or short-circuit concerns. Based upon the review and analysis conducted by the TWG and SWG, the FRCC has determined that the proposed interconnection and integration of the GEC to serve JEA's native load is reliable, adequate, and does not adversely impact the reliability of FRCC transmission system.

Q. What steps has JEA taken to explore nuclear power?

A. In March 2008, the JEA Board of Directors approved the pursuit of nuclear energy partnerships with the goal of providing 10 percent of JEA's energy from nuclear sources. JEA entered into a purchase power agreement in June 2008 with the Municipal Electric Authority of Georgia (MEAG) for a total of 206 MW of firm nuclear capacity from the construction of Vogtle Units 3 and 4, and will continue to evaluate additional nuclear energy opportunities as appropriate.

The nuclear purchase from MEAG will use the Georgia-Florida transmission interface that is currently being used for the Southern Company UPS contract.

Q. How does JEA intend to finance the GEC combined cycle conversion?

A. JEA typically finances large generation capital projects using fixed and floating rate subordinate long-term debt. Up to a maximum of 30 percent of this debt may be floating rate. During preliminary design, engineering, and permitting, JEA may use internal funds from operations or from prior issuances to fund early project costs. As the initial development concludes and construction

commences, JEA may initiate various series of revenue bond issuances for long-term financing with terms of up to 30 years. For large projects, JEA may issue bonds every 1 to 2 years to cover expected construction related capital costs over these periods. By having multiple issuances, JEA will limit the amount of interest incurred during the conversion construction. In addition, JEA may pool the financing for GEC with other smaller capital projects that may be required concurrent with GEC.

Q. Is JEA confident in its ability to secure revenue bonds to finance GEC?

A. Yes. Based on the project's favorable economics and JEA's excellent credit rating, JEA will be able to issue debt to cover the cost of the project.

Q. What are JEA's current credit ratings?

A. JEA has credit ratings for long-term financing of AA- from S&P, Aa2 from Moody's Investors Services, and an AA- from Fitch.

Q. Does this complete your testimony?

A. Yes.

RESUME OF

Donald (Don) Gilbert, Manager, Electric System Planning

JEA

Qualifications and Experience:

Mr. Gilbert has over 30 years experience in the electric utility business including four years in Georgia Power Company's Corporate Planning, three years in JEA's Corporate Planning (transmission & generation planning), and 20 years in JEA's system operations. Don has held chair positions of the Florida Coordinating Group (FRCC) Telecommunication committee, Florida/Southern Inter-utility data exchange working group, and the technical subcommittee responsible for the implementation of the Automated Interchange Matching System. Don served on JEA's management team as a System Operation Control Systems manager from April 1998 until October 2001. Since June 2005, Don has been the Manager of JEA's Electric System Planning area responsible for Generation, Transmission, and Distribution planning activities. Since 1985, Don has been licensed to practice as a Professional Engineer in the state of Florida.

Employment

History:	1982-Present	JEA
	1977-1982	Georgia Power Company
Education:	B.S.	Electrical Engineering, Georgia Institute of Technology

Existing Generating Facilities

Plant Name	Unit Number	Unit Type	Fuel Type Primary	Alt.	Fuel Transport Primary	Alt.	Commercial Service (Mo/Yr)	Gen Max Nameplate (kW)	Net MW Capacity		Ownership
									Summer	Winter	
Kennedy											
	3	GT	FO2		WA	TK	7/1973	68,600	51	63	Sole
	7	GT	NG	FO2	PL	WA	6/2000	203,800	150	191	Sole
Northside											
	1	ST	PC	BIT	WA	RR	11/1966[1]	350,000	293	293	Sole
	2	ST	PC	BIT	WA	RR	3/1972[1]	350,000	293	293	Sole
	3	ST	NG	FO6	PL	WA	7/1977	563,700	524	524	Sole
	3-6	GT	FO2		WA	TK	1/1975	248,400	212	246	Sole
Brandy Branch											
	1	CT	NG	FO2	PL	TK	5/2001	203,800	150	191	Sole
	2	CT	NG	FO2	PL	TK	5/2001	203,800	150	191	Sole
	3	CT	NG	FO2	PL	TK	11/2001	203,800	150	191	Sole
	4	ST	NG	FO2	PL	TK	1/2005	268,400	201	223	Sole
Girvin Landfill	1-4	IC	LFG		PL		6/1997	1.2	1.2	1.2	Sole
St. Johns River Power Park											
	1	ST	BIT/PC		RR	WA	3/1987	679,600	501[2]	510[2]	Joint
	2	ST	BIT/PC		RR	WA	5/1988	679,600	501[2]	510[2]	Joint
Scherer	4	A	SUB	BIT	RR	RR	2/1989	846,000[4]	194[3]	194[3]	Joint
JEA System Total[4,]									**3,370**	**3,620**	

[1]Northside steam Units 1 and 2 were repowered as CFBs and returned to service in May 2002 and February 2002, respectively.
[2]Net capacity reflects JEA's 80 percent ownership of Power Park. Nameplate is original nameplate of the unit.
[3]Nameplate and net capacity reflect JEA's 23.64 percent ownership in Scherer 4.
[4]Numbers may not add up due to rounding.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF MICHAEL N. LAWSON

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and address.

A. My name is Michael N. Lawson. My business address is 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA as a Project Manager.

Q. Please describe your responsibilities in that position.

A. I am responsible for all phases of project management from start of engineering through startup and commissioning for new projects.

Q. Please state your educational background and professional experience.

A. I have a Bachelor's degree in Mechanical Engineering from the University of Alabama in Huntsville. I am a registered Professional Engineer in the State of Florida.

I have worked for JEA since 1983 and my responsibilities have included serving as Lead Project Administrator and Contracts Administration Manager for the St. Johns River Power Park, Construction Site Manager for the Northside Repowering Project, Project Manager for the Brandy Branch Combined Cycle Project, and Project Manager for the proposed Taylor Energy Center (TEC). Prior to JEA, I worked in a variety of engineering positions including Startup Engineer, Lead Project Engineer, and Plant Engineer.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to provide an overview of the Greenland Energy Center (GEC) combined cycle conversion project.

Q. Have you prepared any exhibits to your testimony?

A. Yes. Exhibit No. __[MNL-1] is a copy of my resume. Exhibit No. __[MNL-2] summarizes the estimated capital cost for the GEC combined cycle conversion. Exhibit No. __[MNL-3] presents the estimated performance for the GEC combined cycle.

Q. Are you sponsoring any sections of Exhibit No. __ [GEC-1], the GEC Need for Power Application?

A. Yes, I am sponsoring Section 9.0, which was prepared under my direct supervision.

Q. Please describe the Greenland Energy Center combined cycle conversion.

A. The GEC combined cycle conversion will consist of converting the two simple cycle General Electric (GE) 7FA combustion turbines at the GEC site in Jacksonville, Florida to a 2x1 combined cycle configuration. The 2x1 GEC combined cycle will have a nominal net output of 522 MW at average ambient conditions.

The GEC combined cycle will be dual fueled with natural gas as the primary fuel and ultra-low sulfur diesel (ULSD) fuel oil as a backup fuel. The GEC combined cycle will include two heat recovery steam generators (HRSGs) with natural gas-fired duct burners (supplemental firing) to increase power generation and steam bypass to allow for simple cycle operation.

Q. Will GEC include best available control technologies to minimize environmental impacts?

A. Yes. The GEC combined cycle will be one of the most efficient and lowest polluting power plants in the State of Florida. Compared to simple cycle generating plants, combined cycle units have higher efficiency and, therefore, generate more electrical output per unit of fuel consumed. As a result, air pollutant emissions per MW are minimized. Pollution prevention is also incorporated through the use of clean fuels that minimize emissions of SO_2 and particulate matter. In addition, advanced dry low-NO_x combustion technology will be used to minimize NO_x emissions while ensuring that emissions of carbon monoxide and volatile organic compounds are within accepted limits.

Moreover, selective catalytic reduction, or SCR, will be installed in each HRSG to further reduce NO_x emissions when operating in combined cycle mode.

Q. Will adequate water be available for operation of the GEC combined cycle?

A. Yes. Reclaimed water for cooling tower makeup is expected to be supplied from JEA via a pipeline adjacent to the GEC site. In emergency situations municipal water could be used for backup cooling water makeup. Service water, potable water, demineralizer water makeup, and fire water will be supplied from the JEA municipal water system.

Q. How will GEC be interconnected to JEA's transmission system?

A. The additional steam turbine generator will connect to the JEA 230 kV transmission system via the GEC plant switchyard.

Q. Are there other important features that will be included in the design of the GEC combined cycle?

A. Yes. GEC will include several design features for cycling load operation. The steam turbine generator will be selected in combination with the HRSGs to provide a reasonable design throttle pressure to ensure satisfactory cycling operation. GEC will also have full steam bypass capability, allowing the combustion turbine units to operate in simple cycle mode.

Q. Please describe the fuel supply to the GEC site.

A. The primary fuel for the GEC combined cycle will be natural gas, while the backup will be ULSD. As discussed more in the testimony of Mr. James Myers, natural gas will be delivered to the GEC site through the SeaCoast Pipeline via a distribution lateral. The use of SeaCoast allows JEA to utilize a diverse natural gas supply portfolio, as SeaCoast is interconnected with both Florida Gas Transmission Company and Southern Natural Gas. Adequate natural gas pressure is anticipated to be available, with no need for the addition of gas compressors.

Q. Please describe the capital costs for the GEC combined cycle conversion.

A. The capital cost estimate is based on the conversion of the two GE 7FA simple cycle combustion turbines at GEC to a 2x1 combined cycle configuration. The construction cost includes direct costs for purchased equipment and materials, construction contract costs, and indirect costs. Direct costs include the costs associated with the purchase of equipment, erection, and all contractor services. All direct costs include escalation for commercial operation June 1, 2012. Construction costs are based on an engineering, procurement, and construction (EPC) contracting philosophy.

Indirect costs associated with construction are included in the capital cost estimate. General indirect costs include all necessary services required for checkouts, testing services, and commissioning. Insurance for builder's risk and general liability are included. Contractor engineering, contractor field

construction management, technical direction, contingency, profit, equipment transportation costs, startup, and commissioning are also included.

The total capital cost is estimated to be $418,575,000 in 2012 dollars, and is summarized in Exhibit No. ___ [MNL-2]. This estimate includes equipment costs, EPC costs (direct and indirect), project contingency, and owner's costs. The capital cost estimate also includes interest during construction and is representative of an installed, in-service cost estimate for June 2012 commercial operation of the GEC combined cycle.

Q. Please discuss the estimated fixed O&M costs for the GEC combined cycle conversion.

A. Fixed O&M costs associated with the GEC combined cycle conversion are estimated to be $3.38 million per year in 2008 dollars, and are based on a full-time staff level of 22.

Q. Please discuss the estimated non-fuel variable O&M expenses for the GEC combined cycle conversion.

A. Non-fuel variable O&M costs include consumables, chemicals, lubricants, water, and major inspections and overhauls. Major inspection and overhaul costs can be covered under long-term service agreements with the turbine manufacturer, or each overhaul can be subcontracted to the turbine supplier or a third party maintenance provider. Because the plant is not staffed to fully perform these major inspections, it is assumed that these will be subcontracted

to the turbine supplier or a third party O&M provider. The incremental non-fuel variable O&M costs associated with the GEC combined cycle conversion are estimated to be $2.28 million per year in 2008 dollars.

Q. Please discuss the estimated scheduled and unscheduled outage rates of the GEC combined cycle.

A. GEC is assumed to have an annualized scheduled outage rate of 7 days per year. GEC is assumed to have an annual forced outage rate of 4 percent over the analysis period.

Q. Please describe the estimated performance for the GEC combined cycle.

A. Actual plant performance (including net plant output and net plant heat rate) will be a function of ambient conditions and other factors. Estimated performance at various load points was developed for summer ambient conditions, winter ambient conditions, and average ambient conditions. Nonrecoverable degradation factors of 2.7 percent for net plant output and 1.5 percent for net plant heat rate (NPHR) have been included. Exhibit No. __[MNL-3] presents the estimated degraded net plant output and NPHR for the GEC combined cycle.

Q. What is the overall schedule for construction completion of the GEC combined cycle conversion?

A. The GEC combined cycle is planned for commercial operation beginning in June 2012. Detailed engineering activities will commence in the first quarter 2009 in support of anticipated construction start of early 2010. Long lead time

procurement activities, such as specification, equipment proposal solicitation, and contract negotiations for the steam turbine generator and HRSGs will occur in 2008 to support the overall construction schedule.

Q. Does this conclude your testimony?

A. Yes.

EMPLOYMENT

Update?

02/05 – Present **JEA, Taylor Energy Center**

Project Manager for 800 MW solid fuel fire electric generating plant. Project cost $1,200 million. Responsible for all phases of project management from start of engineering through start-up and commissioning for a multi-participant project.

02/02 – 02/05 **JEA, Brandy Branch Combined Cycle Project, Jacksonville, FL**

Project Manager for the addition of a combined cycle plant on two 7FA GE CT's. Project cost $201 million. Responsible for all phases of project management from start of engineering through start-up and commissioning.

4/98 – 02/02 **JEA, Northside Repowering Project, Jacksonville Fl.**

Construction Site Manager for repowering two – 275 MW oil/gas fired units with two 300 MW solid fuel fired CFB boilers. Project cost $650 million. Responsible for all site construction activities including work scope delineation, change management, laydown coordination, security, safety program, owners providied insurance program, and budget responsibility.

8/83 – 4/98 **Jacksonville Electric Authority,** St Johns River Power Park, Jacksonville, Fl.

Contracts Administration Manager: Responsible for all phases of major capital and maintenance projects ranging from power piping, boiler modifications, and major equipment installations to yard utilities. Heavy involvement with plant planned and forced outages. Duties include: development, biding and management of all site Contracts; review of engineering packages; daily interface and direction of contractors; project scheduling, budgeting, estimating, equipment procurement and cost controls; construction and maintenance field inspections; and direct supervision of up to 40 Contract Management employees.

Lead Project Administrator: Owner representative for boiler, coal handling, cooling tower and other various contracts on construction of two 624 megawatt coal fired electric generating units. Responsible for Owner inspections, budget control, preparation of change orders, payment approvals, contract interpretations, claims negotiations, and managing 38 million dollars of project force contract work.

11/82 - 8/83 **Tennessee Valley Authority,** Bellefonte Nuclear Plant, Hollywood, Al.

Start-up Engineer: Group leader of four engineers. Prepared flush procedures; prepared construction operating instructions; coordinated start-up of various plant systems; maintained construction schedules; and prepared turnover packages for plant systems .

4/79 - 7/82 **Gardinier, Inc.,** Ft. Meade Mine, Ft. Meade, Florida

Lead Project Engineer: Concept, design and control of $40 million slimes thickening project. Supervised six person engineering staff.

Plant Engineer: Phosphate mining and beneficiation; full control of various plant modifications and additions such as slurry pumps, conveyor stackers, classifiers, log washers, hydraulic stations, and thickeners from concept through design and construction. Lead Project Engineer for new $3.5 million matrix pumping system. Was on design team for $25 million major plant expansion. All projects involved concept, design, equipment selection, procurement, and construction.

3/78 - 4/79 **Gulf States Utilities Company,** Sabine Station, Bridge City, Texas

Engineer: Power Plant maintenance planning; boiler, pump, and turbine maintenance supervision; specification preparation, bidding, and procurement. Major projects: Outage Coordinator for a 380 megawatt steam turbine generator; boiler inspections and maintenance on four boilers including leak records and supervision of repair crews.

12/76 - 3/78 **United Parcel Service,** Huntsville, Alabama

Pre-load Splitter: Sorted packages into driver routes, loaded package trucks.

9/75 - 12/76 **Montgomery Ward and Company,** Huntsville, Alabama

Salesman: Sales in hardware department. 30 - 40 hours per week.

71 - 75 **Ala-Tenn Natural Gas Company,** Muscle Shoals, Alabama
Summer Crew Foreman: Supervised six to eight men on general pipeline maintenance. Summers 40 hours per week.

EDUCATION

1974 - 1978 University of Alabama in Huntsville
Mechanical Engineering Degree obtained in 1978

1973 - 1974 University of North Alabama, Florence, Alabama

1969 - 1973 Bradshaw High School, Florence, Alabama

Licensing: **Professional Engineer,** State of Florida, certificate #32619

GEC 2x1 Combined Cycle Conversion
In-Service Capital Cost Estimate
(000s)

Cost Item Descriptions	Total Cost
Major Procurements	
STG	41,000
HRSGs	60,000
Subtotal	101,000
EPC	
Civil/Structural Engineered Materials/Equipment	4,753
Mechanical Engineered Materials/Equipment	23,190
Electrical Engineered Materials/Equipment	6,141
Control Engineered Materials/Equipment	656
Chemical Engineered Materials/Equipment	3,100
Civil/Structural Construction	9,973
Mechanical/Chemical Construction	16,409
Electrical/Control Construction	1,121
Service Contracts and Construction Indirects	12,700
Startup Spare Parts	1,083
Field Management	14,080
Engineering	14,218
Overhead and Profit	35,856
Subtotal	143,280
Total Direct Costs	244,280
Owner/Other Cost Items	
Balance of Owner's Costs	41,346
Contingency	22,977
Escalation to Summer 2012 Commercial Operation	69,167
IDC	40,805
Subtotal	174,295
Project Total Cost	418,575

Estimated Greenland Energy Center Estimated Combined Cycle Performance		
Performance Point	Net Plant Output (kW)	Net Plant Heat Rate (Btu/kWh, Higher Heating value[HHV])
95° F, Full Load with Supplemental Firing	491,346	7,280
24° F, Full Load with Supplemental Firing	562,423	7,159
69° F, Full Load with Supplemental Firing	522,190	7,136
69° F, Full Load without Supplemental Firing	490,314	7,019
69° F, 2 CTGs at 80% Load without Supplemental Firing	405,420	7,226
69° F, 2 CTGs at 50% Load without Supplemental Firing	284,534	7,908
69° F, 1 CTG at 100% Load without Supplemental Firing	240,136	7,165
69° F, 1 CTG at 80% Load without Supplemental Firing	197,091	7,432
69° F, 1 CTG at 50% Load without Supplemental Firing	134,644	8,355

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF MARY GUYTON-BAKER

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is Mary Guyton-Baker. My business address is 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA as a Professional Engineer working in the JEA Resource Planning Group.

Q. Please describe your responsibilities in that position.

A. My major responsibilities include modeling and production of JEA's load and energy forecast, Integrated Resource Planning (IRP) studies, and the annual Ten Year Site Plan (TYSP).

Q. Please state your educational background and professional experience.

A. I received my Bachelor of Sciences degree in Industrial & Systems Engineering from the University of Florida and also have a degree in Math Education from the University of North Florida.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to discuss JEA's forecast of electrical power demand and energy consumption.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [MGB-1] is a copy of my resume.

Q. Are you sponsoring any sections of Exhibit No. __ [GEC-1], the Greenland Energy Center Need for Power Application?

A. Yes. I am sponsoring Section 5.0, which was prepared under my direct supervision.

Q. Please briefly describe the methodology used to determine the load forecasts for JEA.

A. JEA prepares forecasts of both net energy for load (NEL) and peak demand. JEA currently furnishes wholesale power to Florida Public Utilities Company (FPUC) for resale in the City of Fernandina Beach in Nassau County, north of Jacksonville. JEA is contractually committed to supply FPUC until December 31, 2017. FPUC's historical loads are embedded in JEA's historical loads for the purpose of developing the load forecast used throughout the GEC Need for Power Application. JEA expects that the contract to sell power to FPUC will be renewed upon its expiration and therefore the FPUC loads are included throughout the 20 year evaluation period.

The NEL forecast is developed on a monthly and annual basis as a function of time and heating and cooling degree-day data. Inputs into the forecast include historical energy production, JEA territory sales, sales to FPUC, and heating and cooling degree-days. The JEA forecast modeling methodology separately accounts for and projects the temperature-dependent and non-temperature-dependent energy requirements over time, then combines these components to derive the system total NEL forecast. The temperature-dependent NEL is modeled as a function of parameter estimates for historical and projected heating and cooling degree-days.

To forecast peak demand, JEA has developed a linear regression analysis that utilizes Statistical Analysis Software (SAS) and Excel software. JEA develops a forecast of total peak demand, including interruptible and curtailable customers, and then subtracts these customers to derive an estimate of firm demand only. The peak demand forecast is driven by temperature and time-series data. The forecasting process involves the collection of historical hourly system load data and daily temperature data. A linear regression analysis is conducted to forecast the summer and winter peaks. The forecast temperature used in the regression is the 20 year median of the seasonal extreme temperatures (summer 97° F and winter 25° F) wherein the winter seasonal extreme for a year is the lowest temperature during the months of December, January, and February, and the summer seasonal extreme is the highest temperature during the months of July, August, and September.

Q. Does the load forecast account for interruptible and curtailable customers?

A. Yes. JEA initially develops a forecast of total peak demand that does not reflect the peak demand reductions associated with interruptible and curtailable customers. Once the total peak demand forecast is developed, the peak demand reductions associated with interruptible and curtailable customers are subtracted from the annual total peak demand forecasts, and the resulting firm peak demand forecast is used for capacity planning purposes.

Q. Please summarize the firm base case summer peak demand forecast.

A. The forecast summer firm peak demand for 2009 is 2,890 MW, and the 2027 forecast summer firm peak demand is 4,070 MW. The summer peak demand is projected to grow at a rate of 1.92 percent from 2009 to 2027.

Q. Please summarize the firm base case winter peak demand forecast.

A. The forecast winter firm peak demand for 2009 is 3,022 MW, and the 2027 forecast winter firm peak demand is 4,404 MW. The winter peak demand is projected to grow at a rate of 2.11 percent from 2009 to 2027.

Q. What is JEA's base case net energy for load forecast?

A. The forecast 2009 NEL is 15,016 GWh and the forecast NEL in 2027 is 21,726 GWh. The NEL is expected to grow at a rate of 2.07 percent from 2008 to 2027.

Q. Were any alternative load forecasts developed?

A. Yes. In addition to the base case forecast that I just described, high and low case projections were developed to reflect the effects that extreme and moderate temperatures could have on peak demand and NEL (Extreme and Moderate Condition forecasts). Summaries of the results of the moderate case and extreme case forecasts are presented in Table 5-3 of Exhibit No. __ [GEC-1].

Q. In your opinion, is the process used for developing the demand and energy forecasts reasonable for planning purposes?

A. Yes. The process used in developing the demand and energy forecasts is appropriate for planning purposes. The use of this approach has improved the accuracy of JEA's load forecast as compared to previously used methodologies.

Q. Does this conclude your testimony?

A. Yes.

RESUME OF

Mary Guyton-Baker

Professional Engineer, JEA Resource Planning Group

JEA

EDUCATION

Polk Community College	Fall 1983	AA, Pre-Engineering
University of Florida	Fall 1986	BS, Industrial & Systems Engineering Gainesville, FL
University of North Florida	Spring 2006	ME, Math Education

PROFESSIONAL EXPERIENCE

JEA — January 12, 1987 - Present — Engineer, Electric System Planning
Jacksonville, FL

Major responsibilities include modeling and production of JEA's load and energy forecast, Integrated Resource Planning (IRP) studies, and the annual Ten Year Site Plan (TYSP). Other responsibilities include the economic analysis and/or support of JEA's annual disclosure document, annual marginal cost projections and budget, demand side management plan, emission projections and various internal production cost analyses. I also provide support to and serve on behalf of JEA on the Florida Reliability Coordinating Council's Resource Working Group, interfacing with resource planners from other Florida utilities and staff of the Florida Public Service Commission.

PROFESSIONAL LICENSES

Professional Engineer — State of Florida Board of Professional Engineers
License Number: 65611
Expiration: February 28, 2009

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF JAMES T. MYERS

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is James T. Myers. My business address is JEA, 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA, where I am the Director of Fuel Management Services.

Q. Please describe your educational background and experience.

A. I have a bachelor's degree in Industrial Engineering from Georgia Institute of Technology. I am also a licensed professional engineer in the State of Florida.

I have over 27 years of work experience, all of which has been with JEA. From 1981 to 1986, I worked on load and energy forecasting and load research, which included development of economic, energy, and peak demand models. My responsibilities also included the production of load and energy forecasts for generation planning.

From 1987 to 1995, I was involved in energy resource planning. During this time, I was responsible for long range planning, which included the development of corporate financial models and the preparation of official statements to support bond issues. While in this position, I also assisted in the development of JEA's first integrated resource planning (IRP) study in 1994/1995. I also served as Chairman for the Florida Electric Power Coordinating Group's Generation Task Force, in which I presented the Florida Ten Year Plan to the Florida Public Service Commission.

I have worked in the Fuel Management Services Group since 1995 and have held my current position as Director since 2003. I was the Chairman for the Taylor Energy Center Fuels Committee (TEC Fuels), and have been a JEA representative on the SJRPP and Plant Scherer Fuel committees. I also achieved "Six Sigma Green Belt" designation in substantially reducing JEA's fuel procurement expenses, developed fuel acquisition strategies and market forecasts for JEA's electric system, negotiated agreements, and maintained documentation supporting fuel purchases.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to describe the availability of natural gas throughout the United States as a whole. I will also discuss the natural gas transportation system as it relates to Florida, and demonstrate that the Greenland Energy Center (GEC) will have a reliable supply of natural gas.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [JTM-1] is a copy of my resume.

Q. Are you sponsoring any sections of the GEC Need for Power Application, Exhibit No. __ [GEC-1]?

A. Yes. I am sponsoring Sections 6.0 and 8.0, both of which were prepared under my direct supervision.

Q. Are there any concerns regarding the availability of natural gas?

A. No. Based on the information provided in the Energy Information Administration's Annual Energy Outlook 2008 (AEO2008), as well as other information from other sources, JEA believes that there will be an adequate supply of natural gas. The United States has sufficient natural gas reserves, and these reserves are consistently being replaced as existing natural gas reserves have been consumed. In order to better facilitate this process, existing natural gas storage facilities have recently been or are planned to be expanded. New storage facilities are also being constructed, and projects are under way to better provide natural gas to the pipelines that serve the Southeast US. This construction will allow for better management of gas volumes and increases in reliability of supply.

Q. Will liquefied natural gas (LNG) contribute to the availability of natural gas for GEC?

A. Yes. With US natural gas production remaining relatively constant, imports of natural gas are projected to rise to meet an increasing share of domestic consumption. Most of the expected growth in US natural gas imports would be in the form of LNG. The expansion of LNG supplies and associated infrastructure has increased the opportunity for GEC to receive natural gas from LNG terminals located in the southeastern United States.

Q. How will the anticipated increase in LNG imports affect receiving capacity in the United States?

A. Projected growth in the demand for LNG has resulted in companies adding LNG receiving capacity in the United States. Five LNG import terminals currently operate in the United States. These terminals have expanded to accommodate increased LNG import capabilities. In addition, EIA expects at least four new terminals to be operational in the next two years, more than doubling import capacity from 4.7 billion cubic feet per day (Bcf/d) at the end of 2006 to over 11 Bcf/d at the end of 2008. It is projected that the regasified natural gas send out capacity of onshore facilities could grow to more than 10 Bcf/d by the middle of 2010, with about half of this send out capacity coming from new terminals.

Q. Please discuss natural gas pipeline and storage infrastructure as it relates specifically to Florida.

A. The southeastern states of the United States account for over 38,000 miles of pipeline in 2008, with the State of Florida accounting for approximately 5,000 miles of pipeline. The total Florida pipeline capacity is served by four companies: Florida Gas Transmission Company, GulfSouth Pipeline, Gulfstream Natural Gas System, and Southern Natural Gas. The four interstate pipelines provide reliable and adequate natural gas capacity into Florida and, along with existing and proposed natural gas storage facilities, will provide adequate transportation and storage capacity for the Florida market.

There are a number of natural gas storage facilities in operation and under development that will serve the Florida market. These storage facilities will enhance the natural gas system in the state.

Q. Are there other proposed projects that will benefit the Florida natural gas market?

A. Yes. The Southeast Supply Header, LLC (SESH) is an ongoing, non-conventional domestic project that will further enhance the supply of natural gas to the State of Florida. The 270 mile, 36 inch and 42 inch diameter pipeline will provide transportation of onshore natural gas supplies in east Texas and northern Louisiana into the Southeast US, which is normally served by offshore supplies from the Gulf of Mexico. The SESH project will provide an alternative to offshore supplies to these areas, and improve the overall reliability of natural gas

supply through its additional capacity of over 1 Bcf/d. SESH will interconnect with Gulfstream and FGT.

Q. How will natural gas be delivered to the GEC site?

A. Delivery of natural gas to the GEC site will utilize the proposed SeaCoast Gas Transmission LLC intrastate pipeline (SeaCoast Pipeline). The SeaCoast Pipeline will initially extend from the interconnection of the existing Florida Gas Transmission (FGT) and Southern Natural Gas (SNG) pipelines located near Jacksonville.

FGT will deliver natural gas to the SeaCoast pipeline from its existing system in Florida, and SNG will deliver natural gas to the SeaCoast Pipeline from its existing system originating in Georgia. Peoples Gas System (PGS) is in the process of engineering a 16 inch diameter lateral (GEC Lateral) that will extend from the SeaCoast Pipeline to the GEC site.

Q. Please describe the route for the GEC Lateral.

A. Several routes extending from the main line to the GEC site are being considered: the lateral is likely to utilize a tie-in point near Highway 315 in Clay County, approximately 27 miles south of the FGT/SNG interconnect. Depending on the final route, the proposed lateral will extend a length of approximately 31 to 36 miles through Clay, St. Johns, and Duval Counties with a majority of the pipe co-located alongside highway and power line corridors.

Q. When will the GEC Lateral be in service?

A. The GEC Lateral will be in service prior to the commercial operation of the simple cycle combustion turbines that will be located at the GEC prior to the combined cycle conversion.

Q. Please describe PGS.

A. PGS is one of four business units of TECO Energy, an S&P 500 energy company headquartered in Tampa, Florida. PGS is Florida's largest natural gas distribution utility serving more than 320,000 commercial, industrial, and residential customers. PGS has long term agreements with FGT, Gulfstream Natural Gas System, LLC, and SNG for natural gas transportation into Florida.

PGS serves as Jacksonville's natural gas distribution company and provides commercial and residential gas service to the Jacksonville area through its pipeline system. In addition, JEA has existing agreements with PGS to receive natural gas delivery service through the local gas distribution to its generating units.

Q. Please describe FGT.

A. FGT operates a 5,000-mile natural gas pipeline system that extends from south Texas to south Florida with a current mainline capacity of 2.1 Bcf/d. FGT's total receipt point capacity is in excess of 3.0 Bcf/d and includes interconnections with 10 interstate and 10 intrastate pipelines to facilitate receiving supplies of natural gas into its pipeline system. The pipeline has

extensive access to diverse natural gas supplies, including the offshore Gulf of Mexico region.

Q. Please describe SNG.

A. SNG is a natural gas pipeline company headquartered in Birmingham, Alabama. It is a subsidiary of El Paso Corporation. The company transports more than 3 Bcf of natural gas per day during peak periods through approximately 8,000 miles of pipeline in the southeast. SNG owns and operates the Elba Island LNG regasification facility near Savannah, Georgia. Elba Island has approximately 4 Bcf of storage capacity and 440 million cubic feet per day (Mcf/d) of send-out capacity. The facility is currently being expanded to approximately 7.3 Bcf of storage capacity and a send-out capacity of 800 Mcf/d.

Q. Does JEA have adequate firm natural gas transportation capacity to reliably serve its generating units including the GEC combined cycle?

A. Yes. JEA has contracts for firm natural gas transportation capacity including increases in firm natural gas capacity to accommodate both its existing generating units and GEC.

Q. Does this conclude your testimony?

A. Yes.

JAMES T. MYERS

Director, Fuel Management Services
JEA
21 West Church Street
Jacksonville, FL 32202
904-665-6224
Email: myerjt@jea.com

SUMMARY

Over twenty-six years experience in fuel procurement, generation planning, and related activities at JEA including three years in current position as Director, Fuel Management Services.

PROFESSIONAL EXPERIENCE

FUEL MANAGEMENT SERVICES **1995-Present**

Team member and, since 2003, Director of group responsible for design and implementation of fuel management processes including fuel supply planning, procurement and scheduling, and reporting. Developed fuel acquisition strategies and market forecasts for JEA Electric System, negotiated agreements, and maintained documentation supporting fuel purchases.

Selected Accomplishments

- Directly responsible for approximately $300 million of current annual JEA fuel and purchased power budget including the procurement of all petroleum coke, coal, natural gas, #6 fuel oil, #2 fuel oil, and limestone for JEA Electric System.
- JEA representative on St. John's River Power Park and Plant Scherer Fuel Committees.
- Chairman, Taylor Energy Center Fuel Committee.
- Maintained sufficient economic supply of fuel during various recent storm events and 2003 Venezuelan worker strike.
- Acquired delivered gas supplies at below market rate to support long term JEA needs.
- Negotiated natural gas agreements that provide flexible gas volumes and the construction of laterals serving JEA's Brandy Branch Generating Station.
- Coordinated the transfer of daily gas procurement activity to The Energy Authority's natural gas trading group.
- Achieved "Six Sigma Green Belt" designation in reducing JEA's #6 oil procurement by over $2 million since June 2004.
- Developed fuel price forecasts to support budget analysis, Ten Year Site Plans and Integrated Resource Planning Studies.

ENERGY RESOURCE PLANNING **1987-1995**

Responsible for long range planning. This effort included the development of corporate financial models and preparation of Official Statements to support bond issues. Prepared and submitted various regulatory filings such as the Ten Year Site Plan required by the Florida Public Utilities Commission.

Selected Accomplishments

- Participated in JEA's first IRP study in 1994/95.
- Developed economic analysis supporting Scherer 4 capacity purchase in 1991.
- Served as Chairman (1991-92) and Vice-Chairman (1990-91) of the Florida Electric Power Coordinating Group's Generation Task Force.
    - Presented the Florida Ten Year Plan and JEA Ten Year Site Plan to FPSC staff.
    - Represented Florida subregion before NERC Reliability Assessment subcommittee.
- Evaluated various computer models for load research/forecasting and generation planning.

LOAD AND ENERGY FORECASTING / LOAD RESEARCH **1981-1986**

Developed economic, energy, and peak demand models and produced load and energy forecasts for generation planning.

Selected Accomplishments

- Reduced expenses by bringing the forecast process in-house in 1983.
- Developed annual forecast documents.
- Produced statistically valid estimates of residential appliance use and developed annual residential customer survey documents.

EDUCATION

Bachelor of Industrial Engineering, Georgia Institute of Technology - 1981
Numerous Professional Seminars
"Six Sigma Green Belt" training and designation
Working knowledge of Excel, Word, and Power Point

ACCREDITATION

Registered Professional Engineer in Florida, February 1986

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF JOHN A. WORLEY

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is John A. Worley. My business address is 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA. My title is Director, Environmental Programs.

Q. Please describe your responsibilities in that position.

A. My responsibilities include directing JEA's renewable energy program, serving as the environmental permitting lead for current and future major permit initiatives, serving as the Environmental Service's lead in JEA's green house gas/climate change policy/initiatives, coordinating sustainability initiatives, and the development and implementation of internal environmental program review processes.

Q. Please state your educational background and professional experience.

A. I received a bachelor's degree in wildlife biology in 1978 and a master's degree in botany in 1980 from Northwestern State University of Louisiana. Post graduate studies have included business administration and engineering management.

For the past 23 years at JEA, I have held various environmental and production management positions at JEA's St. Johns River Power Park. I was employed by Southwestern Electric Power Company in 1980 as an environmental specialist before joining JEA in 1985. I am a member of Air & Waste Management Association and serve as a Subcommittee Chair on the Jacksonville Community Council's Air Quality Task Force.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to discuss JEA's Clean Power Action Plan. I will also provide an overview of JEA's existing renewable energy resources, as well as potential new renewable energy resources that are being evaluated by JEA.

Q. Are you sponsoring any exhibits as part of your pre-filed testimony?

A. Yes. I am sponsoring Exhibit No. ___ [JAW-1], which is a copy of my resume.

Q. Are you sponsoring any sections of the Greenland Energy Center (GEC) Need for Power Application, Exhibit No. __ [GEC-1]?

A. Yes. I am sponsoring Sections 3.9 and 14.0, which were prepared under my direct supervision.

Q. Please describe JEA's Clean Power Action Plan.

A. JEA has worked closely with the Sierra Club of Northeast Florida (Sierra Club), the American Lung Association (ALA), and local environmental groups to establish a process to maintain the Clean Power Action Plan. The Clean Power Action Plan establishes an Advisory Panel, comprised of participants from the Jacksonville community, who provide guidance and recommendations to JEA in the development and implementation of the Clean Power Program. Current members of the Advisory Panel include the Sierra Club, ALA, and the City of Jacksonville Environmental Protection Board.

JEA has implemented several projects as part of the Clean Power Action Plan, including installation of clean power systems, purchase power agreements, legislative and public education activities, and research into and development of clean power technologies. JEA has conducted a number of generating efficiency improvements, increasing the output of existing generating units without increasing the amount of fuel burned or emissions of carbon dioxide (CO_2) or other pollutants.

Q. What renewable energy projects are in JEA's existing energy portfolio?

A. JEA's existing renewable energy sources include installation of solar photovoltaic (PV), solar thermal, landfill and wastewater treatment biogas capacity, and wind.

Q. Please describe JEA's use of solar energy.

A. JEA has installed 35 solar PV systems, totaling 220 kW, on all of the public high schools in Duval County, as well as many of JEA's facilities, and the Jacksonville International Airport (one of the largest solar PV systems in the Southeast). To further promote the acceptance and installation of solar energy systems, JEA implemented the Solar Incentive Program in early 2002. This program provided cash incentives for customers to install solar PV and solar thermal systems on their homes or businesses.

JEA provided customer incentives for more than 25 solar PV systems (for a total of 98 kW) until January 2005, when the PV incentive was discontinued in favor of the solar water heating program discussed below, which provides more cost effective CO_2 reduction. In addition to the PV incentive program, JEA established a residential net-metering program to encourage the use of customer-sited solar PV systems. JEA also offers incentives for the installation of solar hot water heaters. To date, the program has resulted in over 500 incentives, or approximately 1.6 MW of capacity savings.

Q. How is JEA using landfill gas and biogas in its energy portfolio?

A. Since 1997, JEA has owned and operated four internal combustion engine generators fueled by landfill gas produced by the City of Jacksonville's Girvin Road landfill. Since that time, landfill gas generation has declined, and one generator was removed and placed into service at the Buckman Wastewater Treatment facility. The facility uses biogas produced by the wastewater treatment plant to fuel the 800 kW generator. JEA also utilizes landfill gas from the North Landfill at the Northside Generating Station, where it is used to generate power at Northside Unit 3.

In 2006, JEA signed a purchase power agreement with Landfill Energy Systems to obtain energy from a 9.6 MW landfill gas-to-energy facility at the Trail Ridge Landfill in Jacksonville. Once completed, the facility will be one of the largest landfill gas-to-energy facilities in the Southeast, providing enough renewable energy to supply electricity to approximately 2,275 homes. The projected date of completion for the facility is late 2008.

Q. Please describe JEA's wind power initiatives.

A. As part of its ongoing effort to utilize more sources of renewable energy, in 2005 JEA entered into a 20 year agreement with Nebraska Public Power District (NPPD) to participate in a wind generation project located in Ainsworth, Nebraska. Under the wind generation agreement, JEA has agreed to purchase 10 MW of capacity from NPPD's wind generation facility for a 20 year period. In turn, NPPD will buy back the energy at specified on/off peak charges. JEA

retains the rights to the environmental attributes (renewable energy credits, or RECs) and will sell the RECs unless JEA needs them to meet possible state or federal environmental requirements.

Q. Please describe JEA's ongoing research efforts with respect to renewable resources.

A. JEA's renewable energy research efforts have focused on the development of technologies through a partnership with the University of North Florida's (UNF). The following projects are currently in progress:

- JEA is working with the UNF to quantify the winter peak reductions of solar hot water systems.
- UNF, along with the University of Florida, is evaluating the effect of biodiesel fuel in a pilot-scale combustion turbine. Biodiesel has been extensively tested on diesel engines, but combustion turbine testing has been very limited.
- UNF is evaluating the tidal hydro-electric potential for North Florida, particularly in the Intracoastal Waterway.
- UNF is in the preliminary stage of evaluating fuel cell technology utilizing methane produced at JEA's Buckman Wastewater Treatment Facility.
- JEA, UNF, and other Florida municipal utilities have partnered on a grant proposal to the Florida Department of Environmental Protection to evaluate the potential for wind development in Florida.

- JEA is providing solar PV equipment to UNF for installation of a solar system at the UNF Engineering Building to be used for student education.
- JEA developed a 15 acre biomass energy farm where the energy yields of various hardwoods and grasses were evaluated over a 3 year period.
- JEA participated in the research of a high temperature solar collector that has the potential for application to electric generation or air conditioning.
- JEA is evaluating the use of biofuels such as fats, oils and greases for potential use in solid fuel units.

Q. Please discuss the generating efficiency improvements undertaken by JEA.

A. JEA has been modernizing its fleet of generating units by replacing less efficient steam units and combustion turbines with more efficient combined cycle units and combustion turbines. The retirement of less efficient units with more efficient generating resources significantly reduces CO_2 emissions. The proposed conversion of the GEC simple cycle combustion turbines to combined cycle configuration is a key part of JEA's generating unit efficiency program, allowing for the output of GEC to increase over 60 percent without any increase in CO_2 emissions when compared to the simple cycle combustion turbines.

Q. What other efforts has JEA made to pursue renewable energy resources?

A. Since 2004, we have issued several requests for proposals (RFP) for renewable energy resources including specifically solar and wind resources.

Q. Please provide a brief overview of JEA's 2004 request for proposals (RFP) for renewable energy generation.

A. In February 2004, JEA issued a Request for Proposals (RFP) for Renewable Energy Generation for 1 MW to 300 MW. JEA received 13 acceptable responses with capacities between 1 MW and 50 MW. As a result of this RFP, JEA entered into negotiations with Landfill Energy Systems (9.6 MW) on the Trail Ridge landfill gas and signed a Power Purchase Agreement in May 2006. The project is expected to be operational by late 2008.

JEA also started negotiations with Evergreen Paper and Energy (13 MW using the City's yard waste) but these negotiations were cancelled by JEA in July 2007 after consultation with the City of Jacksonville on the City of Jacksonville-Evergreen yard waste fuel contract. The City of Jacksonville concluded that Evergreen, after several years of negotiation, had failed to deliver an executed contract and the bonding requirement. In addition, Evergreen had not prepared the site to take the yard waste within the timeframe proposed by City of Jacksonville.

Q. Please describe JEA's 2007 RFP for renewable energy generation.

A. In 2007, JEA issued a solicitation for letters of interest for renewable energy generation. Nineteen responses were received, including a response from Trail Ridge LLC regarding the generation energy of an additional 9.6 MW of landfill gas at the Trail Ridge Landfill. JEA and Trail Ridge LLC continue to evaluate this proposal. Another letter of interest was from a Florida municipal utility

indicating their interest in working with JEA on development of joint renewable energy projects. Because of the large size and risk of some renewable energy projects, JEA may consider working with other Florida utilities to develop joint projects similar to how several fossil fuel plants have been developed.

Thirteen of the responses were related to biomass and appeared to have the potential to move forward. As a result, JEA issued a RFP for the biomass respondents. Of the nine proposals received, four proposals were acceptable and five proposals were rejected because they did not meet the screening criteria. All the bids were significantly higher than JEA's avoided costs. In addition, none of the projects (with the exception of one project which was an existing operating biomass facility) could demonstrate a commitment on the fuel source or site nor did they demonstrate project financing by providing commitment letters from third-party institutions. For these reasons, JEA chose not to negotiate with any of the bidders.

Q. Please describe JEA's most recent RFP for solar and wind renewable energy resources.

A. Most recently, JEA issued a RFP for renewable energy, in particular solar and wind resources (Solar and Wind RFP), on March 17, 2008. Responses to the RFP were due on May 16, 2008. The RFP requested projects greater than 1 MW that generate electricity from solar (including photovoltaic or thermal electric) or wind. Solar projects greater than 250 kW at a JEA commercial customer's site were also included if the aggregate installation is greater than 1 MW. The RFP

also requested proposals for solar photovoltaic equipment (panels and inverters) for installation by JEA.

Q. Please describe the response to JEA's Solar and Wind RFP.

A. JEA received ten solar photovoltaic purchase power proposals and two proposals for solar photovoltaic panels (equipment purchase only). JEA did not receive any proposals for solar thermal electric or wind projects. Of the ten solar purchase power proposals received, eight were for ground-mounted systems from 8 MW to 12 MW in size and two were for roof-top distributed mounted systems from 2 MW to 4 MW in total size. All proposals submitted were for projects to be developed in the JEA service area.

Q. What technical factors were considered when evaluating the Solar and Wind RFP responses?

A. The proposals were all scored based on JEA's technical and pricing factors. The technical factors included: qualifications of the company, financial strength, technical feasibility, ease of interconnection, barriers to project site, other ancillary benefits of the project, level of development of financing plan, level of project development completed, status of major equipment, interconnection design maturity, level of resource assessment performed, level of site control, level of site infrastructure, status of obtaining permits, and project schedule.

Q. Please describe the pricing factors evaluated for the solar RFP responses.

A. The pricing proposals were first evaluated based on their levelized price with levelized costs ranging from approximately $186/MWh to approximately $343/MWh. All of the solar proposals reflect the assumed extension of the benefits of the existing Solar Incentive Tax Credits. Finally, the pricing proposals were evaluated by calculating an incremental cost for each proposal on the basis of all-in cost in nominal 2008 dollars. The incremental cost is the difference between the project's cost of power relative to JEA's existing system and base case plan, with the GEC combined cycle conversion representing the avoided unit. The incremental costs of the proposals ranged from approximately $10/MWh to approximately $150/MWh over a 20 year period.

Q. What were the conclusions of the evaluation of responses to the Solar and Wind RFP?

A. JEA is pursuing negotiations with the company that provided the lowest cost solar PV proposal described previously in my testimony.

Q. Is JEA continuing to explore the potential use of biomass generation?

A. Yes. In a continuing effort to obtain cost effective biomass generation, JEA is conducting a detailed feasibility study of both self-build stand-alone biomass units and the co-firing of biomass in Northside 1 and 2. JEA also periodically receives unsolicited offers for biomass and other renewable generation. JEA evaluates the feasible unsolicited offers, but has been unable to successfully execute a contract for cost-effective biomass generation.

Q. Does this complete your testimony?

A. Yes.

RESUME OF

John A. Worley, Director, Environmental Programs

JEA

EDUCATION

1998 – 1999
University of Phoenix
Jacksonville, Florida
Masters of Business Administration
Post Graduate Studies

1992
University of South Florida
Tampa, Florida
Principles in Engineering Management
Post Graduate Studies

1978 - 1980
Northwestern State University of Louisiana
Natchitoches, Louisiana
M.S., Botany

1974 - 1978
Northwestern State University of Louisiana
Natchitoches, Louisiana
B.S., Wildlife Management

PROFESSIONAL EXPERIENCE

JEA
Jacksonville, Florida

August 2007 to Present
Director, Environmental Programs *– Responsibilities include JEA's renewable energy program, environmental permitting lead for current and future major permit initiatives, Environmental Service's lead in JEA's green house gas/climate change policy/initiatives, coordinating sustainability initiatives and the development and implementation of internal environmental program review processes.*

JEA / St. Johns River Power Park (SJRPP)
Jacksonville, Florida

June 2000 to August 2007
Superintendent Bulk Materials, Laboratory & Environmental Compliance *- Provide leadership for 90 employees, which include: BM Operations and Maintenance and SJRPP Environmental. Responsibilities include the oversight of operational and maintenance activities; close interaction with SJRPP Fuels regarding fuel procurement, preparation and maintenance of operational (O&M) and capital budgets; project management and coordination; regulatory and legal liaison; environmental reporting, permit acquisition and renewals; SO_2 allowance management, port activities and dredging; SHAPE safety committee member; environmental laboratory operations; personnel development, regulatory, safety and technical skills training. SJRPP Employer Negotiating Team Member. Facilitator of WorkSmart process and trainer for Covey Seven Habits course. Nature preserve management.*

May 1999 to June 2000
Group Leader Air & Water Quality (AWQ) Production *– Provide leadership for 72 employees, which include: AWQ Operations and Maintenance, SJRPP Environmental, SJRPP Laboratory Chemical Process. Responsibilities include the oversight of operational and maintenance activities; preparation and maintenance of operational (O&M) and capital budgets (3.5MM); project management and coordination; regulatory and legal liaison; environmental reporting, permit acquisition and renewals; SO_2 allowance management, port activities and dredging; safety committee member; development and monitoring of OSHA and Dept. of Labor safety programs; environmental and industrial laboratory operations; personnel development, regulatory, safety and technical skills training. Media relations for SJRPP. SJRPP Employer Negotiating Team Member. Facilitator of WorkSmart process and trainer for Covey Seven Habits course. Nature preserve management.*

January 1997 to May 1999
Group Leader Production Support Process/Regulatory *– Provide leadership for five (5) departments (33 employees) which included: Environmental, Safety & Security, Training, Laboratory Chemical Process and Document Control. Responsibilities included the preparation and maintenance of departmental operation & maintenance (O & M) and capital budgets; project management and coordination; regulatory and legal liaison; environmental reporting, permit acquisition and renewals; port activities and dredging; development and monitoring of OSHA and Dept. of Labor safety programs; environmental and industrial laboratory operations; personnel development, regulatory, safety and technical skills training; electronic document management and retention. Interface responsibilities regarding all insurance and public relations activities associated with SJRPP and JEA. Facilitator and trainer of Covey Seven Habits course; nature preserve management.*

October 1994 to January 1997
Director of Environmental & Safety *– Provide leadership for three (3) departments: Environmental, Safety & Security and Document Control. Responsibilities included the preparation and maintenance of departmental operation & maintenance and capital budgets; project management and coordination; port activities and dredging; regulatory and legal liaison; environmental reporting, permit acquisition and renewals; development and monitoring of OSHA and Dept. of Labor safety programs; electronic document management and retention; nature preserve management.*

October 1987 to October 1994

Sr. Environmental Engineer *– Provide leadership for two (2) departments: Environmental and Safety & Security. Responsibilities included the preparation and maintenance of departmental operation & maintenance and capital budgets; project management and coordination; port activities and dredging; regulatory and legal liaison; environmental reporting, permit acquisition and renewals; development and monitoring of OSHA and Dept. of Labor safety programs; nature preserve management.*

August 1985 to October 1987

Environmental Engineer *- Manage and lead the Environmental Dept. with responsibilities which included the preparation and maintenance of departmental operation & maintenance and capital budgets; project management and coordination; port activities and dredging; regulatory and legal liaison; environmental reporting, permit acquisition & renewals.*

Southwestern Electric Power Company
Shreveport, Louisiana

October 1980 to August 1985

Environmental Specialist *- Assistant to the Manager of Environmental Affairs. Responsibilities included project management and coordination, regulatory and legal liaison, environmental permit acquisitions and renewals; environmental reporting.*

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF RICHARD J. VENTO

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is Richard J. Vento. My business address is 21 West Church Street, Jacksonville, Florida 32202.

Q. By whom are you employed and in what capacity?

A. I am employed by JEA. My current position is Director of Corporate Data Integration.

Q. What are your responsibilities in that position?

A. Directing and managing the utilities load research and DSM activities.

Q. Please state your educational background and experience.

A. I hold a Bachelor of Science in Business Administration from the University of Florida.

With 26 years in the utility industry, my experience includes electric production operations and maintenance, water and wastewater operations and maintenance, technology integration, load research and demand side management (DSM).

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to provide an overview of the DSM and conservation programs currently offered by JEA, as well as the portfolio of new DSM programs recently developed by JEA.

Q. Are you sponsoring any exhibits with your testimony?

A. Yes. I am sponsoring the following exhibits: Exhibit No. __ [RJV-1], which is a copy of my professional resume; Exhibit No. __ [RJV-2] which presents the annual summer and winter peak demand and net energy for load reductions projected for JEA's new DSM portfolio; and Exhibit No. __ [RJV-3], which presents the projected annual costs of JEA's new DSM portfolio.

Q. Are you sponsoring any sections of Exhibit No. ___[GEC-1], the GEC Need for Power Application?

A. Yes. I am sponsoring Section 15.0 which was prepared under my direct supervision.

Q. Please describe JEA's existing DSM and conservation programs.

A. The DSM and conservation programs currently offered by JEA include the following:

- Energy audits (residential and commercial)
- Green Built Homes of Florida
- Chilled water services
- Interruptible load
- Educational seminars (residential and commercial)
- School activities
- Monthly newsletter

Q. Please describe how JEA developed its new DSM portfolio.

A. JEA contracted with Summit Blue Consulting, LLC (Summit Blue), an independent firm that specializes in DSM program evaluation and development, to identify potential DSM programs for JEA. Summit Blue conducted DSM benchmarking and best practices analyses and performed benefit-to-cost analysis. Based on the Summit Blue analyses, JEA's senior management approved a new DSM portfolio through 2012 in accordance with guidance from JEA's Board.

Q. Please discuss the benefit-to-cost analyses performed by Summit Blue.

A. DSM measures were evaluated with two different tests – the Total Resource Cost (TRC) test and the Rate Impact (RIM) test. Both of these tests are based on a net benefit to net cost analysis, and consider annualized avoided capacity costs, annualized avoided transmission and distribution costs, assumptions related to future rate increases, energy and demand savings over the lifetime of each measure, and DSM measure and program costs.

Q. Please describe the TRC test.

A. The TRC test considers the benefits (avoided costs) of generation, transmission and distribution investments and avoided fuel costs due to the conserved energy caused by the DSM measures. The costs for the TRC test are the DSM measure costs plus the DSM measure administration costs.

Q. What is the RIM test?

A. The RIM test considers the benefits (avoided costs) of generation, transmission and distribution investments and avoided fuel costs due to the conserved energy caused by the DSM measure. The costs for the RIM test are the DSM measure costs incurred by the utility plus the "lost revenues" due to the DSM programs. Typically, a DSM measure is considered cost-effective if it has a RIM value of 1.0 or greater.

Q. What criteria were used to develop the new DSM portfolio?

A. In June 2006, JEA's senior management established a policy to consider all DSM measures that passed the TRC test, and to maintain an overall portfolio RIM value of no less than 1.0. The RIM constraint was to ensure no future upward pressure on customer rates resulting from JEA's DSM programs. Because JEA utilized the overall portfolio RIM value rather individual RIM values for particular measures, the new DSM portfolio includes more measures than would be considered cost-effective under typical RIM analyses.

Q. Did JEA's new DSM portfolio raise any reliability concerns?

A. Yes. Demand response measures are key components of the new DSM portfolio. By their very nature, demand response measures are not available for extended durations and frequent implementation of these measures due to their unacceptable customer impacts. As a result, JEA was concerned that over-reliance on demand response measures could impact system reliability. These concerns are addressed in the direct testimony of Mr. Myron Rollins.

Q. What residential DSM measures are included in the new DSM portfolio?

A. The residential DSM measures included are domestic hot water measures, space heating and cooling measures, envelope measures, lighting measures, refrigeration and appliance measures and load management measures.

Q. Please discuss the commercial and industrial DSM measures included in the new DSM portfolio.

A. The commercial DSM measures included are domestic hot water measures, space heating and cooling measures, envelope measures, lighting measures and load management measures. The industrial measures include demand response and load control.

Q. Please discuss the annual peak demand and energy savings projections corresponding to the DSM portfolio.

A. Following approval of the DSM portfolio, Summit Blue provided the projected energy efficiency and demand response savings corresponding to the policies

and conservation funding limits. Exhibit No. __ [RJV-2] presents the annual summer and winter peak demand and net energy for load reductions.

Q. Please discuss the annual costs associated with the new DSM portfolio.

A. Summit Blue provided projected annual costs associated with JEA's new DSM portfolio, which are summarized in Exhibit No. __ [RJV-3].

Q. Does this conclude your testimony?

A. Yes.

RESUME OF

Richard Vento, Director of Corporate Data Integration

JEA

Qualifications and Experience:

Summary

25 years of progressive experience in electric, water and sewer utility planning, operations and maintenance.

Areas of Experience

- Water and Electric System Operations and Maintenance
- New Product Development
- Program Development and Implementation
- Load Research
- Demand Side Management
- Advanced Metering Data Integration

Experience

JEA **2005-Present**
Director of Corporate Data Integration
Responsible for:
- Development and delivery of electric system demand side management program
- Development and delivery of water and sewer system demand side management program
- Development and delivery of electric and water Load Research
- Development and delivery of advanced uses of AMI systems and data to internal business process owners

JEA **2002-2005**
Director of New Technologies
Established a division to identify evaluate and recommend emerging technologies that would benefit the utility.

JEA **1999-2002**
Director of Water and Wastewater Operations and Maintenance
Managed all aspects of water and wastewater treatment O&M. Reorganized to ensure all regional treatment plants were managed as individual cost centers with performance accountabilities at the plant manager level.

JEA **1988-1999**
Manager, Generation Station Systems
Jointly Managed the maintenance of 3 steam units and 4 combustion turbines.

Education

Bachelor of Science in Business Administration from University of Florida
Associates Degree in Biology
Associates Degree in Electronics

Memberships

American Society of Energy Professionals
Toastmasters International

Table 1
Target JEA DSM Portfolio Summer Peak Demand Reductions
(Cumulative MW Reductions)

DSM Program	2008	2009	2010	2011	2012
Residential Lighting	2.8	8.5	14.2	19.8	25.5
Neighborhood Efficiency	0.2	0.4	0.6	0.8	1.0
Residential Efficiency Upgrades	0.0	2.3	6.8	11.3	15.8
Residential Direct Load Control	0.0	7.1	21.2	36.5	51.8
Commercial Direct Load Control	0.0	5.9	17.8	35.6	53.4
Total Cumulative Demand Reductions[1]	3.0	24.2	60.5	104.0	147.5

[1]. Totals may not exactly equal the sum of the individual program demand reductions due to rounding.

Table 2
Target JEA DSM Portfolio Winter Peak Demand Reductions
(Cumulative MW Reductions)

DSM Program	2008	2009	2010	2011	2012
Residential Lighting	1.9	5.7	11.3	16.3	21.2
Neighborhood Efficiency	0.2	0.4	0.6	0.8	1.0
Residential Efficiency Upgrades	0.0	1.5	4.5	9.0	13.0
Residential Direct Load Control	0.0	8.2	26.9	51.4	75.9
Commercial Direct Load Control	0.0	5.8	17.4	31.3	45.3
Total Cumulative Demand Reductions[1]	2.0	21.5	60.7	108.7	156.3

[1]. Totals may not exactly equal the sum of the individual program demand reductions due to rounding.

Table 3
Target JEA DSM Portfolio Total Annual Energy Reductions
(Cumulative GWh Reductions)

DSM Program	Calendar Year 2008[1]	Calendar Year 2009	Calendar Year 2010	Calendar Year 2011	Calendar Year 2012
Residential Lighting	2.2	14.1	37.2	67.1	87.2
Neighborhood Efficiency	0.2	1.0	1.8	2.6	3.2
Residential Efficiency Upgrades	0.3	3.8	17.4	41.9	66.3
Residential Direct Load Control	0.0	0.0	0.0	0.0	0.0
Commercial Direct Load Control	0.0	0.0	0.0	0.0	0.0
Total Cumulative Energy Reductions[2]	2.7	18.8	56.4	111.6	156.8

[1]. Energy reductions were not provided by Summit Blue for 2008. The 2008 GWh reductions have been estimated based on actual performance to date.
[2]. Totals may not exactly equal the sum of the individual program energy reductions due to rounding.

Table 4
Target JEA DSM Portfolio Annual Program Costs
(Millions $)

DSM Program	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012
Residential Lighting	$0.6	$1.5	$2.2	$1.9	$1.9
Neighborhood Efficiency	$0.25	$0.35	$0.35	$0.35	$0.35
Residential Efficiency Upgrades	$0.1	$1.0	$2.1	$3.1	$2.7
Residential Direct Load Control	$0.6	$1.2	$2.7	$3.6	$3.6
Commercial Direct Load Control	$0.2	$0.4	$0.9	$1.1	$1.1
Total Program Costs[(1)]	$1.85	$4.45	$8.35	$10.05	$9.65

(1) Totals may not exactly equal the sum of the individual program costs due to rounding.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF MYRON R. ROLLINS

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is Myron R. Rollins. My business address is 11401 Lamar Avenue, Overland Park, Kansas 66211.

Q. By whom are you employed and in what capacity?

A. I am employed by Black & Veatch Corporation. My current position is Director.

Q. Please describe your responsibilities in that position.

A. I am responsible for the management of various projects for utility and non-utility clients. These projects encompass a wide variety of services for the power industry. The services include load forecasts, conservation and demand-side management, reliability criteria and evaluation, development of generating unit addition alternatives, fuel forecasts, screening evaluations, production cost simulations, optimal generation expansion modeling, economic and financial evaluation, sensitivity analysis, risk analysis, power purchase and sales evaluation, strategic considerations, analyses of the effects of environmental

regulations, feasibility studies, qualifying facility and independent power producer evaluations, power market studies, and power plant financing.

Q. Please describe Black & Veatch.

A. Black & Veatch Corporation has provided comprehensive engineering, consulting, and management services to utility, industrial, and governmental clients since 1915. Black & Veatch specializes in engineering, consulting, and construction associated with utility services, including electric, gas, water, wastewater, telecommunications, and waste disposal. Service engagements consist principally of investigations and reports, design and construction, feasibility analyses, rate and financial reports, appraisals, reports on operations, management studies, and general consulting services. Present engagements include work throughout the United States and numerous foreign countries.

Q. Please state your educational background and experience.

A. I received a Bachelor of Science degree in Electrical Engineering from the University of Missouri – Columbia. I also have two years of graduate study in Nuclear Engineering at the University of Missouri – Columbia. I am a licensed professional engineer and a Senior Member of the Institute of Electrical and Electronic Engineers.

I have 32 years of experience in the power industry specializing in generation planning and project development. In the past ten years, I have been the project manager for over 100 projects, the vast majority of which have been for Florida

utilities. Florida utilities for which I have worked include Florida Municipal Power Agency (FMPA), Kissimmee Utility Authority, Lakeland Electric, Orlando Utilities Commission (OUC), JEA, City of Tallahassee, Reedy Creek Improvement District (RCID), City of St. Cloud, Utilities Commission of New Smyrna Beach, Sebring Utilities Commission, City of Homestead, Florida Power Corporation, Tampa Electric Company, and Seminole Electric Cooperative.

I was responsible for the development of Black & Veatch's POWRPRO chronological production costing program and POWROPT optimal generation expansion program. I am also responsible for power market analysis and project feasibility studies. I have been responsible for supporting need for power petitions on a number of power plants in Florida including Stanton 1, 2, A, and B; Cedar Bay; Cane Island 3 and 4; McIntosh 5; the Brandy Branch Combined Cycle Conversion, and Treasure Coast Unit 1;. I also participated in the need for power proceeding for the Hardee and Hines projects. I have presented expert testimony on several occasions before the Alaska, Indiana, Missouri, and Florida public service commissions and have presented numerous papers on strategic planning and cogeneration.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to discuss JEA's need for the Greenland Energy Center (GEC) combined cycle conversion project. I will provide an overview and summary of the Greenland Energy Center (GEC) combined cycle

conversion Need for Power Application, Exhibit No. __ [GEC-1]. In addition to this general summary, I will discuss the economic parameters used in the economic analyses of the GEC combined cycle conversion. I will discuss the reliability criteria used by JEA and the projected need for additional capacity to satisfy these criteria. I will also discuss the purchase power request for proposals (RFP) that JEA issued in 2007.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [MRR-1] is a copy of my résumé, Exhibit No. __[MRR-2] presents JEA capacity requirements, and Exhibit No. __[MRR-3] presents levels of capacity bid from JEA's RFP.

Q. Are you sponsoring any sections of the GEC combined cycle conversion Need for Power Application, Exhibit No __ [GEC-1]?

A. Yes. I am sponsoring Sections 1.0, 2.0, 4.0, 11.0, and 12.0, all of which were prepared by me or under my direct supervision.

Q. What events led to JEA develop the GEC combined cycle conversion?

A. For several years, JEA has shown a need for approximately 200 MW of base load capacity in the 2012 time frame with the need for peaking capacity prior to the 2012 base load capacity need as shown in JEA's Ten Year Site Plans as early as 2005. JEA's base load needs were primarily driven by the expiration of JEA's 207 MW UPS purchase from Southern Company on May 31, 2010. Initially, JEA planned to meet the base load requirements with JEA's share of

the proposed Taylor Energy Center Super Critical Pulverized Coal Unit scheduled for commercial operation in the summer of 2012. Prior to the 2012 base load need, JEA had needs for peaking power of approximately 450 MW in the 2009 and 2010 time frame which includes replacement of the Southern UPS purchase. That amount of peaking capacity need can be met with three 7FA simple cycle combustion turbines. Furthermore, JEA had a unique opportunity to acquire these combustion turbines at below market price through the transfer of an option that Florida Municipal Power Agency obtained when they purchased the combustion turbine for the Treasure Coast Energy Center. One of these combustion turbines is currently being installed as Kennedy Combustion Turbine 8 with a commercial operation date of March 2009. The other two combustion turbines are in the permitting process and will be installed at GEC for commercial operation in June 2010 as simple cycle combustion turbines until the combined cycle conversion in 2012. Exhibit No. __[MRR-2] shows JEA's capacity needs for these simple cycle combustion turbines during the 2009 through 2011 period.

Q. Are there additional benefits to JEA of installing generation at GEC?

A. Yes. JEA currently does not have any generation in the southern portion of its service area. This area is also the fastest growing portion of JEA's service area. Without the installation of GEC, JEA would be required to provide extensive transmission system improvements to continue to reliably serve its growing customer load in the southern part of JEA's service area. GEC's installation will displace the need for these transmission system improvements.

Q. Did JEA explore extension of the UPS contract?

A. Yes. JEA discussed extending the UPS contract with Southern Company. Southern Company would not extend the UPS agreement only offered a new contract which was predominately natural fired combined cycle capacity. The cost for this capacity including associated transmission costs and losses was greater than the JEA's cost for developing the GEC combined cycle project using JEA's low cost tax exempt financing. Furthermore, JEA conducted a RFP process as discussed later in my testimony. Southern Power Company provided several proposals all of which were more expensive than GEC, but none of the bids were cost effective compared JEA's phased combined cycle approach.

Q. Did JEA evaluate short term purchases?

A. Yes. As discussed later in my testimony, JEA issued an RFP for purchase power.

Q. Please summarize the GEC combined cycle conversion Need for Power Application, Exhibit No. __ [GEC-1].

A. JEA is submitting a Need for Power Application in support of a proposed conversion of two natural gas-fired "simple cycle" combustion turbines to a 2x1 combined cycle configuration at the GEC generating station in Duval County, Florida.

Exhibit No. __ [GEC-1] presents the results of a comprehensive analysis that was performed to demonstrate that the proposed conversion satisfies all of the statutory criteria set forth in Section 403.519 Florida Statutes.

Q. Please discuss these statutory criteria.

A. Section 403.519(3), Florida Statutes, sets forth the following criteria which the Commission must consider in 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 which might mitigate the need for the proposed plant.

Q. Please summarize the process used to determine that GEC combined cycle conversion met each of these statutory criteria.

A. JEA went through a multistage evaluation process to ensure the proposed GEC combined cycle conversion is consistent with the criteria in Section 403.519(3).

The first step involved developing detailed cost and performance estimates for GEC combined cycle conversion. These estimates are presented in Section 9.0 of Exhibit No. __[GEC-1].

The second step involved the development of cost and performance estimates for numerous natural gas-fired supply-side alternatives to the GEC combined cycle conversion. These supply-side alternatives included three simple cycle combustion turbines and a combined cycle alternative. These alternatives are discussed in Section 13.0 of Exhibit No. __[GEC-1].

JEA is a municipality, and is therefore not required to issue an RFP in accordance with the Florida Public Service Commission's "Bid Rule" (i.e., Rule 25-22.082, F.A.C.). Nevertheless, JEA issued an RFP for purchase power in 2007 and in addition, has issued several RFPs for renewable generation. None of the RFPs resulted in cost effective purchase power that displaced the need for the GEC combined cycle conversion

Detailed economic evaluations were performed to evaluate the proposed combined cycle conversion as well as the bids received in response to the last RFP conducted by JEA which was the RFP for Solar and Wind capacity. The methodology and results of these evaluations are discussed in Sections 16.0 and 17.0 of Exhibit No. __ [GEC-1]. The combined cycle conversion of GEC in June 2012 represents the most cost-effective resource addition under all of the

scenarios and sensitivity cases evaluated, which included consideration of new renewable and demand-side management projects being considered by JEA.

Q. Please describe the economic parameters used in the GEC combined cycle conversion Need for Power Application, Exhibit No. __ [GEC-1].

A. A 2.5 percent annual general inflation rate was used. Escalation rates of 2.5 percent annually were used for capital and O&M costs. An annual rate of 5.0 percent was used for the long-term tax-exempt bond interest rate, interest during construction rate, and present worth discount rate. Detailed economic evaluations were performed over a 20 year planning period from 2008 through 2027.

Q. What is the fixed charge rate?

A. 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.

Q. What fixed charge rates were used in the GEC combined cycle conversion Need for Power Application, Exhibit No. __ [GEC-1]?

A. The FCR calculations assume 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. The resulting 20 year fixed charge rate is 8.972 percent and the 25 year fixed charge rate is 7.915 percent.

Q. Are these economic parameters appropriate for use in this Need for Power Application?

A. Yes. They are consistent with economic parameters that we have been using in similar evaluations before the Commission and more importantly, they are internally consistent across all the evaluations.

Q. What planning reliability criteria do JEA use?

A. JEA uses a minimum 15 percent reserve margin criterion for both summer and winter seasons. This is lower than the minimum 20 percent reserve margin criterion that the investor owned utilities in Peninsular Florida have stipulated to use. The 15 percent minimum reserve margin is equal to the 15 percent minimum reserve margin requirement in Rule 25-6.035, F.A.C., required for reserve sharing in the State. The 15 percent minimum reserve margin is also consistent with the reserve margin criterion used by many other utilities across the nation.

Q. How is the 15 percent reserve margin criterion applied?

A. The 15 percent reserve margin criterion is applied to firm load. In other words, JEA's peak demand is reduced by interruptible and curtailable loads before considering the 15 percent criterion.

Q. Does JEA apply limitations to the reserve margin criterion?

A. Yes. JEA limits the amount of demand response (DR), which includes interruptible and curtailable loads, to 7.5 percent of its forecast peak demand. This effectively limits DR to one half of JEA's planning reserves.

Q. Is this limitation appropriate?

A. Yes. As presented in Section 17.0 of Exhibit No. __ [GEC-1], JEA's proposed DR programs are projected to be cost-effective. These projections are based on limited use of the programs' customer load reductions and service interruptions. As DR becomes a larger and larger component of a utility's planning reserves, customer load reductions and service interruptions will become more frequent in order for the utility to maintain system reliability. When the frequency of these customer load reductions and service reductions reaches a point that the benefits to customers are negated by the inconvenience, discomfort, and loss of productivity due to the load reductions and service interruptions, customers will begin to leave the DR programs. This indeed occurred on Florida Power Corporation's system a few years ago. The situation can compound as customers leave the program, as the reserve margin decreases the utility is unable to install generation quick enough to compensate for the reduced DR, and the remaining DR customers are exposed to even more frequent interruptions resulting in even more customers leaving the program. The exact point at which DR accounts for too much of a utility's planning reserves is

difficult to ascertain and is also dependant upon many other factors such as the reliability of the utility's generating units. The 7.5 percent criterion is appropriate for JEA and compares favorably with the 6.6 percent level for the FRCC Region's 2008 projected summer peak demand.

Q. Is the limitation of the amount of DR as a component of JEA's planning reserve margin important to the cost-effectiveness of JEA's new Demand Side Management (DSM) portfolio?

A. Yes. As shown in Section 15.0 of Exhibit No. __[GEC-1], the DR program is essentially the only conservation and DSM program which is cost-effective for JEA from a rate impact (RIM) test perspective. Thus the RIM savings from DR allows the inclusion of the energy efficiency programs in order to still meet JEA's requirement for the entire DSM portfolio to be RIM neutral. If the level of DR were to become such a large component of JEA's planning reserves, causing frequent exercise of it such that customers were to leave the program as discussed above, the cost-effectiveness of JEA's entire DSM portfolio could be in jeopardy.

Q. Please describe JEA's expected need for additional capacity to satisfy reserve margin requirements under the base case load forecast.

A. Based on JEA's existing and committed capacity resources and the base case load forecast as presented in Table 12-1 of Exhibit No. __[GEC-1], JEA requires minor amounts of additional capacity to maintain its 15 percent summer reserve

margin up until 2011 when JEA's margin begins to decline rapidly. By the summer of 2012 (the proposed commercial operation date for the GEC combined cycle conversion), JEA's reserve margin declines to 9.6 percent, requiring 167 MW of additional capacity to maintain a 15 percent reserve. JEA's capacity requirements are expected to grow to 393 MW by 2015. These capacity requirements already include reductions associated with JEA's 117 MW of existing summer season curtailable loads.

Q. Will JEA still have a need for capacity after implementation of JEA's new DSM portfolio?

A. Yes. With the projected peak demand reductions from JEA's new DSM portfolio, JEA will need 41 MW of additional capacity in 2012 to maintain the 15 percent reserve margin criterion. By 2015, JEA will need 267 MW of additional capacity to maintain the 15 percent reserve margin criterion.

Q. Please discuss JEA's 2007 purchase power RFP.

A. As discussed previously, JEA planned to meet its 2012 capacity needs through its participation in the Taylor Energy Center, an 800 MW pulverized coal unit to be jointly owned with FMPA, RCID, and the City of Tallahassee. When the Taylor Energy Center project was suspended in 2007, JEA was faced with replacing its proposed ownership share of the base load capacity from Taylor Energy Center as well as continuing with its planned deployment of simple cycle combustion turbines that it had planned to construct in addition to Taylor

Energy Center. A 2x1 F class combined cycle represented JEA's best alternative for meeting these capacity requirements; however, JEA's need for capacity was such that the combined cycle could not be constructed in time to meet JEA's capacity requirements due to permitting and construction lead times. Given the timing of JEA's need for capacity, JEA is initially installing the two 7FA combustion turbines in simple cycle mode at the GEC site and then converting them to a 2x1 combined cycle. JEA's 2007 purchase power RFP was an attempt to determine if purchase power could be obtained at a lower cost than the phased combined cycle installation.

JEA's 2007 purchase power RFP was conducted by The Energy Authority (TEA) on JEA's behalf. TEA's RFP requested up to 600 MW of purchase power from 2010 to 2017. The request was for two different capacity purchases. The first was up to 200 MW of peaking power in 2010 and up to 400 MW of peaking power in 2011 through 2015 and the second was up to 200 MW of base load and intermediate capacity. Proposals were due on April 30, 2007. TEA received proposals from four bidders with one of the bidders providing eight different options. The terms of the bids ranged from 2010 through 2026 in various combinations based on the individual bid and options. Exhibit No. __ [MRR-3] presents amount of power bid. JEA's analyses indicated that none of the bids were cost-effective compared to JEA's phased 2x1 combined cycle approach. As a result, JEA continued the planned installation of the GEC simple cycle combustion turbines followed by their conversion to combined cycle.

Q. Does this conclude your pre-filed testimony?

A. Yes.

RESUME OF

MYRON R. ROLLINS

Black & Veatch

Director

Project Management; Integrated Resource Planning; Permitting and Licensing; Feasibility Studies and Project Development

Education
Bachelors, Electrical, University of Missouri at Columbia, 1974

Professional Registration
Engineer (PE), Missouri, 1982

Total Years Experience
32

Joined B&V
1976

Professional Associations
MoKan American Nuclear Society – Past President
Institute of Electrical and Electronics Engineers – Senior Member

Language Capabilities
English

Mr. Rollins is a Director in Enterprise Management Solutions. He is responsible for management of system planning and feasibility studies encompassing the areas of integrated resource planning, load forecasting, generation planning, cogeneration, site selection, and other special studies.

Mr. Rollins specializes in generation planning and project development. He is responsible for numerous power supply studies incorporating integrated planning techniques. Mr. Rollins was responsible for the development of Black & Veatch's POWRPRO chronological production costing program and POWROPT optimal generation expansion program. He is also responsible for power market analysis and project feasibility studies. Mr. Rollins extends his expertise in generation system planning to the area of need for power certification of power plants.

Mr. Rollins has broad expertise in planning and project development that enables him to assist clients in the development of expansion plans and specific projects in a realistic manner that incorporates the required balance between engineering and cost considerations as well as sociopolitical and licensing considerations. With this experience, Mr. Rollins has successfully helped utility and developer clients add value to their systems and projects throughout his career.

Mr. Rollins has presented expert testimony on several occasions before the Alaska, Florida, Indiana and Missouri Public Service Commissions, and has published numerous papers on strategic planning and cogeneration. He is past chairman of the Mo-Kan section of the American Nuclear Society and a senior member of IEEE.

Representative Project Experience

Need for Power Certification, Orlando Utilities Commission, Florida 2005-2006
Project Manager. Managed the preparation of a Need for Power Application for Orlando Utilities Commission's Stanton Energy Center Unit B. Stanton B is a proposed IGCC unit to be constructed at Stanton Energy Center in Orlando, Florida. The application was submitted to the Florida Public Service Commission under the Electrical Power Plant Siting Act. The Need for Power Application evaluated Stanton B against

other self-build alternatives and demand-side management alternatives. The Florida Public Service Commission unanimously approved the need for Stanton B.

Need for Power Certification, Florida Municipal Power Agency, Florida
2005
Project Manager. Managed the preparation of a Need for Power Application for Florida Municipal Power Agency's (FMPA's) Treasure Coast Energy Center (TCEC) Unit 1. TCEC Unit 1 is a proposed 1x1 F class combined cycle unit to be constructed on a greenfield site in Ft. Pierce, Florida. The application that was submitted to the Florida Public Service Commission under the Florida Electrical Power Plant Siting Act. The Need for Power Application evaluated TCEC Unit 1 against other self-build alternatives, purchase power from a request for proposals (RFP) process, and demand-side management alternatives. The Florida Public Service Commission unanimously approved the need for TCEC Unit 1.

Integrated Resource Plan, City of Tallahassee, Florida
2005-2006
Project Manager. Managing an integrated resource plan (IRP) for the City of Tallahassee. The IRP involves extensive evaluation of gas and coal fueled alternatives. More than 140 demand-side management (DSM) measures were evaluated. The IRP includes extensive evaluation of the impacts from the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR). Biomass generation was evaluated as part of the IRP. Extensive probabilistic risk analysis was also conducted.

Integrated Resource Plan, JEA, Florida
2005-2006
Project Manager. Managing an integrated resource plan (IRP) in conjunction with JEA. The IRP involves extensive evaluation of gas and coal fueled alternatives including the development of site-specific estimates. Requirements for the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) were included in determining air quality control additions necessary for existing units. Demand-side management (DSM) evaluation made use of previous work conducted by Black & Veatch as part of JEA's Conservation Goal Docket before the Florida Public Service Commission.

Integrated Resource Plan Review, City of Lakeland, Florida
2005
Project Manager. Managed the review of the development of the City of Lakeland's integrated resource plan (IRP). The review encompasses all aspects of the IRP including load forecast, fuel forecast, development of supply side alternatives, life extension, and expansion planning. In

addition, Black & Veatch evaluated demand-side management alternatives for the City of Lakeland.

Expert Testimony, Indiana Municipal Power Agency, Indiana
2004
Project Manager. Presented expert testimony before the Indiana Utility Regulatory Commission for issuance of a Certificate of Public Convenience and Necessity. The testimony covered the technical and economic feasibility for three coal generating unit projects in which the Indiana Municipal Power Agency planned to participate.

St. Johns River Power Park Annual Report, JEA, Florida
2004
Project Manager. Managed preparation of the annual report on the operation and maintenance of St. Johns River Power Park consisting of two 675 MW pulverized coal units burning a mix of coal and petroleum coke. The units are jointly owned by Florida Power & Light Company and JEA. The annual operation and maintenance report is required to be submitted to the bond trustee under JEA's bond covenants.

Ten Year Site Plan, Orlando Utilities Commission, Florida
2004
Project Manager. Managed the preparation of the Ten Year Site Plan for Orlando Utilities Commission as required by the Florida Public Service Commission. The Ten Year Site Plan is an integrated resource expansion plan for the utility including load forecast, fuel price forecast, demand side management, and generation expansion.

Stock Island Combustion Turbine Unit 4 Development and Licensing, Florida Municipal Power Agency, Florida
2004
Project Manager. Managed development of the project description, the conceptual design, the development of lease and operating agreements, and permitting and licensing of a LM6000 simple cycle combustion turbine located at Key West, Florida. In addition, studies of the method of project execution, either EPC or traditional design and construction management, were developed along with a detailed schedule and cost estimate.

Combined Cycle Site Selection Study, Florida Municipal Power Agency, Florida
2004
Project Manager. Managed the site selection study for a 1x1 F class combined cycle for Florida Municipal Power Agency (FMPA). The site selection study initially evaluated four FMPA member generation sites. From those four sites, two were selected for detailed evaluation. The site selection study evaluated fatal flaws and permitting requirements, natural gas supply, water supply, wastewater disposal, and transmission

interconnection requirements. The study evaluated construction and operating costs differences between the two sites. The study also evaluated the ability to deliver power to the East system and the associated economic impacts of wheeling costs to get power to the East system. The study recommended selection of a site in St. Lucie County.

Independent Assessment, Edwards & Angell, Florida
2003
Project Manager. Managed an independent assessment of the current state and cost to complete a partially completed combined cycle repowering project in Lake Worth, Florida for Edwards & Angell, the City of Lake Worth's bond attorney. The study involved developing an estimate to complete the project as a simple cycle combustion turbine and providing consultation on the development of a new natural gas transportation agreement and a memorandum of understanding between the existing owner, AES, and the new purchaser of the project, Florida Municipal Power Agency. The assignment also involved review and advise on numerous other project agreements.

Cane Island Feasibility Study, Florida Municipal Power Agency, Florida
2002
Project Manager. Managed a feasibility study for the installation of a 1 x 1 F class combined cycle at the existing Cane Island Power Park. The study addressed site arrangement, the availability of cooling water, and the disposal of wastewater.

JEA Simple Cycle Combustion Turbine Additions

SUMMER			
Year	**Capacity Need MW**	**CT Addition MW**	**Remaining Capacity Need MW**
2009	**168**	**Kennedy-150**	**18**
2010	**450**	**GEC 1 & 2-284**	**16**
2011	**525**	**-----**	**91**
2012	**601**	**-----**	**167**

WINTER			
Year	**Capacity Need MW**	**CT Addition MW**	**Remaining Capacity Need MW**
2008/2009	**(129)**	**-----**	**(129)**
2009/2010	**22**	**Kennedy 8-191**	**(169)**
2010/2011	**468**	**GEC 1 & 2 – 376**	**(99)**
2011/2012	**556**	**-----**	**(11)**

Capacity Bid in Response to RFP (Summer MW)

Proposal / Option

Year	A	B	C	D1	D2	D3	E1	E2	F1	F2	F3
2010		200		155			157	157	200	200	200
2011	50	150	92	310	310	310	314	314	200	200	200
2012	50	150	92	310	310	310	314	314	200	200	200
2013	50	100	92	310	310	310	314	314	200	200	200
2014			92	310	310	310	314	314	200	200	200
2015			92	310	310	310	314	314	200	200	200
2016					310	310	314	314	200	200	200
2017					310	310	314	314	200	200	200
2018						310	314	314		200	200
2019						310	314	314		200	200
2020						310	314	314		200	200
2021								314		200	200
2022								314			200
2023								314			200
2024								314			200
2025								314			200
2026								314			200

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF BRADLEY E. KUSHNER

ON BEHALF OF

JEA

DOCKET NO. _____

SEPTEMBER 30, 2008

Q. Please state your name and business address.

A. My name is Bradley E. Kushner. My business mailing address is 11401 Lamar Avenue, Overland Park, Kansas 66211.

Q. By whom are you employed and in what capacity?

A. I am employed by Black & Veatch Corporation where I am currently a Manager.

Q. Please describe your responsibilities in that position.

A. I am responsible for the management of various projects for utility and non-utility clients. These projects include production cost modeling associated with power system expansion planning, feasibility studies, and demand-side management (DSM) evaluations. I also have involvement in the issuance and evaluation of requests for proposals (RFPs).

Q. Please describe Black & Veatch.

A. Black & Veatch Corporation has provided comprehensive engineering, consulting, and management services to utility, industrial, and governmental

clients since 1915. Black & Veatch specializes in engineering, consulting, and construction associated with utility services including electric, gas, water, wastewater, telecommunications, and waste disposal. Service engagements consist principally of investigations and reports, design and construction, feasibility analyses, rate and financial reports, appraisals, reports on operations, management studies, and general consulting services. Present engagements include work throughout the United States and numerous foreign countries.

Q. Please state your educational background and professional experience.

A. I received my Bachelors of Science in Mechanical Engineering from the University of Missouri – Columbia in 2000. I have more than 8 years of experience in the engineering and consulting industry. I have experience in the development of integrated resource plans, ten-year-site plans, demand-side management (DSM) plans, and other capacity planning studies for clients throughout the United States. Utilities in Florida for which I have worked include JEA, Florida Municipal Power Agency, Kissimmee Utility Authority, Orlando Utilities Commission, Lakeland Electric, Reedy Creek Improvement District, Tampa Electric Company, and the City of Tallahassee. I have performed production cost modeling and economic analysis, and otherwise participated in four previous Need for Power Applications that have been filed on behalf of Florida utilities and approved by the Florida Public Service Commission (FPSC). I have also testified before the FPSC in previous Need for Power proceedings.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to discuss the fuel and carbon dioxide (CO_2) emissions allowance price forecasts and supply-side alternatives used in the economic analysis of the Greenland Energy Center (GEC) combined cycle conversion. I will also discuss the methodology utilized in the economic evaluations, as well as the results of the economic evaluations that were performed for numerous scenarios and sensitivities.

Q. Have you prepared any exhibits to your testimony?

A. Yes. I am sponsoring the following exhibits:

- Exhibit No. __[BEK-1], which is a copy of my resume;
- Exhibit No. __[BEK-2] which includes a series of tables presenting the results of the economic evaluation of the GEC combined cycle conversion.

Q. Are you sponsoring any sections of Exhibit No. __ [GEC-1], the GEC Need for Power Application?

A. Yes. I am sponsoring Sections 7.0, 13.0, 14.0, 16.0, 17.0, and 18.0, all of which were prepared by me or under my direct supervision.

Q. Please describe the basis for the fuel price projections used in the GEC Need for Power Application, Exhibit No. __ [GEC-1].

A. The fuel price projections for natural gas, fuel oil, and coal used for the economic evaluations presented in Exhibit No. __ [GEC-1] were based on those

presented in the US Energy Information Administration's (EIA) Annual Energy Outlook 2008 (AEO2008).

The AEO2008 presents projections of energy supply, demand, and prices through the year 2030. The projections presented within the AEO2008 are based on results 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.

AEO2008 includes the Reference Case, as well as numerous other cases. For purposes of the economic evaluations presented in Exhibit No. __[GEC-1], the AEO2008 High Price Case and Low Price Case were considered in addition to the Reference Case.

Q. How are state and federal legislation and regulations reflected in AEO2008?

A. Analyses developed by the EIA are required to be policy neutral. Therefore, the projections in the AEO2008 are based on federal and state laws and regulations in effect on or before December 31, 2007. As stated in the AEO2008, the potential impacts of pending or proposed legislation, regulations, and standards – or of sections of legislation that have been enacted, but that require

implementing regulations or appropriation of funds that are not provided or specified in the legislation itself – are not reflected in the projections.

Q. Does AEO2008 provide projections of fuel prices for fuel delivered to the Florida region?

A. Yes. The AEO2008 Reference Case includes fuel price projections for delivered fuel to numerous geographic areas throughout the US. The natural gas and fuel oil price projections used in the economic evaluations presented in Exhibit No. __ [GEC-1] were based on AEO2008 price projections for natural gas and fuel oil delivered to the Florida Reliability Coordinating Council (FRCC). Coal price projections were based on the AEO2008 price projections for coal delivered to the Georgia/Florida region.

The Reference Case fuel price projections considered throughout Exhibit No. __ [GEC-1] reflect the region-specific fuel price projections for use in the electric power sector.

Q. Were any adjustments made to the AEO2008 region-specific Reference Case fuel price projections?

A. Yes. The AEO2008 fuel price projections were developed in real 2006 dollars. For purposes of the economic evaluations presented in Exhibit No. __[GEC-1], these projections were converted to nominal dollars using the general inflation rate of 2.5 percent discussed in the testimony of Mr. Myron Rollins.

Q. Were solid fuel and nuclear alternatives among those considered as viable generation expansion options?

A. Biomass generation was the only solid fuel alternative considered for this analysis. Conventional solid fuel generating units were not included as generating unit alternatives because building additional coal or nuclear generation by 2012 is not feasible due to permitting constraints and construction lead times. However, JEA's purchase power agreement (PPA) with the Municipal Electric Authority of Georgia (MEAG) for a portion of MEAG's entitlement to the proposed Plant Vogtle nuclear Units 3 and 4 was included for all cases considered in the economic evaluations throughout the GEC Need for Power Application (Exhibit No. __ [GEC-1]).

Q. Did the economic analyses consider the costs associated with CO_2 emissions allowances?

A. Yes. Several cases considered in the economic analyses reflected hypothetical sensitivity evaluations in which emissions of CO_2 would be regulated in the US.

Q. How were the emissions prices for CO_2 derived, given that CO_2 emissions are not currently regulated?

A. Although CO_2 emissions are not currently regulated, the EIA developed an analysis entitled *Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007.* The EIA's analysis of S.2191 includes five different cases related to the proposed S.2191. Sensitivity evaluations presented in the GEC Need for Power Application reflect two of

these five cases – the *S.2191 Core Case* and the *S.2191 Limited/No International Case.* In general, the CO_2 emissions allowance prices and natural gas prices are higher in the Limited/No International Case than in the Core Case.

Q. How were the detailed economic analyses conducted?

A. The optimal generation expansion plan evaluations were performed using STRATEGIST, a computer software system developed by Ventyx (who recently acquired NewEnergy Associates, LLC, the original developer of STRATEGIST).

Q. How does STRATEGIST determine the most optimal generation plan?

A. STRATEGIST includes an automatic expansion planning module which determines the optimal balanced demand and supply plan for a utility system under a prescribed set of constraints and assumptions. It evaluates all combinations of generating unit alternatives and purchase power options in conjunction with existing capacity resources to satisfy forecast capacity requirements while maintaining user-defined reliability criteria. STRATEGIST simulates the operation of a utility system to determine the cost and reliability effects of adding resources to the system or modifying the load through DSM programs. The expansion plan that results in the lowest cumulative present worth of costs (CPWC) is the optimal generation plan.

Q. How did STRATEGIST simulate utility system operation to arrive at the optimal generation plan for JEA?

A. The simulation of the utility system operation is accomplished using dynamic programming, a mathematical technique useful for making a sequence of interrelated decisions for determining the combination of decisions that optimizes the desired outcome (lowest CPWC in this case). In this Application, all expansion plans were analyzed over a 20 year period from 2008 through 2027.

Q. What supply-side alternatives were included in the detailed economic analysis?

A. The detailed economic analysis considered the following generating unit alternatives:

- General Electric (GE) LM6000 Simple Cycle
- GE LMS100 Simple Cycle
- GE 7FA Simple Cycle
- GE 1x1 7FA Combined Cycle

Q. Were any new renewable energy technologies evaluated?

A. Yes. Several evaluations presented in the GEC Need for Power Application (Exhibit No. __ [GEC-1]) include consideration of a new biomass resource as well as solar photovoltaic (PV).

Q. Were any new conservation measures evaluated?

A. Yes. Several evaluations presented in the GEC Need for Power Application (Exhibit No. __ [GEC-1]) include consideration JEA's new DSM portfolio, which is discussed in the testimony of Mr. Richard Vento.

Q. Please describe the scenarios evaluated in the GEC Need for Power Application, Exhibit No. __ [GEC-1].

A. Four distinct scenarios were considered in the economic evaluations presented in the GEC Need for Power Application (Exhibit No. __ [GEC-1]). Scenario 1 considered the addition of only combustion turbine and combined cycle generating units. Scenario 2 considered the addition of new renewable energy resources supplemented by combustion turbine and combined cycle generating unit alternatives. Scenario 3 considered the annual demand and energy savings and corresponding annual costs associated with JEA's new DSM portfolio supplemented by combustion turbine and combined cycle generating unit alternatives. Scenario 4 considered the addition of both the new renewable energy resources and JEA's new DSM portfolio supplemented by combustion turbine and combined cycle generating alternatives.

Q. How was the least-cost capacity expansion plan identified for JEA?

A. STRATEGIST was used to identify the optimal, or least cost, expansion plan based on CPWC. The CPWC which are presented in Exhibit No.__[BEK-2] include production costs consisting of fuel, purchase power, and nonfuel variable O&M and fixed costs consisting of fixed O&M, fixed charges on new generating units, DSM costs (for scenarios in which JEA's new DSM portfolio was considered), and incremental natural gas transportation charges for new combined cycle units additions. The CPWC are presented in 2008 dollars over the 2008 through 2027 evaluation period using the 5.0 percent present worth discount rate discussed in the testimony of Mr. Myron Rollins.

Q. What were the results of the economic analysis for JEA?

A. Analysis of the CPWC associated with each of the cases analyzed indicates that expansion plans including the GEC combined cycle conversion in June 2012 are the most cost-effective expansion plans for all cases considered.

Q. Did you conduct any sensitivity analyses?

A. Yes.

Q. Please provide an overview of this sensitivity analysis.

A. Sensitivity analyses were performed on the Scenario 1 cases to supplement the reference case economic analysis and to demonstrate the robustness of the GEC combined cycle conversion as part of the most cost-effective expansion plans. The sensitivity analyses measure the impact of varying key assumptions used in

the reference case economic analysis, as well as the impacts of considerations not included in the reference case.

The general methodology used in the sensitivity analyses was similar to the methodology used in the reference case analysis described previously in my testimony. STRATEGIST was used to determine the optimal capacity expansion plan for all cases considered under different sensitivity cases.

Q. What sensitivity analyses were conducted for Scenario 1?

A. Sensitivity analyses were developed to evaluate the impact of:

1. High fuel prices;
2. Low fuel prices;
3. High loads;
4. Low loads;
5. High capital costs;
6. Regulated CO_2;
7. High fuel prices with regulated CO_2; and
8. High CO_2 costs.

Q. Were any sensitivity analyses conducted for Scenarios 2 through 4?

A. Yes. In addition to the reference case assumptions, Scenarios 2 through 4 each consider the potential impact of regulated CO_2 using the S.2191 Core Case evaluation assumptions.

Q. What were the results of these sensitivity analyses?

A. Exhibit No.____[BEK-2] presents a summary of the results of all of the economic evaluations, including each of the sensitivity analyses performed. As shown in Exhibit No.____ [BEK-2], the GEC combined cycle conversion in June 2012 represents the least-cost capacity expansion plan under all sensitivity evaluations.

The results of the sensitivity analyses, coupled with the results of the base case analysis, demonstrate that the capacity expansion plan including the GEC combined cycle conversion in June 2012 is a robust plan, and is sufficiently flexible to overcome variations and deviations from the base case assumptions.

Q. Is GEC combined cycle conversion the most cost-effective alternative available to JEA?

A. Yes. The GEC combined cycle conversion is the most cost-effective alternative available to JEA. In Scenario 1 (conventional resources), the GEC combined cycle conversion in June 2012 will result in CPWC savings of approximately $122.6 million when compared to the least cost plan without the GEC combined cycle conversion. The amount of CPWC savings for the sensitivity evaluations ranges from approximately $57.0 million to approximately $401.0 million.

In Scenario 2 (conventional and renewable resources), the GEC combined cycle conversion in June 2012 will result in CPWC savings of approximately $117.0 million when compared to the least cost plan without GEC combined cycle

conversion. In Scenario 3 (conventional and DSM), the GEC combined cycle conversion in June 2012 will result in CPWC savings of approximately $134.9 million when compared to the least cost plan without the GEC combined cycle conversion. In Scenario 4 (conventional, renewable, and DSM), the GEC combined cycle conversion in June 2012 will result in CPWC savings of approximately $70.6 million when compared to the least cost plan without the GEC combined cycle conversion.

Q. Will the GEC combined cycle conversion provide adequate electricity at a reasonable cost to JEA?

A. Yes. The expansion plan with the GEC combined cycle conversion in 2012 will help to meet JEA's electric generation needs at the lowest cost of all the alternatives evaluated.

Q. Have renewable energy sources and technologies, as well as conservation measures been evaluated to the extent that they are reasonably available to JEA in the economic evaluations?

A. Yes. As discussed in the testimony of Mr. John Worley, JEA has conducted request for proposals (RFP) processes to identify available renewable energy sources and technologies. The testimony of Mr. Richard Vento discusses JEA's new DSM portfolio. The results of the economic evaluations presented in Exhibit No. __[GEC-1] demonstrate that the GEC combined cycle conversion is the most cost-effective alternative available to JEA including consideration of

reasonably available renewable energy sources and technologies as well as conservation measures.

Q. What would be the consequences to JEA of delaying GEC combined cycle conversion?

A. As demonstrated by the economic evaluations presented in the Application, the results of which are summarized in Exhibit No.__ [BEK-2], the GEC combined cycle conversion in 2012 represents the most cost-effective addition to satisfy JEA's forecast capacity requirements to reliably serve its load. The consequences of delaying the commercial operation of the GEC combined cycle conversion would be significant from an economic and reliability standpoint for JEA.

If the commercial operation of the GEC combined cycle conversion is delayed, JEA would be required to replace the capacity and energy that would otherwise be provided by a new, efficient combined cycle generating unit. The economic consequence of delaying the commercial operation of the GEC combined cycle conversion from June 2012 until June 2013 is approximately $36.7 million in CPWC, compared to the next most cost-effective expansion plan.

JEA is projected to require a significant amount of capacity in 2012 to maintain its reserve margin requirements. If the GEC combined cycle conversion is delayed by one year and no additional generating capacity is installed to meet JEA's forecast capacity requirements by 2012, JEA's reserve margin will fall to

approximately 9.6% (or 167 MW less than the 15% reserve requirement) in 2012. The projected capacity deficit in the summer of 2012 is nearly all of the capacity that will be provided by the GEC combined cycle conversion. With an unacceptable reserve margin in 2012, JEA would not have enough reserves to provide reliable electricity to its customers. This will expose JEA to potentially high purchase power costs.

Q. Does this conclude your testimony?

A. Yes.

Utility System Planning, Production Costing, Economic Analysis, and Demand-Side Management

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, and demand-side management evaluation. He has also 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.

Education
Bachelors, Mechanical Engineering, University of Missouri at Columbia, 2000

Total Years Experience
8

Joined Black & Veatch
2000

Representative Project Experience

Cane Island 4 Need for Power Application, Florida Municipal Power Agency, Orlando, Fla

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). 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
2007 - 2008
Study Manager. Oversee modeling and evaluation of purchase power contracts related to 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 an overall generation portfolio. The portfolio of assets and associated purchase power contracts was evaluated using more than 50 models. Mr. Kushner was involved in the modeling of the contracts as well as quality assurance/quality control related to the entire portfolio prior to delivering evaluations to Client.

Characterization and Selection of Nuclear Generating Technologies; AmerenUE; Missouri
2007 - 2008

Project Analysis Engineer. Provide assistance in characterizing and screening of various nuclear generating technologies for consideration by AmerenUE. The nuclear technology selected for further evaluation will be evaluated as part of 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.

Supply-Side Technologies Characterization; Tampa Electric Company; Tampa, Florida
2007
Study Manager. Provide cost and performance estimates for various renewable, conventional, and other generating technologies for client consideration in support of their determination of need filing. Technologies considered approximately 20 renewable technologies (including biomass, biogas, waste-to-energy, wind, solar, geothermal, hydroelectric, and ocean energy), 6 conventional technologies (including simple and combined cycles), and 2 emerging technologies (including nuclear). Also considered advanced, energy storage, and distributed generation technologies.

Power Supply Study; Western Farmers Electric Cooperative; Anadarko, Oklahoma
2006 - 2008
Study Manager. Provide 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 is an update to previous capacity planning studies which evaluates the economics of various supply-side alternatives to satisfy forecast capacity requirements.

Integrated Resource Plan; Village of Rockville Centre, New York
2006 – 2007
Study Manager. Analysis related to and preparation of 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 - 2007
Study Manager. Provided production costing, economic analysis, and various other support to facilitate completion and filing of the Taylor Energy Center (TEC) Need for Power Application (NFP). 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 four separate utilities participating in the project. The analysis considered self-build and purchase power alternatives.

Integrated Resource Plan; City of Tallahassee; Tallahassee, Florida
2004 - 2007
Study Manager. Analysis related to and preparation of 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
2005 - 2006
Project Analysis Engineer. Provided assistance to Brazos Electric Power Cooperative (Brazos) in developing their Integrated Resource Plan (IRP). Included drafting a request for power supply proposals (RFP), analysis of responses to the RFP, review of Brazos production costing analysis, and documentation of final report. The IRP provided strategic direction to Brazos, which is currently experiencing and is forecast to continue to experience robust system growth.

Stanton Energy Center Unit B Need for Power Application; Orlando Utilities Commission; Orlando, Florida
2005 - 2006
Study Manager. 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). 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 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, Oklahoma
2002 - 2006
Project Analysis Engineer. 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. Involved evaluation of numerous conventional as well as renewable technology proposals and culminated in the issuance of a short-list and presentation to WFEC Board of Directors.

Saint Johns River Power Park Annual Review; JEA; Jacksonville, Florida
2006
Engineering Manager. Preparation of annual report documenting the previous year's operations of the St. Johns River Power Park. Included a summary of the findings of field activities, staff interviews, observations, and document review associated with the Power Park.

Ten-Year Site Plan, FRCC Forms, EIA-860 and Annual Conservation Report Filings; Orlando Utilities Commission; Orlando, Florida
2006
Engineering Manager. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2006 Ten-Year Site Plan and submit to the Florida Public Service Commission (FPSC). Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC. The EIA-860 collects data related to the specific utility's existing and planned generating units. The Annual Conservation Report is 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, Missouri
2005 - 2006
Study Manager. 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 most cost-effective and reliable manner. Involved evaluation of numerous conventional capacity options under consideration by the City, as well as options proposed by respondents to the RFP. Included 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, Florida
2004 - 2005
Project Analysis Engineer. 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). Also provided 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. 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, Florida
2004 - 2005
Project Analysis Engineer. 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
2005
Project Analysis Engineer. 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
2005
Project Analysis Engineer. 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 which will satisfy forecasted capacity requirements in the most cost-effective manner.

Ten-Year Site Plan and FRCC Forms; Florida Municipal Power Agency; Orlando, Florida
2005
Engineering Manager. Provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2005 Ten-Year Site Plan and subsequent submission to the Florida Public Service Commission

(FPSC). Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC.

Saint Johns River Power Park Annual Review; JEA; Jacksonville, Florida
2005
Engineering Manager. Preparation of annual report documenting the previous year's operations of the St. Johns River Power Park. Included a summary of the findings of field activities, staff interviews, observations, and document review associated with the Power Park.

Ten-Year Site Plan, FRCC Forms, EIA-860 and Annual Conservation Report Filings; Orlando Utilities Commission; Orlando, Florida
2005
Engineering Manager. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2005 Ten-Year Site Plan and submit to the Florida Public Service Commission (FPSC). Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC. The EIA-860 collects data related to the specific utility's existing and planned generating units. The Annual Conservation Report is prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

Due Diligence and Economic Analysis; Dairyland Power Cooperative; La Crosse, Wisconsin
2003-2005
Project Analysis Engineer. Performed due diligence review of the power supply planning efforts undertaken by Dairyland Power Cooperative (DPC). Included development of numerous capacity expansion plans and associated system production costing. Analysis was done in compliance with the requirements of the Rural Utilities Services (RUS) to potentially obtain low-cost RUS project financing. Also included was 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 was completed, with the results presented to DPC project personnel as well as RUS staff.

Numeric Conservation Goals Filing; JEA; Jacksonville, Florida
2004
Project Analysis Engineer. 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 is 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, Florida
2004
Project Analysis Engineer. Analysis related to and preparation of the Orlando Utilities Commission (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 is 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, Florida
2004
Project Analysis Engineer. Coordination and preparation of a site selection study related to the potential construction of a new combined cycle unit to be installed by the Florida Municipal Power Agency.

Ten-Year Site Plan; Florida Municipal Power Agency; Orlando, Florida
2004
Engineering Manager. Provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2004 Ten-Year Site Plan and subsequent submission to the Florida Public Service Commission (FPSC).

Saint Johns River Power Park Annual Review; JEA; Jacksonville, Florida
2004
Engineering Manager. Preparation of annual report documenting the previous year's operations of the St. Johns River Power Park. Included a summary of the findings of field activities, staff interviews, observations, and document review associated with the Power Park.

Ten-Year Site Plan, FRCC Forms, and Annual Conservation Report Filings; Orlando Utilities Commission; Orlando, Florida
2004
Engineering Manager. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2004 Ten-Year Site Plan and submit to the Florida Public Service Commission (FPSC). Also included follow-up response to FPSC inquiries and preparation of presentation to FPSC staff. Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC. Annual Conservation Report is prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

Due Diligence; City Utilities; Springfield, Missouri
2003
Project Analysis Engineer. 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, consisting of constructing a second unit at an existing site and an independent developer's proposed construction of a unit at a new site.

Saint Johns River Power Park Annual Review; JEA; Jacksonville, Florida
2003
Engineering Manager. Preparation of annual report documenting the previous year's operations of the St. Johns River Power Park. Included a summary of the findings of field activities, staff interviews, observations, and document review associated with the Power Park.

Participation Agreement; Kissimmee Utility Authority; Orlando, Florida
2003
Engineering Manager. 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. Included meetings and coordination with clients and incorporation of various requirements to sufficiently complete the Agreement.

Ten-Year Site Plan, FRCC Forms, and Annual Conservation Report Filings; Orlando Utilities Commission; Orlando, Florida
2003
Engineering Manager. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2003 Ten-Year Site Plan and submit to the Florida Public Service Commission (FPSC). Also included follow-up response to FPSC inquiries and preparation of

presentation to FPSC staff. Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC. Annual Conservation Report is prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

Capacity Planning Study; Western Farmers Electric Cooperative; Anadarko, Oklahoma
2001 - 2002
Project Analysis Engineer. 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, Florida
2002
Engineering Manager. Assisted in coordination and preparation of a preliminary study to evaluate the feasibility of constructing a new generating unit at an existing Kissimmee Utility Authority site.

Ten-Year Site Plan, FRCC Forms, and Annual Conservation Report Filings; Orlando Utilities Commission; Orlando, Florida
2002
Project Analysis Engineer. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2002 Ten-Year Site Plan and submit to the Florida Public Service Commission (FPSC). Also included follow-up response to FPSC inquiries and preparation of presentation to FPSC staff. Related to the Ten-Year Site Plan are the Florida Reliability Coordinating Council (FRCC) filings, which are submitted to FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by FRCC. Annual Conservation Report is prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

Capacity Planning Study; Braintree Electric Light Department; Braintree, Massachusetts
2002
Project Analysis Engineer. 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, Florida
2001-2002

Project Analysis Engineer. Assisted in 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, North Dakota
2001
Project Analysis Engineer. 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.

Ten-Year Site Plan; Lakeland Electric; Lakeland, Florida
2001
Project Analysis Engineer. Assisted in completion of Lakeland Electric's 2001 Ten-Year Site Plan, including consideration of Lakeland's capacity addition options.

Ten-Year Site Plan; Orlando Utilities Commission; Orlando, Florida
2001
Project Analysis Engineer. Production costing and economic analysis necessary to complete the Orlando Utilities Commission 2001 Ten-Year Site Plan and submit to the Florida Public Service Commission. Also included follow-up response to FPSC inquiries and preparation of presentation to FPSC staff.

Need for Power Application; Various Clients; Florida
2001
Project Analysis Engineer. Production costing and economic analysis required in support of determination of most cost-effective expansion options to meet the individual needs of the Orlando Utilities Commission, Kissimmee Utility Authority, and Florida Municipal Power Agency. Also included preparation of corresponding application to be presented to the Florida Public Service Commission, as well as written testimony in support thereof.

Table 1
CPWC Summaries for Scenario 1
($000)

Case	CPWC of Expansion Plan Including GEC Conversion in 2012	CPWC of Expansion Plan Without GEC Conversion in 2012	CPWC Savings for Expansion Plan with GEC Conversion in 2012
Reference Case	11,054,686	11,177,317	122,631
High Fuel	11,528,352	11,637,336	108,984
Low Fuel	10,501,774	10,598,528	96,754
High Load	12,495,350	12,638,740	143,390
Low Load	10,001,095	10,058,137	57,042
High Capital Cost	11,183,032	11,295,586	112,554
Regulated CO_2	15,861,139	16,028,653	167,514
High Fuel with Regulated CO_2	16,681,496	16,840,280	158,784
High Regulated CO_2	23,814,086	24,215,124	401,038

Table 2
CPWC Summaries for Scenario 2
($000)

Case	CPWC of Expansion Plan Including GEC Conversion in 2012	CPWC of Expansion Plan Without GEC Conversion in 2012	CPWC Savings for Expansion Plan with GEC Conversion in 2012
Reference Case	11,228,052	11,345,073	117,021
Regulated CO_2	15,999,936	16,154,956	155,020

Table 3
CPWC Summaries for Scenario 3
($000)

Case	CPWC of Expansion Plan Including GEC Conversion in 2012	CPWC of Expansion Plan Without GEC Conversion in 2012	CPWC Savings for Expansion Plan with GEC Conversion in 2012
Reference Case	10,803,625	10,938,494	134,869
Regulated CO_2	15,581,425	15,767,659	186,234

Table 4
CPWC Summaries for Scenario 4
($000)

Case	CPWC of Expansion Plan Including GEC Conversion in 2012	CPWC of Expansion Plan Without GEC Conversion in 2012	CPWC Savings for Expansion Plan with GEC Conversion in 2012
Reference Case	10,987,500	11,058,147	70,648
Regulated CO_2	15,724,591	15,851,309	126,719