060220-EC

SEMINOLE ELECTRIC COOPERATIVE, INC.

Petition to Determine Need for

Electric Power Plant

March 2006

Need Study

Seminole Electric
COOPERATIVE, INC
IN PARTNERSHIP WITH THOSE WE SERVE

060220-EC

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(Filed Separately)

I. EXECUTIVE SUMMARY

Seminole Electric Cooperative, Inc. (Seminole) is seeking a determination of need for a 750 MW (nominal) coal generating unit to be located at the Seminole Generating Station (SGS) in Palatka, Florida. The unit, SGS Unit 3, will be a pulverized coal unit. It will employ a state-of-the-art, supercritical design. SGS Unit 3 will be designed to burn bituminous coal as well as combination of coal and petroleum coke. The supercritical design of SGS Unit 3 will incorporate best available control technologies to control air emissions. SGS Unit 3 is scheduled for commercial operation in May 2012.

The Seminole Generating Station currently has two 650 MW class coal units, SGS Units 1 and 2. The site contains all facilities necessary for the operation of the two existing coal generating units. SGS Unit 3, as a brownfield project, will be designed to maximize the use of existing site facilities. No new transmission lines will be required to accommodate SGS Unit 3 on the existing SGS site. The control technologies for SGS Unit 3 and planned retrofits of SGS Units 1 and 2 will result in SGS site air emissions of NO_x, SO2, and mercury lower than current levels.

Seminole is a generation and transmission electric cooperative organized to serve its Member distribution cooperatives. There are ten member electric cooperatives (Members) that are served by Seminole, each with equal representation on Seminole's Board of Trustees (Board).

Seminole serves the requirements of its Members through a combination of Seminole owned generating resources and purchased power contracts. Seminole's owned generation resources include the two SGS pulverized coal units, a gas combined cycle unit, and a share of a nuclear plant. In addition, those resources will soon include gas peaking facilities that are currently under construction. Seminole has contracts for the purchase of power with four independent power producers, three renewable resource generators, one municipal electric utility and one investor-owned utility. Seminole is interconnected with seven other electric utilities at fifteen interconnection points. Seminole owns and operates 230 kV and 69 kV transmission facilities, and it receives firm network transmission service from two investor owned electric utilities.

As of the end of 2004, the ten Members comprising Seminole's system served 805,085 retail consumers. During calendar year 2004, those customers consumed 15,348 GWh of energy and placed a maximum coincident demand on the system of 3,364 MW. Seminole's highest peak demand on record occurred in February 2006 at 4,113 MW (estimated). Seminole and its Members serve one of the fastest growing service areas in Florida. The forecasted average annual growth rates for the next ten years of the customers, energy and demand served by Seminole's Members are 2.8%, 4.1%, and 4.1%, respectively.

In its power supply planning process, Seminole has determined that due to forecasted load growth and the scheduled expiration of some existing purchased power contracts, it needs to add over 1200 MW of generating capacity by 2012. These additional resources are necessary for Seminole and its Members to be able not only to maintain system reliability, but also to provide electric service at a reasonable cost.

Because of the longer lead times associated with base load technologies, Seminole focused first on meeting its need for base load capacity. Seminole already had agreed to participate in a feasibility study regarding Seminole's potential partial ownership of a coal unit to be jointly owned with several Florida municipal electric utilities. Independent of this effort, Seminole undertook to determine how best to meet its base load requirement through either self-build generation or purchased power.

With regard to self-build options, Seminole ultimately narrowed its focus to either pulverized coal units or gas combined cycle units. Although other coal technologies were initially considered, Seminole determined that the most feasible proven coal technology was pulverized coal. Initial economic comparisons of technologies suggested that the pulverized coal option enjoyed a distinct economic advantage over gas combined cycle technology. Seminole contracted with Burns & McDonnell to perform a feasibility study of adding a third coal unit at the Seminole Generating Station. In late August 2004, Burns & McDonnell completed a study showing that a 600 MW pulverized coal unit at the Seminole Generating Station was technically and economically feasible.

With regard to purchased power alternatives, on April 19, 2004 Seminole issued a Request for Proposals for purchased power alternatives (RFP). This RFP solicited proposals for up to 600 MW of firm base load capacity beginning as early as the summer of 2009. Seminole received fourteen proposals from five different entities, with proposals ranging in size from 100 to 750 MW, and in term from 10 to 40 years. These proposals included potential sales from both new and existing gas combined cycle units and from new pulverized coal units with proposed start dates for capacity and energy deliveries ranging throughout the 2009 to 2012 period referenced in Seminole's RFP. Seminole performed a technical and economic evaluation of the proposals. The initial economic evaluation suggested that the coal-based bids were more economical than gas combined cycle based bids and that Seminole's self-build 600 MW coal option was the least cost option by a significant margin. The lowest cost coal bidders were given an opportunity to improve their bids. Despite this opportunity, none of the bidders offered an option that was less costly than Seminole's self-build pulverized coal option.

In December 2004, Seminole's staff reported to its Board that the best, most economical option available to meet Seminole's base load capacity need was a self-build pulverized coal unit targeted for commercial operation in 2012. Staff informed the Board that further analysis of base load requirements showed that Seminole could support up to 750 MW of coal capacity. Staff advised the Board that an outside consulting firm had been retained to assist in performing a relative risk assessment of a self-build coal project versus an all gas strategy. Staff recommended that Seminole not pursue further negotiations with RFP bidders. The Board accepted the staff's recommendation and further authorized staff to continue background activities associated with a self-build coal option at the Seminole Generating Station.

In February 2005 both the risk assessment and a feasibility study of increasing the size of the self-build coal unit had been completed. The risk assessment showed a high probability that a self-build coal unit would yield better economic results than a self-build gas combined cycle unit. The updated feasibility study also showed that a 750 MW coal unit was feasible at the Seminole Generating Station and was a superior option to either a 600 MW coal unit by itself or the 600 MW coal unit in conjunction with a 150 MW participation in the municipal project.

In March 2005 Seminole's Board voted to move forward with the permitting of a new 750 MW pulverized coal generating unit at the Seminole Generating Station (SGS Unit 3) with commercial operation planned for May 2012. The Board also voted to withdraw from the joint coal project. The Board concluded that SGS Unit 3 was the most cost-effective option available to meet the reliability needs of Seminole, its Members and their member/consumers. The addition of SGS Unit 3 would also allow Seminole and its Members to continue to provide adequate electric service at a reasonable cost, while avoiding an undue reliance on natural gas generation (i.e., in the absence of SGS Unit 3, natural gas generation would provide over 50% of Seminole's system energy requirements by 2013).

In the Fall of 2005, Seminole updated its economic evaluation. This analysis compared SGS Unit 3 with a similar amount of gas combined cycle capacity and showed that SGS Unit 3 is projected to save Seminole, its Members and their member/consumers $498 million on a cumulative, present worth revenue requirements basis through the year 2030. This confirmed the conclusion that SGS Unit 3 is Seminole's most cost-effective option available to meet its base load capacity need beginning in May 2012.

Based upon this extensive and rigorous assessment of alternatives, Seminole is seeking certification under the Florida Electrical Power Plant Siting Act and a determination of need from the Florida Public Service Commission (Commission) under Section 403.519, Florida Statutes, for SGS Unit 3. SGS Unit 3 is the most cost-effective alternative available to Seminole and its Members for maintaining electric system reliability and integrity and for providing adequate electric service at a reasonable cost. There is no conservation or demand side management (DSM) available to Seminole to mitigate the need for this unit, and there is not sufficient, reasonably achievable conservation and DSM available to Seminole's Members to avoid SGS Unit 3. Seminole, its Members, and their member/consumers face serious, adverse consequences if SGS Unit 3 is not granted an affirmative determination of need. The facts support the Commission granting an affirmative determination of need for SGS Unit 3.

II. INTRODUCTION

A. Purpose and Overview of this Document

This document supports Seminole's petition to the Commission to determine the need for SGS Unit 3. SGS Unit 3 will be a supercritical pulverized coal unit located at the Seminole Generating Station in Palatka, Florida. Once completed, SGS Unit 3 will have a net rating of approximately 750 MW. This Need Study demonstrates that SGS Unit 3 is needed by Seminole, its Members, and their member/consumers to (a) maintain system reliability and integrity, (b) provide adequate electricity at a reasonable cost, and (c) avoid an undue reliance on natural gas generation. The Need Study addresses why SGS Unit 3 is the most cost-effective alternative available to Seminole to meet the needs of its Members and their member/consumers. This Need Study also addresses the lack of sufficient reasonably-achievable conservation and DSM available to mitigate Seminole's needs for additional base load capacity.

This document contains the information required by Rule 25-22.081, Florida Administrative Code (F.A.C.). It provides the information that will "allow the Commission to take into account the need for electric system reliability and integrity, the need for adequate reasonable cost electricity, and the need to determine whether the proposed plant is the most cost-effective alternative available…." The following information is provided in subsequent sections:

- a description of the existing Seminole system (Section III);
- a description of the proposed generating unit (Section IV);
- an explanation of Seminole's need for the proposed generating unit (Section V);

- a discussion of factors affecting the selection of the proposed generating unit (Section VI);
- a discussion of the analyses which determined that the planned generating unit represents the best alternative to meet Seminole's need (Section VII);
- a discussion of non-generating alternatives and an analysis of their potential for mitigating the need for SGS Unit 3 (Section VIII); and
- a discussion of the adverse consequences that would result from delay of the completion of SGS Unit 3 (Section IX).

B. Supporting Appendices

While the text of this Need Study is presented as a narrative that addresses the information required by Rule 25-22.081, F.A.C., it is supplemented by a number of appendices that follow in a separately bound volume. These Appendices provide greater detail as to certain aspects of Seminole's Need Study. They are supplemental to the Need Study and are incorporated by reference into the Need Study.

III. PRIMARILY AFFECTED UTILITIES

A. Description of Seminole

Seminole Electric Cooperative, Inc. is a not for profit rural electric cooperative organized under Chapter 425, Florida Statutes. Seminole is a generation and transmission cooperative that only makes wholesale sales; it does not make retail sales. Each of Seminole's ten Members is also a rural electric cooperative organized under Chapter 425, Florida Statutes, and each Member is a distribution cooperative serving retail end use customers (member/consumers) in Florida.

Seminole exists to provide reliable electric service at the lowest feasible cost to its Members. Seminole was organized in 1948. In 1975, each Member of Seminole entered into a long term contract with Seminole for the purchase of wholesale power. Those Wholesale Power Contracts require each Member to purchase from Seminole all of its power requirements for distribution within the State of Florida not otherwise supplied under pre-existing contracts. Four of Seminole's Members have pre-existing contracts with the Southeastern Power Administration (SEPA) for a combined 26 MW of hydroelectric capacity.

The Wholesale Power Contracts have an initial term of forty-five years, until 2020. Thereafter, each Wholesale Power Contract may be terminated upon a three year written notice by the party desiring termination. On April 6, 2004, amendments to the Wholesale Power Contracts between Seminole and seven of its ten Members, representing approximately 55% of Seminole's current load, were approved, extending the initial term of these seven Wholesale Power Contracts by 25 years, through 2045. Discussions continue between Seminole and its three remaining Members which could result in similar contract term extensions for some or all of those Members. Indeed, two of those three Members (representing 23% of Seminole's current load) have entered into an agreement committing to extend their Wholesale Power Contracts through 2045. Given the uncertainty of whether all Members would extend the term of their Wholesale Power Contracts, Seminole has analyzed the feasibility of various power supply alternatives under different Member extension scenarios. The analyses presented in Seminole's Need Study and testimony have assumed the most conservative scenario, a seven Member scenario.

1. Seminole's Projected Growth

The Seminole system has experienced, and is forecast to continue to experience, some of the fastest load growth in the State of Florida. Over the last five years, the collective member/consumers of Seminole's Members have grown by an average annual rate of 3.4%, and are projected to grow at a rate of 2.8% over the next ten years. The energy consumption of the member/consumers of Seminole's Members grew at an average annual rate of 5.2% over the last five years and is projected to grow at a rate of 4.1% over the next ten years. The coincident winter peak demand on Seminole's system has grown by an average annual rate of 3.8 % over the last five years and is projected to grow at a rate of 4.1% over the next ten years.

2. Conservation and DSM

As a generation and transmission rural electric cooperative that does not serve end use customers, Seminole cannot and does not offer conservation or DSM programs directly to retail customers. Seminole does, however, promote Member involvement in DSM through its wholesale rate signals and its residential load management and peak shaving generation programs. The conservation and DSM offerings by Seminole's Members include consumer awareness efforts, energy audits, energy surveys, energy loans, lighting conversion, distribution system voltage control, customer-based generator programs, contractually interruptible load, and direct load control programs.

The impact of conservation and DSM efforts by the Members are reflected in the individual load forecasts of the Members as well as Seminole's composite load forecast. Seminole forecasts 237 MW of load control capability in its load forecast, 97 MW of which is distributed generation. This is in addition to the conservation that is already reflected in Seminole's load forecast.

3. Seminole's Owned Generating Resources

Seminole serves its Members' system load with a combination of owned generation and power purchase contracts. Seminole's existing generating resources are located at three generating sites.

SGS Units 1 & 2 are 650 MW class pulverized coal units located in Putnam County near Palatka, Florida. SGS Unit 1 began commercial operation on February 1, 1984. SGS Unit 2 began commercial operation on December 31, 1984.

Payne Creek Generating Station (PCGS) Unit 1 is a 500 MW class gas combined cycle unit located in Hardee County, Florida. It began commercial operation on January 1, 2002. The Payne Creek Generating Station is also the site for an addition of approximately 310 MW of gas turbine capacity scheduled for commercial operation in December 2006.

Seminole also owns a 15 MW (nominal) share of Progress Energy Florida's (PEF) Crystal River 3 nuclear generating unit, which is operated by PEF. More information regarding Seminole's existing generating resources is presented in Appendix A.

4. Purchases from Renewable Resources

Seminole has contracts to purchase firm capacity and energy from three renewable resource facilities. These purchases currently total 54 MW and could expand to as much as 98 MW from existing resources. Seminole has procured renewable resources that are cost competitive and which provide economic value to Seminole's Members and their member/consumers. Seminole continues to seek out renewable resources in parallel with its more formal competitive bidding activities.

Seminole entered into a long-term purchased power agreement in 1999 with Lee County, Florida purchasing the net capacity and energy from the County's Resource Recovery Facility. That facility has a rated capability of 35 MW. The facility's size and Seminole's capacity entitlement is expected to increase to approximately 55 MW by April, 2007, and under the contract the County may increase facility capacity up to a maximum of 79 MW.

On May 14, 2004 Seminole entered into a long term agreement with DG Telogia Power, LLC that provides Seminole net capacity and energy from the biomass fired steam turbine generator located near Telogia, Florida. That facility has a rated capability of 12 MW.

On November 19, 2004 Seminole entered into a five year purchased power agreement to purchase the entire electrical energy output from a landfill gas project owned by Bio-Energy

Partners in Pompano Beach. That facility has a rated capability of 7 MW. A summary of these firm capacity agreements with renewable resource facilities is presented in Table III.A.4.1.

Table III.A.4.1

Seminole's Renewable Energy Resources					
Project	***County***	***Fuel***	***MW Capacity***	***Begin Date***	***End Date***
Bio-Energy Partners	Broward	Landfill Gas	7	01/01/05	12/31/09
DG Telogia Power, LLC	Liberty	Biomass	12	06/01/04	12/31/19
Lee County, Florida	Lee	Solid Waste	35 - 55	12/15/99	07/30/20

5. Other Purchased Power Agreements

Seminole has purchased power contracts with numerous organizations. In addition to the three contracts for purchases from renewable resources previously discussed, Seminole has contracts for the purchase of power from one investor owned electric utility and five other wholesale power suppliers. Seminole also has agreements in place to purchase excess capacity from "load management" generation from its Members. All of these agreements are essential to Seminole's ability to meet the requirements of its Members. A summary of Seminole's current purchased power agreements follows in Table III.A.5.1.

Table III.A.5.1.
Seminole's Power Purchase Contracts
Long Term Firm Capacity Purchases

Supplier	Service	Fuel	MW Capacity	Begin Date	End Date
Progress Energy Florida	Partial Requirements	System	1,105*	02/01/84	12/31/13***
Progress Energy Florida	Intermediate	System	150	01/01/99	12/31/13
Progress Energy Florida	Intermediate	System	150	06/01/06	12/31/13
Progress Energy Florida	Intermediate	System	150	12/01/06	12/31/13
Progress Energy Florida	Full Requirements	System	150+**	01/01/10	07/30/20
Hardee Power Partners Limited[(a)]	Firm Capacity & Energy	Gas/Oil	356	01/01/93	12/31/12
Calpine Construction Finance Company, L.P.[(b)]	Firm Capacity & Energy	Gas/Oil	360	06/01/04	05/31/12
Oleander Power Project, Limited Partnership [(c)]	Firm Capacity & Energy	Gas/Oil	546	12/01/02	12/31/09
Oleander Power Project, Limited Partnership [(d)]	Firm Capacity & Energy	Gas/Oil	364 with option for total of 546	01/01/10	12/31/15
Reliant Energy Florida, LLC[(e)]	Firm Capacity & Energy	Gas/Oil	364	12/01/01	12/31/06
Reliant Energy Florida, LLC [(e)]	Firm Capacity & Energy	Gas/Oil	364	12/01/08	05/31/14
The City of Gainesville	Full Requirements	System	17*	10/22/73	12/31/12***

* Capacity is variable over time. Amount shown represents estimated 2006 maximum monthly peak demand purchase.
** Capacity is variable over time. Amount shown represents estimated 2010 maximum monthly peak demand purchase.
*** End Date for this contract represents end of initial term. Contract continues unless terminated by either party with certain notice.
[(a)] Subsidiary of Invenergy, LLC.
[(b)] Subsidiary of Calpine Corporation.
[(c)] Subsidiary of Southern Power Company.
[(d)] Executed February 17, 2006
[(e)] Subsidiary of Reliant Energy, Inc.

6. Seminole's Transmission System and Interconnections

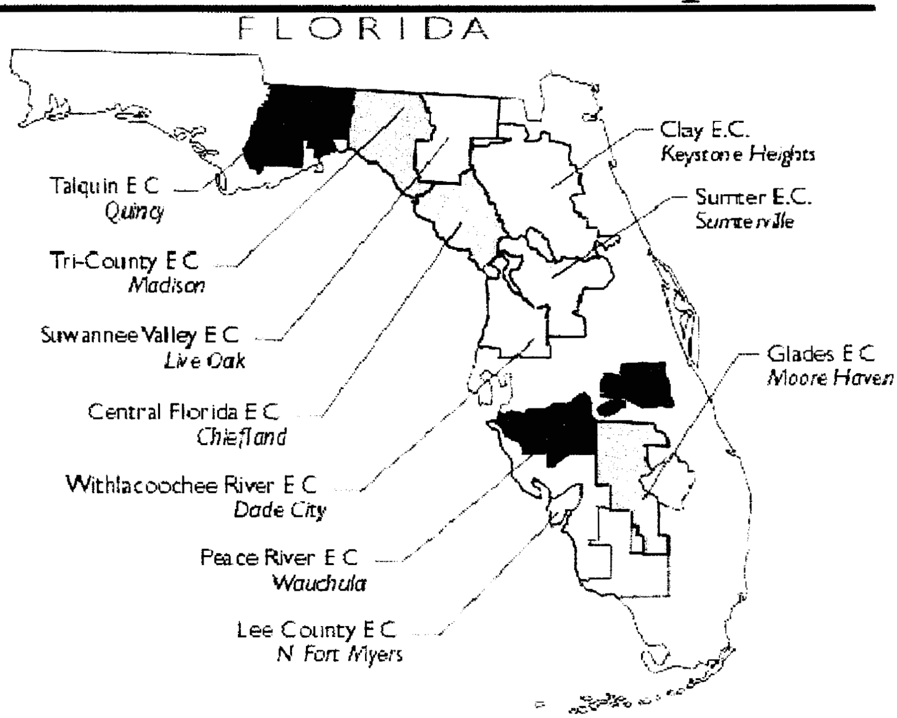
Seminole's transmission facilities consist of 278 circuit miles of 230 kV transmission lines and fourteen 69 kV lines totaling 140 miles in length. In addition, Seminole receives firm transmission service from Florida Power & Light Company (FPL) and Progress Energy Florida (PEF). These transmission service agreements give Seminole the contractual right to serve Member load in the FPL and PEF transmission control areas. As shown on Appendix B, Seminole's owned generating facilities are interconnected to the grid at fifteen (15) 230 kV transmission interconnections with the following utilities: FPL, JEA, City of Ocala, PEF, Hardee Power Partners, L.P., Lee County Electric Cooperative, and Tampa Electric Company (TECO).

B. Seminole's Member Cooperatives

Each Seminole Member provides retail, distribution electric service to their members/consumers within their respective service areas, which cover parts of 46 counties geographically spread throughout Florida, as shown on Figure III.B.1.1.

Figure III.B.1.1.

Seminole's Member Distribution Cooperatives



The names and headquarters locations of each of the Member cooperatives, along with the counties in which each Member serves, are:

- Central Florida Electric Cooperative, Inc.
  Chiefland, Florida
  Counties: Alachua, Dixie, Gilchrist, Levy

- Clay Electric Cooperative, Inc.
  Keystone Heights, Florida
  Counties: Alachua, Baker, Bradford, Clay, Columbia, Duval, Flagler, Gilchrist, Lake, Levy, Marion, Putnam, Suwannee, Union, Volusia

- Glades Electric Cooperative, Inc.
  Moore Haven, Florida
  Counties: Glades, Hendry, Highlands, Okeechobee

- Lee County Electric Cooperative, Inc.
  North Fort Myers, Florida
  Counties: Broward, Charlotte, Collier, Hendry, Lee

- Peace River Electric Cooperative, Inc.
  Wauchula, Florida
  Counties: Brevard, DeSoto, Hardee, Highlands, Hillsborough, Indian River, Manatee, Osceola, Polk, Sarasota

- Sumter Electric Cooperative, Inc.
  Sumterville, Florida
  Counties: Citrus, Hernando, Lake, Levy, Marion, Pasco, Sumter

- Suwannee Valley Electric Cooperative, Inc.
  Live Oak, Florida
  Counties: Columbia, Hamilton, Lafayette, Suwannee

- Talquin Electric Cooperative, Inc.
  Quincy, Florida
  Counties: Gadsden, Leon, Liberty, Wakulla

- Tri-County Electric Cooperative, Inc.
  Madison, Florida
  Counties: Dixie, Jefferson, Lafayette, Madison, Taylor

- Withlacoochee River Electric Cooperative, Inc.
  Dade City, Florida
  Counties: Citrus, Hernando, Pasco, Polk, Sumter

C. Seminole and its Members are the Primarily Affected Utilities.

As explained in detail below in Section V, Seminole and its Members have a need to add over 1200 MW of additional resources by 2012. Seminole has determined that 750 MW of base load, coal-fired capacity is the most cost-effective way to ensure that Seminole and its Members continue to meet their system reliability criteria, provide adequate electricity at a reasonable cost and avoid undue reliance upon natural gas generation. Based upon those analyses, Seminole is petitioning the Commission for an affirmative determination of need for SGS Unit 3, a 750 MW (nominal) pulverized coal plant to be located at Seminole Generating Station in Putnam County, Florida.

As a generation and transmission rural electric cooperative with a need to add capacity to meet the system requirements of its Member distribution systems, Seminole is one of the electric utilities that will be primarily affected by SGS Unit 3. As distribution electric cooperatives served by Seminole who need SGS Unit 3 to maintain reliability and to provide reasonably priced electricity to their member/consumers, the Members of Seminole are also electric utilities that will be primarily affected by SGS Unit 3.

IV. THE DESCRIPTION OF SGS UNIT 3

A. Overview

The proposed generating addition, SGS Unit 3, is a pulverized coal unit using supercritical boiler design with a rating of 750 MW (net). SGS Unit 3 will be designed to burn 100% bituminous coal or coal in combination with up to 30% petroleum coke. The unit is scheduled to begin commercial operation in May 2012.

The location for the new unit will be Seminole's existing Seminole Generating Station in Putnam County, Florida, which contains two existing 650 MW class coal units (SGS Units 1 and 2). Thus, SGS Unit 3 is a brownfield project. The site contains all facilities for the operation of the existing units, including but not limited to all coal unloading and storage facilities, pollution control equipment, and solid waste disposal areas for flyash and other solid waste materials. The design of the new coal fired facility will maximize the co-use of existing site facilities.

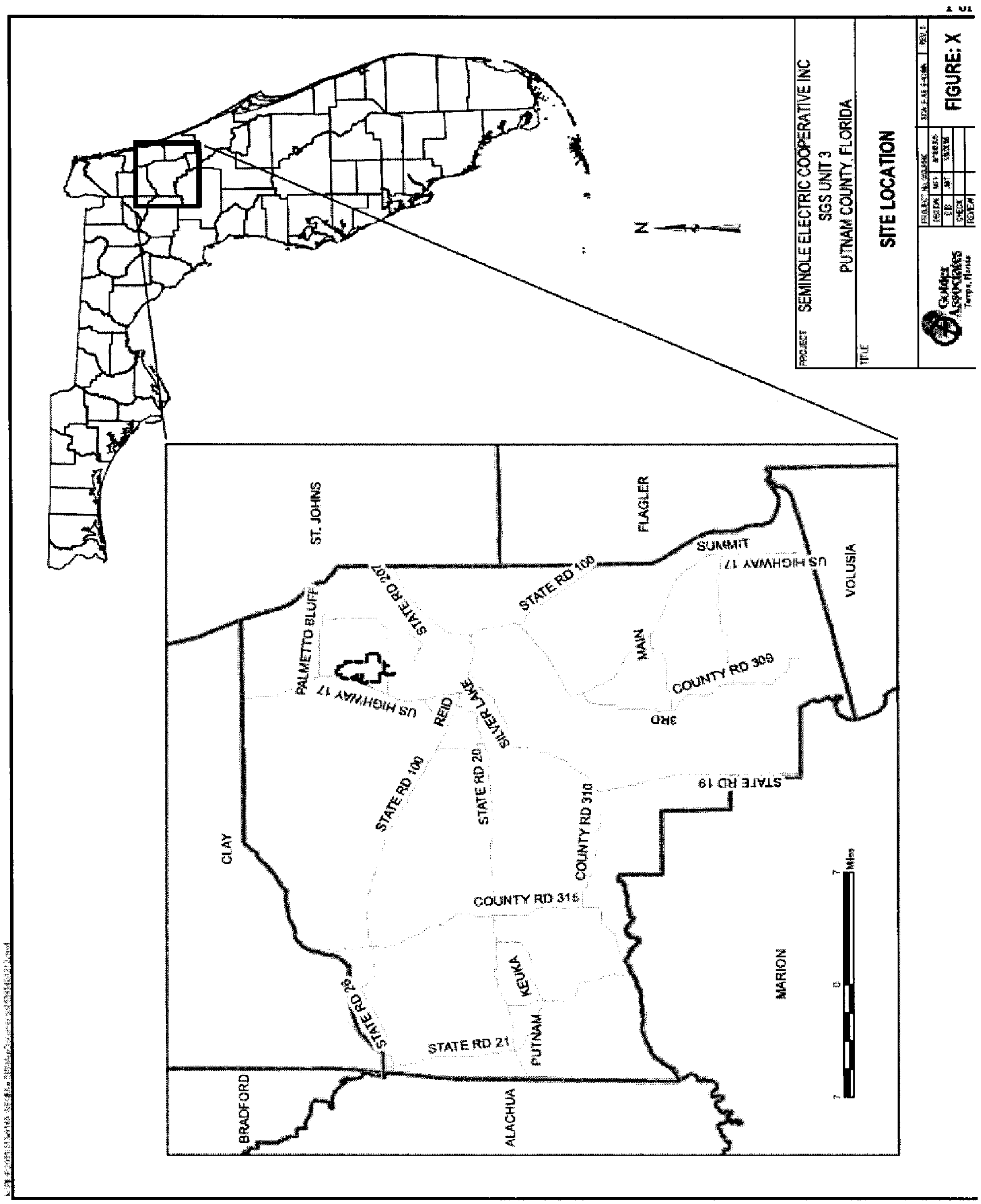
B. Site Description

1. Location

The Seminole Generating Station is located on a 1,966 acre plant site in northeast Putnam County approximately five miles north of Palatka, Florida. Figure IV.B.1.1 is a map of Putnam County showing the location of the Seminole Generating Station site.

Figure IV.B.1.1

Site Location Map – Putnam County



2. Existing Units and Facilities

The Seminole Generating Station currently accommodates two 650 MW class pulverized coal units, SGS Units 1 and 2. SGS Unit 1 began commercial operation in February 1984, and SGS Unit 2 began commercial operation in December 1984. The site contains all facilities for the operation of the existing units, including all coal unloading and storage facilities, pollution control equipment and solid waste disposal areas for flyash and other solid waste materials. Both units are equipped with electrostatic precipitators and wet flue gas desulfurization systems for particulate and sulfur dioxide removal, respectively. Waste material from the flue gas desulfurization system is processed into wall board grade synthetic gypsum and transported to a wall board facility located on a parcel of land adjacent to the Seminole Generating Station. Figure IV.B.2.1 is a photograph of SGS Units 1 and 2, and Figure IV.B.2.2 is a photograph of the existing coal unloading, storage and reclaiming facilities at the site.

Figure IV.B.2.1

Aerial Photograph of Existing Seminole Generating Station

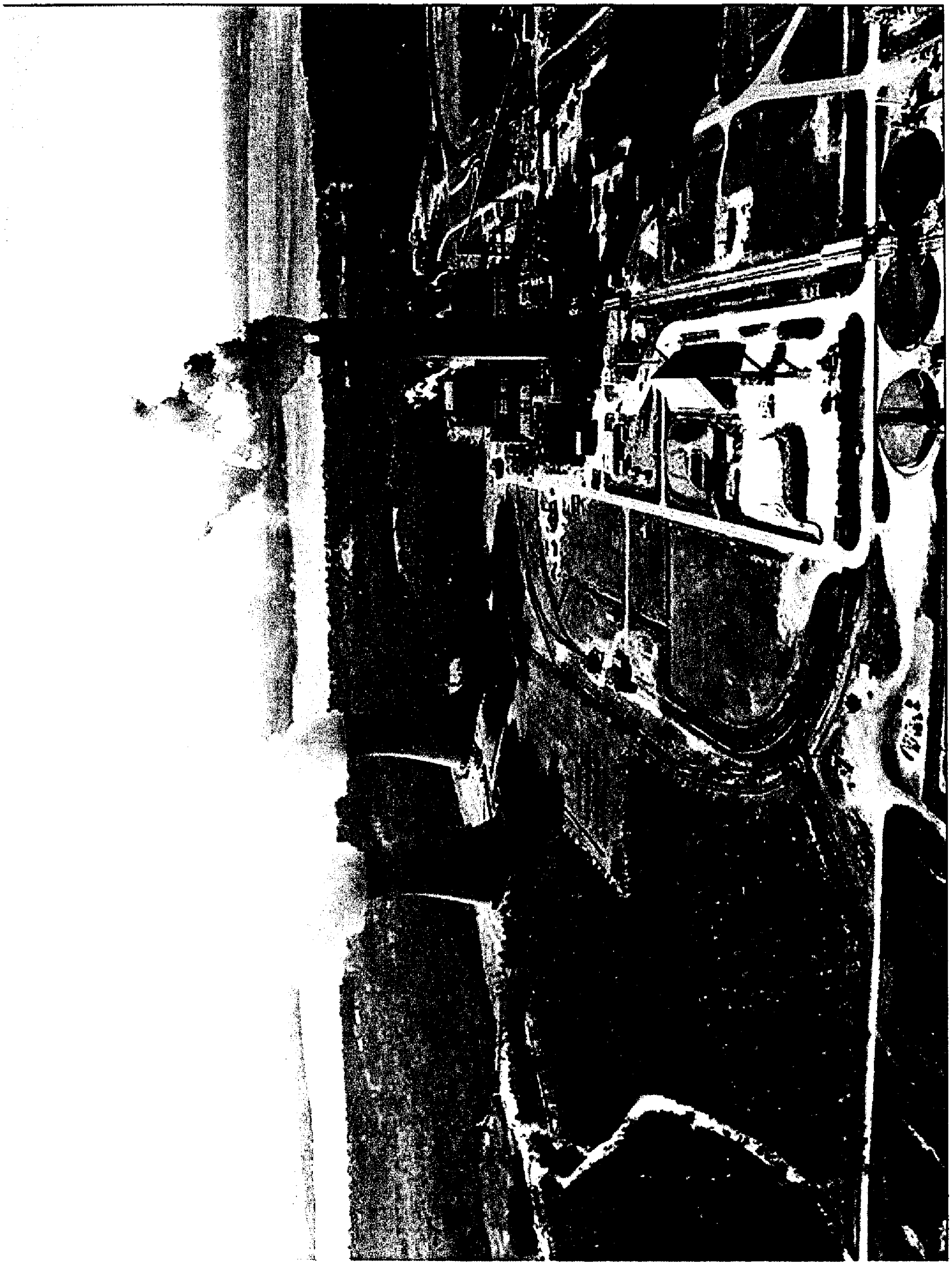
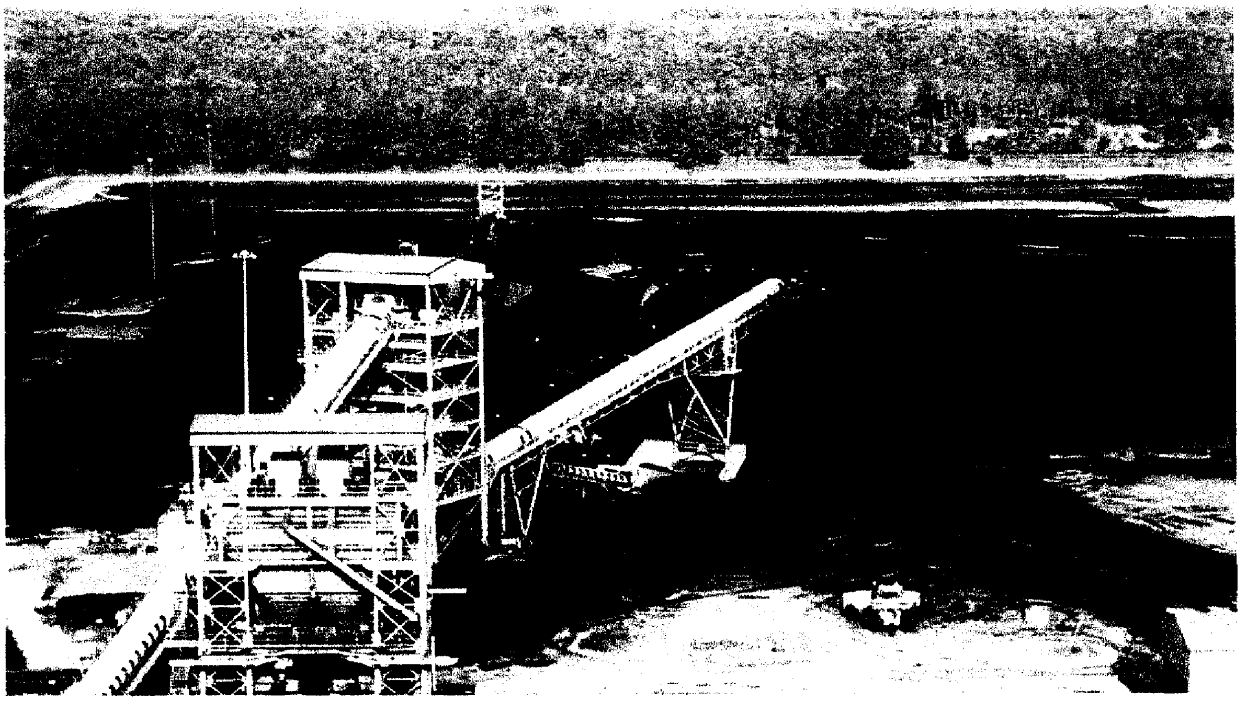
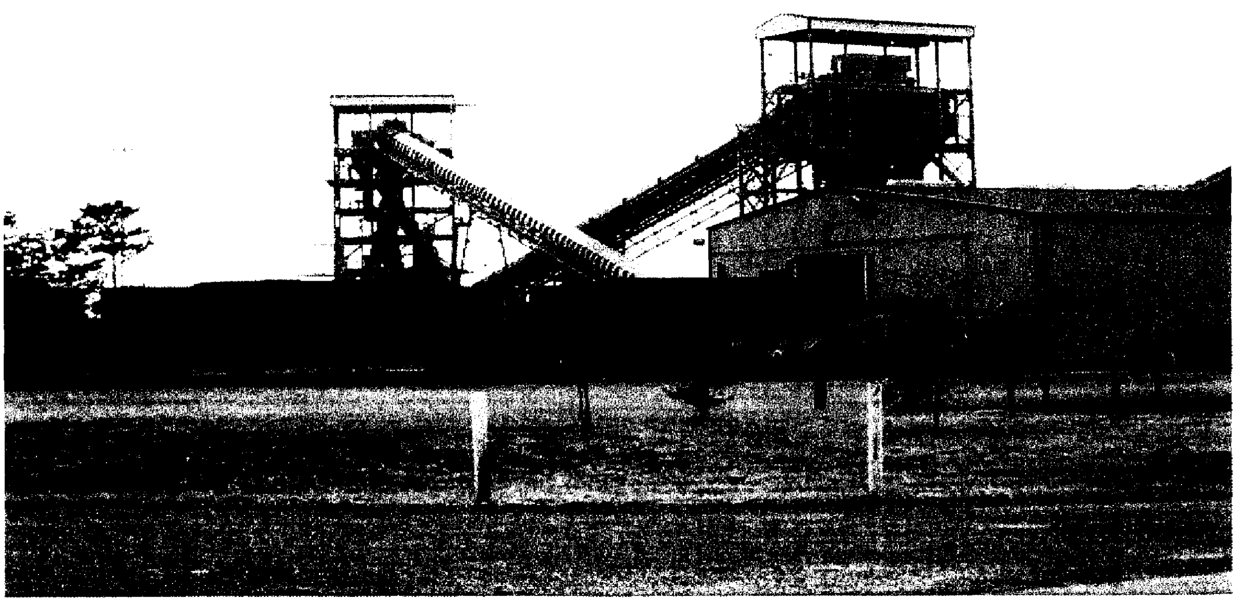


Figure IV.B.2.2

Photograph of Existing Coal Handling Facilities





3. Site Arrangement

Figures IV.B.3.1 and IV.B.3.1a show the preliminary site arrangement of SGS Unit 3 in relation to the existing facilities on the site. Figure IV.B.3.2 is an aerial photograph of the same arrangement showing SGS Unit 3 superimposed. These figures show that there is more than enough space available at the site to accommodate SGS Unit 3. Construction of the new unit at this existing site avoids both the cost of securing another site and the need to devote additional valuable Florida land resources to electrical generating sites and transmission lines.

Figure IV.B.3.1

Site Arrangement With SGS Unit 3

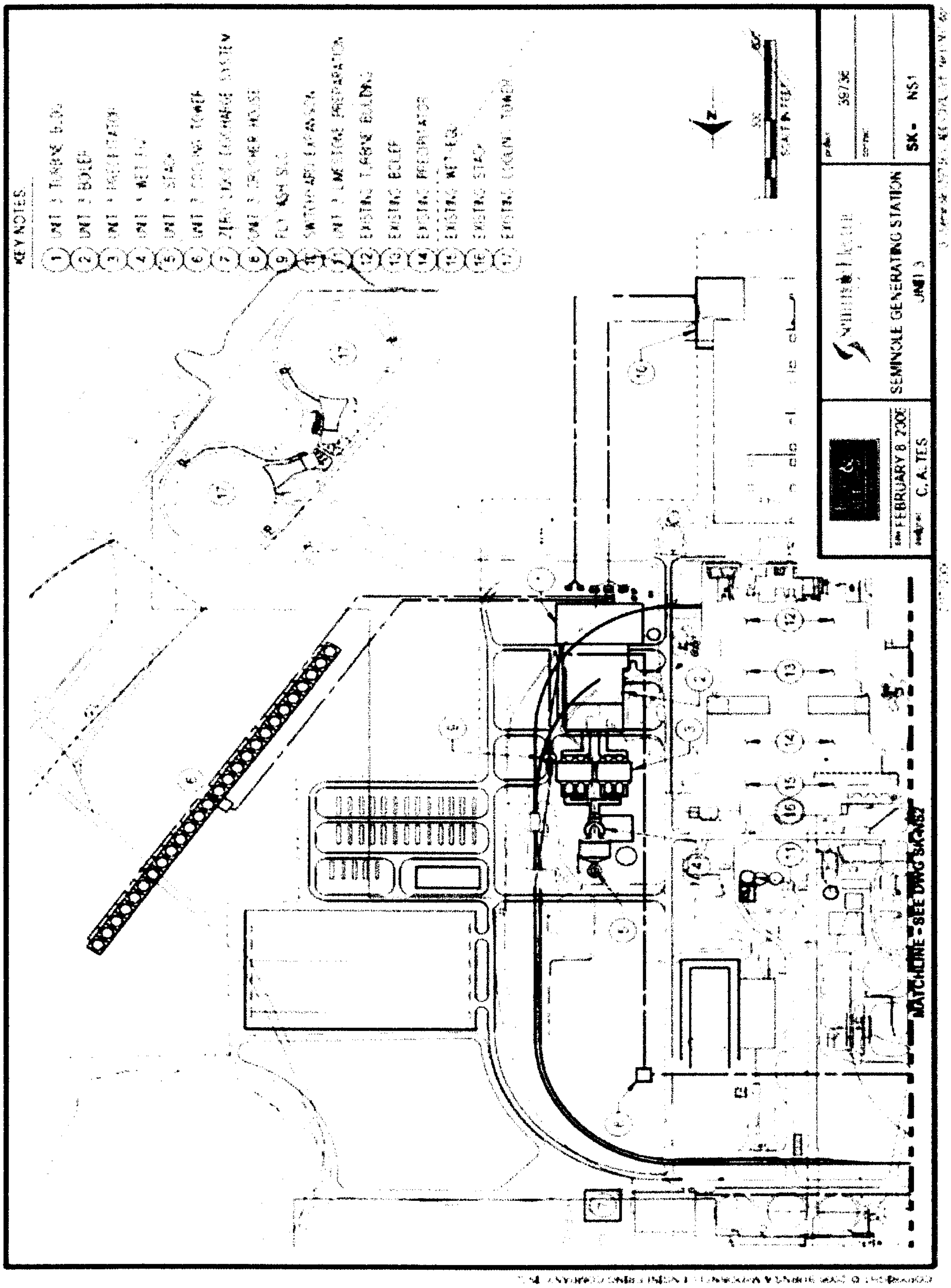


Figure IV.B.3.1a
Site Arrangement With SGS Unit 3

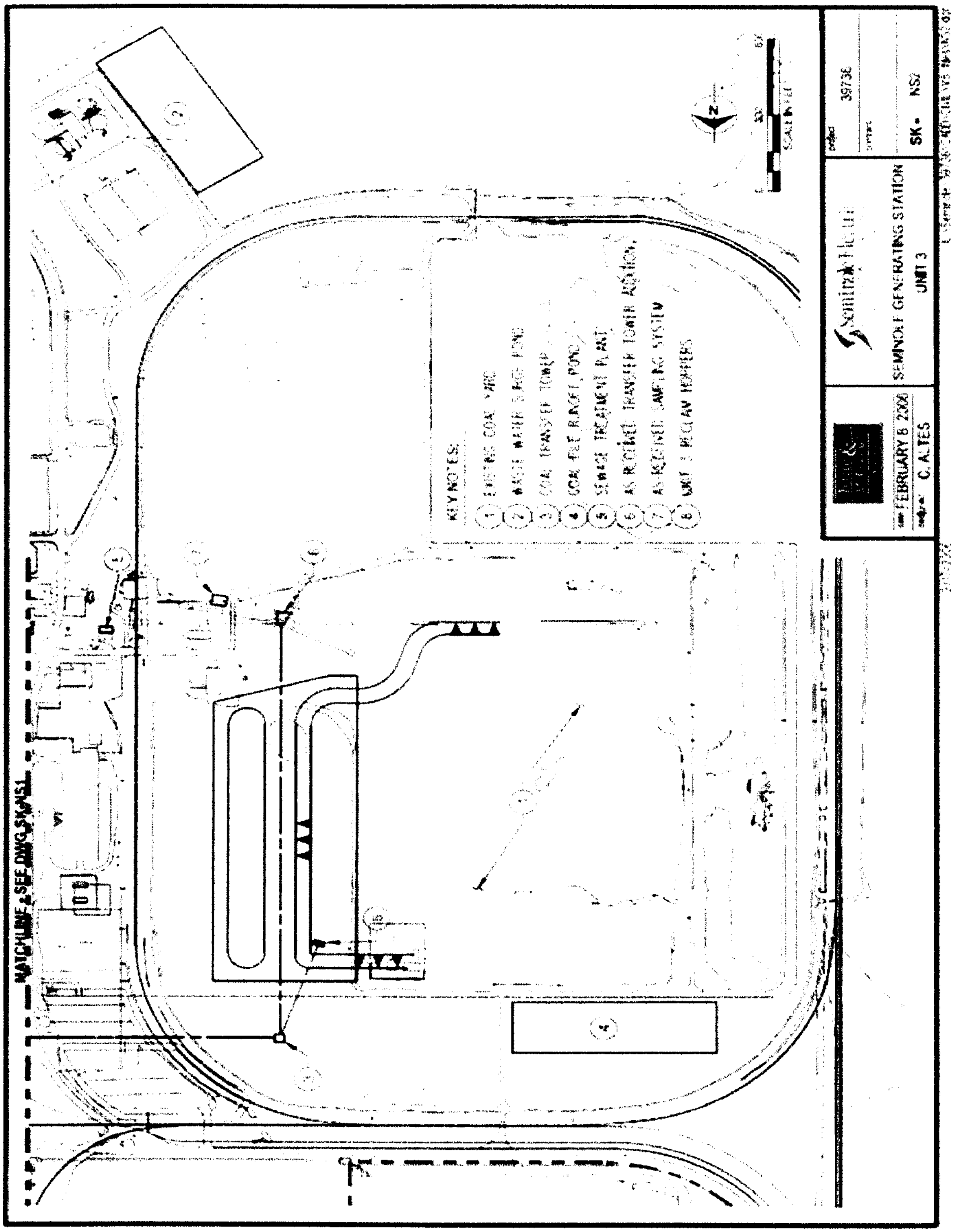


Figure IV.B.3.2
Aerial Photograph of Site with SGS Unit 3 Superimposed

4. Use of Existing Facilities

SGS Unit 3 will maximize the use of existing site infrastructure. Preliminary evaluations have confirmed that the following existing site facilities can be utilized either as currently designed or with minimal modification:

a. Coal Delivery, Unloading and Storage

The existing site has a coal handling system consisting of a spur railroad line off the CSXT rail system, a rotary car dumper, stockout system, and a 52 acre lined coal storage area. The existing units currently receive approximately one unit train (10,000 to 11,000 tons of coal per train) per day. SGS Unit 3 will increase the number of unit trains to an average of 1.6 per day. The existing rotary car dumper has adequate capacity to accommodate the increase. The existing coal handling system at SGS, while adequate for addition of the third unit, will be expanded by adding an additional stacker-reclaimer and related conveyor systems to facilitate material handling, fuel blending and reliability.

b. Potable Water Supply

The existing potable water system has sufficient capacity to provide water for drinking fountains and washroom facilities at SGS Unit 3.

c. Cooling and Service Water Supply

Makeup water to the existing cooling towers and service water systems is supplied from the St. Johns River. The addition of SGS Unit 3 will increase intake flow by approximately 30%. No changes to the river intake structure, which is already equipped with fine mesh screen technology, will be required. An additional pipe from the river intake structure to SGS Unit 3 unit will be required.

d. Cooling Water Discharge

The existing permitted wastewater discharge line has sufficient capacity to accommodate the increased discharge of cooling tower blowdown from SGS Unit 3.

e. Limestone Handling

The current limestone unloading facility has sufficient capacity to accommodate the increase in limestone required for the SGS Unit 3 flue gas desulfurization system.

f. Plant Egress/Ingress

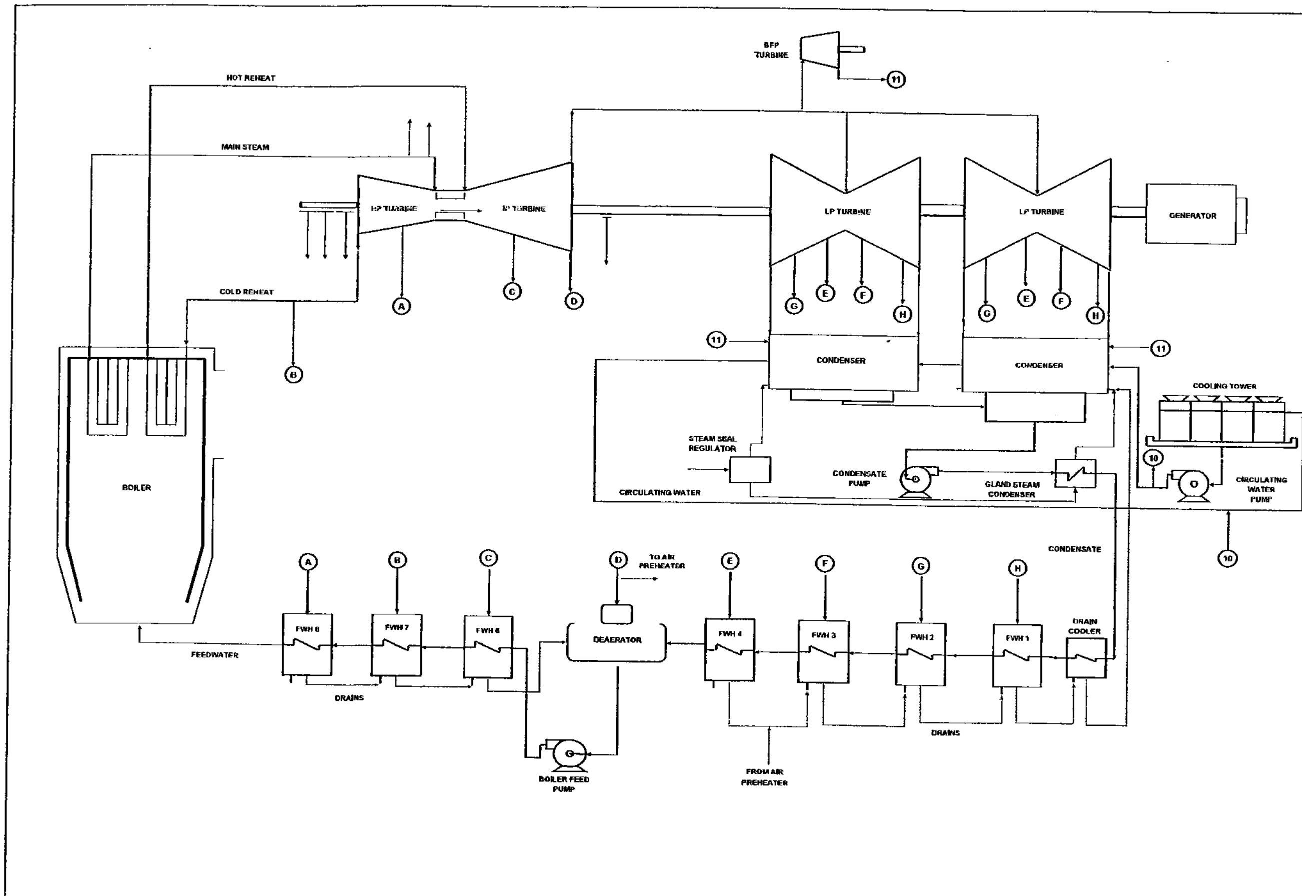
The existing plant entrance off of U.S. Highway 17 will be utilized for all existing facility traffic including SGS Unit 3 construction and operations. Improvements to traffic control systems such acceleration/deceleration lanes and a traffic light will be evaluated during detailed design activities.

C. SGS Unit 3 Design and Performance

The SGS Unit 3 boiler will be a pulverized coal, balanced draft type unit employing supercritical steam pressure and temperature. Supercritical boilers are similar to subcritical boilers. The major difference is the supercritical boiler operates in the supercritical pressure-temperature region where water converts directly to steam without two phase fluid existing. As a result the supercritical boiler uses a once-through system which does not require a steam drum. The primary advantage of the supercritical steam cycle over the subcritical steam cycle is improved plant efficiency due to higher operating pressures and temperatures which results in lower emissions and lower fuel consumption. An additional advantage of the sliding pressure supercritical boiler planned for SGS Unit 3 is that it simplifies cycling the unit to accommodate load regulation required by the electrical system demand. SGS Unit 3, at average annual ambient conditions (71° F dry bulb and 67° wet bulb outside air temperature), will have an expected net plant output of 750 MW and a net plant heat rate of approximately 9,000 Btu/kWh at full load operating conditions.

SGS Unit 3 will have the steam cycle depicted in Figure IV.C.1.1. Condensate pumps will take condensate water from the condenser and pump the water through low pressure feedwater heaters to the deaerator. The boiler feed pump takes water from the deaerator and pumps the water through high pressure feedwater heaters to the boiler. The feedwater enters the boiler through the economizer to recover heat from the combustion gases exiting the boiler. Downstream of the economizer, the heated feedwater is directed to the water wall circuits enclosing the furnace. After passing through the lower and then the upper radiant wall, the fluid passes through the convection enclosure circuits to become steam in the superheater section of the boiler. The steam then exits the boiler to the high-pressure (HP) section of the steam turbine at an inlet temperature of 1,050°F.

As the steam energy is converted to shaft power in the HP section of the steam turbine, its temperature and pressure are reduced. The cooled and lower pressure steam exits the HP section and returns to the boiler. It then passes through the reheater section of the boiler where the steam temperature is raised back up to the expected intermediate-pressure (IP) turbine inlet temperature of 1,050°F. This step is called reheat and is used to increase the



PERFORMANCE SUMMARY

Seminole Electric Cooperative
Seminole Unit 3
750 MW PC SUPERCRITICAL
BMCD PROJECT 39736

STEAM CYCLE DIAGRAM

DESIGNED BY:	
CHECKED BY:	
STATUS:	
DATE 12-Oct-05	MODEL REV.

efficiency of the cycle. The steam then flows to the IP section of the steam turbine where again steam energy is converted to shaft power as its temperature and pressure drops. From the IP section, the steam is directed to the low-pressure (LP) section of the steam turbine where the steam further expands to convert additional energy to the turbine shaft power which drives the electric generator. Steam exits the LP section of the steam turbine to the condenser where the steam is condensed back to liquid water and the cycle repeats itself. Cooling water for the condenser is cooled in a mechanical draft cooling tower.

SGS Unit 3 will be designed to burn 100% bituminous coal or a combination of coal and up to 30% petroleum coke.

SGS Unit 3 will include the following state-of-the-art emissions control equipment:

- Low NO_x Burners and Staged Combustion / Overfire Air for NO_x control.
- Selective Catalytic Reduction (SCR) for NO_x control.
- Electrostatic Precipitator (ESP) for particulate control.
- Wet Flue Gas Desulfurization (WFGD) for SO_2 control.
- Wet ESP for sulfuric acid mist (H_2SO_4) control.
- Mercury removal through application of the above technologies.

With this control equipment and planned retrofits for SGS Units 1 and 2, total NO_x, SO2, and mercury emissions at the Seminole Generating Station will be lower than current emission levels.

The water supply for steam cycle makeup will be from existing plant water wells and will be treated in a demineralizer. The water supply for cooling tower makeup will be from the St.

Johns River, and cooling tower blowdown will be discharged to the St. John's River. Most process wastewater streams will be treated and recycled as make-up water to the wet scrubber. Blowdown from the wet scrubber will be treated in the existing clarification system and in a new zero liquid discharge system consisting of brine concentrators and a spray dryer system. Site runoff will be integrated into the existing site drainage systems. Sanitary discharge will be to a sanitary water treatment system.

Most of the coal combustion by-products produced as a result of the addition of SGS Unit 3 will be sold for reuse, with the balance disposed in the permitted on-site landfill or an offsite permitted landfill (e.g., similar to existing SGS Units 1 & 2, waste from the flue gas desulfurization process will be converted to gypsum and sold to a wall board company on an adjacent site). A monitoring well system is currently in place to monitor ground water quality adjacent to the landfill area and around the SGS property. The ground water monitoring system will be modified as necessary to evaluate the impact of SGS Unit 3.

D. Regulatory Approvals

Table IV.D.1.1 is a list of state, local, and federal regulatory approvals that will be required for the construction, operation, and maintenance of SGS Unit 3, together with the dates when each approval is expected. All regulatory approval documents were filed with the appropriate agencies in March 2006, except for the request for an amended zoning determination, which was approved by the Putnam County Board of County Commissioners in January 2006.

Table IV.D.1.1
SGS Unit 3 Environmental Approvals

	Approval	Agency	Expected Approval Date
1	Determination of Need	Florida Public Service Commission.	9-1-06
2	Prevention of Significant Deterioration Permit (PSD)	Florida Department of Environmental Protection	10-26-07
3	Power Plant Siting Act (PPSA) Site Certification	Florida Siting Board (Governor & Cabinet)	9-17-06
4	National Pollutant Discharge Elimination System (NPDES)	Florida Department of Environmental Protection	10-26-07
5	Building Permit	Putnam County	3-14-06
6	Zoning Approval	Putnam County	Approved 1-10-06
7	Environmental Impact Statement	Rural Utilities Service	9-28-07

E. Fuel

Seminole's fuel management program for Seminole Generation Station is designed to provide a balanced portfolio of long and short term fuel, transportation, and service agreements. Active management of fuel supply, transportation, and related assets provides fuel availability, reliability, and cost control. Fuel management for SGS Unit 3 will be part of the larger fuel management program for the Seminole Generating Station.

1. Fuel Requirements

The Seminole Generating Station utilizes high volatility bituminous coal as its primary fuel and is permitted to blend petroleum coke up to a maximum of 30% by volume. SGS Unit 3 will have the same capability, and Seminole will seek permits to allow a petroleum coke blend of up to a maximum of 30%. It is forecasted that upon the addition of SGS Unit 3, Seminole will require up to 6.0 million tons of solid fuel per year.

2. Solid Fuel Supply

Seminole already has in place long term coal supply agreements with Alliance Coal, LLC to supply 2,750,000 tons of coal a year through the year 2012, with an option to extend 4 years through 2016. In the future, Seminole intends to maintain a significant portion of its coal supply for SGS Units 1, 2 and 3 under long term contracts. The Alliance contracts (and other future long term contracts) will provide a physical hedge to mitigate fuel availability and price risk, providing reliable supply and stable pricing with known and measurable quarterly escalations. Alliance provides coal from multiple mines in Kentucky and Illinois.

Annual SGS solid fuel requirements not provided under term contracts will be secured through spot market agreements for specified quantities for periods ranging from 1 to 18 months. Seminole routinely reviews the short and long term market for opportunities and researches other alternative fuel sources, such as petroleum coke, to obtain the lowest delivered cost of fuel at the quality parameters required. Petroleum coke is an opportunity fuel from both domestic and international refineries.

3. Rail Transportation

Currently, Seminole has a rail transportation contract with CSX Transportation, Inc. (CSXT) to transport coal and/or petroleum coke from various origin mines or import terminals to the Seminole Generating Station (CSXT Contract), which expires at the end of 2008. The CSXT Contract requires the movement of coal and/or petroleum coke on a reasonably uniform basis throughout the year. The CSXT Contract provides for the transportation of coal from the major eastern U.S. supply regions of Illinois Basin, Central Appalachia and North Appalachia and provides for coal imports through terminals accessed by CSXT: Mobile, Charleston and Port St. Joe. Seminole is working with CSXT to add other terminals, in locations such as Tampa, Florida, to the CSXT Contract.

4. Future Rail Transportation Opportunity

Seminole can extend or enter into a new contract with CSXT for a term that will meet Seminole's long term fuel supply objectives. CSXT has confirmed that additional tonnage for SGS Unit 3 requires only 1-2 years notice. Seminole is researching the potential for competitive access from east coast terminals served by the Norfolk Southern Railroad to international coal sources and/or other domestic coal mines. Seminole will keep its strategic options open until the completion of the SGS Unit 3 environmental permitting process. Seminole will then finalize a feasible solid fuel and transportation plan for SGS Unit 3.

5. Solid Fuel Availability

Seminole requested Pace Global Energy Services ("Pace Global") to provide an independent review of the long term supply availability of solid fuels (coal and petroleum coke) which can be utilized at Seminole Generating Station. The Pace Global report, found in Appendix C, states that, "the supply of solid fuel from domestic and foreign sources will be adequate over the study period (present through the year 2040) to meet the requirements of Seminole's existing and new generation." The report also states that "over the period 2005-2040, adequate supplies of petroleum coke will be available from domestic and foreign suppliers to meet the partial or full fuel demand requirements of new solid-fuel-fired generation in Florida." In light of Pace Global's findings, Seminole envisions a flexible solid fuel supply strategy to maintain reliable and economical sources of domestic and foreign coal necessary to meet the operational requirements of the Seminole Generating Station and to provide the opportunity to use petroleum coke as a supplemental fuel when economical and within permit limitations.

6. Railcar Fleet

In 2004, Seminole completed its conversion of the railcar fleet from low volume steel cars (100 ton capacity) to the higher capacity aluminum rotary gondola railcars that can carry 120 tons per car. Seminole primarily leases railcars and has seven train sets for a total fleet of 778 cars. Trinity Railcar Services, Inc., a nationally recognized railcar management company, manages the preventive maintenance and repair program for the leased railcars and the twenty-five (25) railcars currently owned by Seminole.

The current leases for a majority of Seminole's railcars will terminate at the end of 2008. In 2006, Seminole will review its options (ownership vs. leasing) for long term railcar requirements beginning on January 1, 2009. The lead time for acquiring new railcars, either under lease or for purchase, is approximately 30 months. To support SGS Unit 3, Seminole will need three to five additional train sets, depending on the sources of coal and/or petroleum coke. The additional sets need to be available by 2011 by lease and/or a new car purchase.

7. Distillate (Diesel) Fuel Oil

Diesel fuel oil is used for flame stabilization and unit start up and to fuel the on-site mobile equipment utilized in coal stockpile management at the Seminole Generating Station. The current diesel fuel oil storage facilities for SGS Units 1 & 2 consist of two 150,000 gallon tanks. For SGS Unit 3, a new diesel fuel oil storage tank of approximately 200,000 gallon capacity will be added, and all three tanks will be connected to support the full facility operation. Re-supply of diesel fuel oil is by truck deliveries from the terminal in Jacksonville or other east coast Florida terminals.

8. Hedging

Seminole monitors established creditworthy markets for the opportunity to create a solid fuel risk management program for hedging coal and petroleum coke products. The immature coal hedging market has made it difficult for Seminole to establish a hedge program for coal. The volume of coal hedging transactions has not been sufficient to allow full liquidity and price discovery. Also, the coal future contracts that have been available are not for fuel types that are comparable to the primary fuel presently being utilized for the Seminole Generating Station. If the market matures and the types of fuels are comparable to the solid fuels utilized by Seminole, Seminole may enter into solid fuel hedging through a NYMEX margin account.

F. Transmission Interconnection

No new transmission lines are required in order to interconnect SGS Unit 3 to the Florida Grid. However, as described in Section IV.G below, certain transmission equipment will need to be upgraded in order to integrate the additional output of SGS Unit 3 into the grid.

G. Transmission Integration

Seminole receives firm transmission service from FPL under FPL's Open Access Transmission Tariff and from PEF under a "1983 Agreement" between Seminole and PEF. The transmission service agreements give Seminole the contractual right to serve Member load in the FPL and PEF transmission control areas from Seminole's designated generating resources. Seminole designates sufficient resources under the agreements to serve Member load, including backup generation resources. SGS Unit 3 will be a designated network resource to serve Seminole's member load requirements in both the PEF and FPL areas.

1. Facility Upgrades

When transmission service from new resources of capacity is requested, the new designated resources must receive approval from FPL and PEF. As a prerequisite for approval, Seminole performed a Transmission System Impact Study for SGS Unit 3. The Transmission System Impact Study included short circuit, steady-state load flow, and stability analyses. The short circuit analysis indicated that all seventeen 230 kV circuit breakers at the SGS Switchyard will need to be upgraded to a fault interrupting capability of 63 kA. The steady-state load flow analysis indicated that four 230 kV circuit breakers at the Silver Springs North Switchyard and four 230 kV circuit breakers at the SGS Switchyard will need to be upgraded to a continuous rating of 3 kA. Also, four FPL-controlled 230 kV circuit breakers, two located at FPL's Rice Substation and two located at Seminole's SGS Switchyard, that are operated normally open, need to be operated normally closed.

The stability analysis indicated that all seventeen 230 kV circuit breakers at the SGS switchyard will need to be upgraded to two cycle operation. The stability analysis also indicated that the four FPL controlled 230 kV circuit breakers, two located at FPL's Rice substation and two located at Seminole's SGS switchyard, that are presently operated normally open will need to be operated normally closed.

On May 25, 2005, Seminole received written notification from FPL confirming the results of Seminole's SGS Unit 3 Transmission System Impact Study results, agreeing to change the four 230 kV FPL circuit breakers from normally open operation to normally closed operation (two at SGS and two at FPL Rice) and confirming that SGS Unit 3 will be designated as a Seminole Network Resource to serve Seminole Member load integrated within the FPL transmission system.

On September 6, 2005, Seminole received written notification from PEF confirming the results of the SGS Unit 3 Transmission System Impact Study and accepting SGS Unit 3 as a Seminole network resource to serve Seminole Member load integrated within the PEF transmission system.

2. New Transmission Lines

There are no new transmission lines needed to integrate the output from SGS Unit 3 into the Florida Grid.

3. Estimated Costs

The estimated cost to replace the seventeen 230 kV breakers at the SGS switchyard is $4,250,000, and the estimated cost to replace the four 230 kV breakers at the Silver Springs North Switchyard is $600,000. These costs have been included in the overall project cost.

H. Construction Schedule

Burns & McDonnell was selected on a competitive bid basis to serve as the engineer for the project and will be responsible for detailed design and will provide on-site construction management. Burns & McDonnell has extensive experience serving in these roles on similar projects. Construction will need to begin upon receipt of the necessary federal, state, and local approvals, certifications and permits. To achieve the commercial operation date of May 2012, construction will commence in October 2008. The expected construction duration for SGS Unit 3 is approximately 42 months, which is in the range of other coal fired power plants of similar size. A summary of the key construction milestone dates for Unit 3 is shown in Table IV.H.1.1.

Table IV.H.1.1.
SGS Unit 3 Construction Milestones

Milestone	Date
Start Procurement of Boiler	Aug 2007
Start Procurement of Steam Turbine	Aug 2007
Receive Approvals to Start Construction	Oct 2007
Award of Boiler and Steam Turbine	Nov 2007
Mobilize/Start Site Work	Oct 2008
Start Foundations	Dec 2008
Start Boiler Steel Erection	Jun 2009
Boiler Hydro	Feb 2011
Initial Synchronization	Oct 2011
First Fire on Coal	Oct 2011
Commercial Operation	May 2012

I. Estimated Capital Cost

The estimated capital cost for the SGS Unit 3 is $1.43 billion (2012 dollars). This estimate includes plant structures, equipment, construction, consulting, legal, etc. plus 230 kV breaker upgrades, spare parts, testing, sales tax, interest during construction, risk insurance, and Seminole labor and overhead.

J. Fact Sheet

A fact sheet containing summary information about the technology and operating parameters for SGS Unit 3 is found in Figure IV.J.1.1.

Figure IV.J.1.1.
SGS Unit 3 Fact Sheet

Plant Design

Megawatt (net)	750 MW
Net Plant Heat Rate (71°F/80% RH)	9,000 Btu/kWh
Steam Cycle Conditions	3700 PSI/1,050 F/1,050 F

Water Supply

Cooling Tower Makeup	St. Johns River
Boiler Makeup	Ground Water
Potable Water	Well System
Average Annual Makeup from St. John's River	34 MGD

Fuels

Type	Eastern Bituminous Coal/Petroleum Coke
Blend	Up to 30% Petroleum Coke
Delivery	Rail
Startup Fuel	Fuel Oil

Air Quality Control Systems

SO_2	Wet FGD
NO_x	Low NO_x Burners/Overfire Air/SCR
PM	ESP
Sulfuric Acid Mist	Wet ESP

Reagent

Wet FGD	Limestone
Limestone Delivery	Truck
SCR	Urea
Urea Delivery	Truck/Rail

Waste Disposal

Gypsum	Lafarge
Gypsum Transport	Conveyor
Fly Ash	Sold/Landfilled
Bottom Ash	Sold/Landfilled
Ash Transport	Truck
Landfill Location	On-site

Major Equipment

Boiler	Supercritical Pulverized Coal
Steam Turbine	Tandem Compound/Four Flow/Single Reheat
Cooling Tower	Mechanical Draft
Wet Flue Gas Desulfurization (FGD)	Single Module
Wastewater Treatment System	Brine Concentrator/Spray Dryer
Stack	675 Ft
Selective Catalytic Reduction Unit (SCR)	Dual Train
Electrostatic Precipitator (ESP)	Dual Train
Wet Electrostatic Precipitator (Wet ESP)	Single Train

V. THE NEED FOR SGS UNIT 3

A. Overview of Need Assessment

1. Forecast Load

Seminole's historical peak demand occurred in February 2006 at 4213 MW (estimated). The forecast of 2006 winter peak demand, under normal peak season weather conditions, was 4,277 MW. Historical growth in winter peak demand over the past 5 years has averaged 3.8%, and future growth over the next 10 years is projected at 4.1% per year. These growth rates are among the highest in Florida and are indicative of an expectation of continued growth of Florida's population and economy in general and of the growth potential of Seminole's Members' service territories in particular.

2. Existing Generating Resources

Seminole currently owns and operates two power stations: (1) Seminole Generating Station in Palatka Florida, consisting of two 650 MW class pulverized coal units; and (2) Payne Creek Generating Station (PCGS), a 500 MW class gas combined cycle plant. Seminole is currently constructing approximately 300 MW of gas turbine peaking capacity at the PCGS site. Seminole also owns a 15 MW participation share in the PEF Crystal River nuclear plant. The balance of Seminole's generating resources are purchased power contracts totaling over 3000 MW in 2006, with several of such contacts scheduled to expire by 2012.

3. Assessment of Capacity Need

Seminole has established reliability criteria which primarily affect the amount of generating capacity needed in future years to meet the forecast load. Seminole routinely assesses its generation portfolio against such criteria to determine when and how much capacity must be added. These assessments have shown that Seminole will require over 1,200 MW of new generating capacity in 2012. Of that amount, Seminole expects that at least 750 MW of its capacity need would be base-loaded (i.e., operated at a very high capacity factor).

4. Identification of Alternatives

Seminole commissioned Burns & McDonnell to conduct a feasibility study to identify and estimate costs for Seminole's self-build alternative and to establish the feasibility of the existing SGS site in Palatka, Florida hosting a self-build unit. The feasibility study was completed in August 2004 and concluded that a 600 MW pulverized coal unit was (a) feasible for construction at Seminole's existing SGS site and (b) was economically favorable to a self-build gas combined cycle unit. Consistent with its historical practices, in April 2004 Seminole solicited competitive bids for base load purchased power. The purchased power RFP bids were opened in September 2004. The RFP responses (five bidders offering fourteen proposals) included pulverized coal units (new subcritical and supercritical units) and gas combined cycle units (new and existing units). Burns & McDonnell subsequently confirmed that a 750 MW pulverized coal unit was feasible for construction at the existing SGS site.

5. Most Cost-Effective Alternative

Comparative analysis among the self-build and purchased power options initially showed that the most cost-effective alternative was a 600 MW self-build coal unit at the SGS site. Subsequently (in early 2005), it was determined that a larger pulverized coal unit (750 MW) was feasible for construction at the existing SGS site and was economically favorable relative to the 600 MW pulverized coal unit.

6. Seminole Needs SGS Unit 3 for Reliable and Reasonably Priced Electricity

Approximately 750 MW of Seminole's total 2012 need is best served by base load capacity. Coal capacity, which is the most cost-effective base load technology for Seminole's 2012 need to produce electricity at a reasonable cost, requires approximately seven years to license and construct. Seminole's other 2012 needs are best met with intermediate and peaking type capacity. These needs will be met with purchased power commitments or new self-build gas combined cycle units and/or simple-cycle combustion turbines which could still be built in a three to five year time frame.

B. Seminole's Reliability Criteria

The total amount of generating capacity and reserves required by Seminole is affected by Seminole's load forecast and its reliability criteria. Reserves serve two primary purposes: to provide replacement power during generator outages and to account for load forecast uncertainty. Seminole has two principal reliability criteria: (1) a minimum reserve margin of 15% during the peak season, and (2) a 1% Equivalent Unserved Energy (EUE) limitation. Both the minimum reserve margin and EUE criteria serve to ensure that Seminole has adequate generating capacity to provide reliable service to its Members and to limit Seminole's reliance on interconnected neighboring systems for emergency purchases.

C. Seminole's Load Forecast

Seminole's forecast of number of customers, peak demand, and energy requirements is shown in Table V.C.1.1 and in Appendix D, along with historical load data.

Table V.C.1.1.
Seminole's Historical and Forecasted Consumers, Demand and Energy

Year	Total Consumers Avg. Annual	Winter Peak (MW)	Summer Peak (MW)	Energy Purchased from Seminole (GWH)
2000	689,758	3,137	2,566	12,722
2001	710,920	3,517	2,662	12,948
2002	734,264	3,435	2,880	14,144
2003	761,639	3,982	2,876	14,793
2004	793,112	3,365	3,089	15,348
2005*	827,037	3,776	3,448	16,080
2006	858,479	4,277	3,444	16,924
2007	886,957	4,474	3,591	17,674
2008	914,006	4,668	3,737	18,476
2009	940,980	4,864	3,886	19,201
2010	967,986	5,067	4,040	19,993
2011	991,904	5,263	4,183	20,751
2012	1,015,876	5,461	4,333	21,593
2013	1,039,763	5,666	4,487	22,351
2014	1,063,561	5,877	4,644	23,184
2015	1,087,362	6,089	4,802	24,021
2016	1,110,035	6,301	4,957	24,913
2017	1,132,577	6,514	5,115	25,694
2018	1,154,924	6,728	5,274	26,551
2019	1,177,275	6,948	5,437	27,427
2020	1,199,628	7,173	5,603	28,390

* total consumers and energy are estimated actuals

D. Assessment Of Capacity Need

There are two phases of Seminole's determination of capacity need: (1) to maintain reliability - to determine the amount of additional generating capacity in MW needed to cover Seminole's peak system demand while meeting Seminole's reliability criteria, and (2) to minimize costs - to determine the type of capacity which should be added (i.e., base, intermediate, peaking) to provide the most cost-effective generation mix.

E. Seminole's Need Assessment Results

1. Capacity Needed For Reliability

The results of Seminole's need assessment process demonstrated a total capacity shortfall by summer 2012 exceeding 1,200 MW. This shortfall results from the scheduled expiration of purchased power contracts (i.e., 546 MW Oleander Power Project Limited Partnership, 350 MW Calpine Construction Finance Company LP, 50 MW Lee County Resource Recovery, planned annual adjustments in Seminole's PEF Partial Requirements capacity commitment) and expected load growth. By winter 2014, the projected capacity shortfall will increase to over 4,000 MW. This increase results from the combined effect of the subsequent expiration of other purchased power contracts (i.e., 356 MW Hardee Power Partners L.P, 364 MW Reliant Energy Florida LLC, 450 MW PEF System Intermediate, projected 1,355 MW PEF Partial Requirements purchase) and expected load growth.

2. SGS Unit 3 Meets Only a Portion of Capacity Need

As discussed above, SGS Unit 3 alone will not meet Seminole's projected load and reserve requirements. Additional intermediate and/or peaking capacity will be needed as early as

2008, with such supplemental capacity need continuing through 2012 and expanding thereafter. Seminole will require the capacity amounts shown in Figure V.E.2.1.

Figure V.E.2.1.
Capacity Needed (Cumulative) To Meet Reliability Criteria

	Capacity Need Without SGS Unit 3	
Year	**Winter MW**	**Summer MW**
2012	971	1261
2013	1801	1702
2014	4058	3440
2015	4663	3620
2016	4907	3794

3. Capacity Needed To Minimize Costs.

In addition to being needed for Seminole to meet its reliability criteria, SGS Unit 3 is needed for Seminole and its Members to be able to provide adequate electricity at a reasonable cost. When Seminole issued its RFP in April 2004, Seminole had identified that it had a need for up to 600 MW of base load capacity as early as 2009. In conjunction with Seminole's economic assessment of self-build and purchased power alternatives, Seminole subsequently concluded that approximately 750 MW of base load capacity would be economically feasible as a base load resource by 2012.

4. Coal Capacity Needed To Minimize Reliance on Natural Gas and Improve Rate Stability

In addition to the demonstrated economic advantage of coal over gas for meeting base load requirements, natural gas prices have been extremely volatile in the short term and have deviated significantly from historic long term forecast trends. The combination of short term and long term price uncertainty for natural gas has created significant uncertainty in Seminole's wholesale rates. The addition of coal capacity on Seminole's system will decrease Seminole's reliance on natural gas and reduce the price uncertainty experienced by Seminole's Members and their member/consumers.

5. 600 MW Unit Versus 750 MW Unit

The RFP proposals were analyzed in comparison to each other and Seminole's self-build options, which included a 600 MW coal generating unit at Seminole Generating Station and a 150 MW participation share of the joint coal unit. At the conclusion of the analysis in December 2004, Seminole's best economic option to meet a 750 MW need for base load capacity was the 600 MW self-build coal unit in combination with the 150 MW participation share. In January 2005, Seminole requested Burns & McDonnell to update its feasibility study to determine if a 750 MW unit could be constructed and permitted at Seminole Generating Station. The updated study concluded that a 750 MW self-build unit at the Seminole Generating Station was feasible. Due to economies of scale, the incremental cost of up-sizing the self-build unit would be relatively inexpensive, in comparison to the cost of acquiring a 150 MW ownership interest in the joint project. As a result of these findings, Seminole received Board approval (at its March 2005 meeting) to withdraw from the joint project and proceed with plans for a 750 MW unit at Seminole Generating Station.

The models used in Seminole's resource planning process that led to the selection of SGS Unit 3 are described in Appendix E.

F. Consistency with Peninsular Florida Need

By the year 2014, Peninsular Florida utilities report that in aggregate, they will require over 18,000 MW of new generating capacity. This is based upon the July 2005 issue of the FRCC Regional Load and Resource Plan. Seminole and its ten Member systems are among the fastest growing systems in Peninsular Florida, and Seminole's needs are a significant portion of the statewide need for generating capacity. The addition of a 750 MW unit at Seminole's existing SGS site will contribute to meeting the statewide need for power.

The aggregate reliance of Peninsular Florida on natural gas for electric energy will have increased from 32% in 2005 to 45% in 2011. By 2013, currently announced coal additions (including SGS Unit 3) will have increased coal's energy share and correspondingly, decreased the portion served by natural gas from 45% to 43%. So even with coal additions by Seminole and a few others in the 2012 time frame, Peninsular Florida's reliance on natural gas for electric energy will still increase from 32% to 43% by 2013.

It is important for Seminole to maintain a diverse fuel mix which achieves a reasonable balance among reliability, price, and price stability. Even though specific criteria have not been established for fuel diversity within Florida, increased future reliance on natural gas for our Members' energy requirements is of concern to Seminole. Such concern is based upon an observation that the severe increases in energy cost suffered by consumers during the past few years would be even more severe if reliance on natural gas were to increase further. And as noted above, Florida's reliance on natural gas is increasing, even with the currently planned coal additions. Seminole's addition of SGS Unit 3 reduces these consumer risks not only for Seminole's Members, but also for Peninsular Florida.

VI. FACTORS AFFECTING SELECTION OF SGS UNIT 3

A. Forecasts and Assumptions

The load forecast and the fuel price forecast are key drivers in Seminole's assessment of its capacity needs. The load forecast is a bottom-up process wherein Seminole works closely with its Members to develop individual Member load forecasts. The Seminole load forecast is the sum of the Member forecasts after adjustments are made for losses. Seminole contracts with Global Insight, an independent forecasting consultant, for long term fuel price forecasts of coal, gas, and oil. Global Insight was formed in 2001 by the merger of two notable forecasting firms, Data Resources Inc. (DRI) and Wharton Economic Forecasting Association (WEFA).

1. The Load Forecast

Long-term (20 year) forecasts of energy and peak loads are developed biennially. Seminole's last two energy and peak load forecasts were extended to 30 years for power supply planning purposes. These forecasts are a key input to the models used by Seminole for power supply planning.

a. Consumer Base and Related Trends

Seminole's Members have a predominantly residential consumer base. The residential class accounts for approximately 70% of annual energy sales, with the remainder of the sales coming primarily from small to medium sized commercial consumers. Industrial load represents a relatively small portion of Seminole's annual energy sales. Seminole's historical consumer growth rates have exceeded statewide growth rates, and this trend is expected to continue.

b. Forecast Methodology

Seminole's staff develops and utilizes econometric modeling techniques to forecast for each Member the number of consumers and energy sales by retail class and monthly peak demands. The Seminole forecast is the sum of the individual Member forecasts. The models used to develop Seminole's load forecasts that were used in the analyses that led to the selection of SGS Unit 3 are discussed below and in more detail in Mr. Lawton's testimony.

c. Energy Forecast

The Seminole energy sales forecast is the sum of the Members' forecasts of energy purchases from Seminole. Member retail energy forecasts are developed first by estimating the number of consumers and the per consumer energy usage by class. Then the estimated number of consumers is multiplied by the estimated per consumer energy usage for each class. Those values are summed and then adjusted up for losses and billing cycle differences to estimate Member energy purchases from Seminole.

For the residential and commercial industrial classes, the number of consumers is a function of population, binary variables, and an auto-regressive term. These models are discussed in more detail in Mr. Lawton's testimony. Residential energy usage per consumer is a function of heating and cooling degree days weighted with space conditioning equipment saturations, the real price of residential electricity, and real per capita income variables. Commercial/Industrial energy usage per consumer is a function of heating and cooling degree days, the real price of commercial electricity, real per capita income, total non-farm employment, and binary variables. Other energy usage is estimated using various trending techniques. Total energy purchases from Seminole are calculated for each Member by summing energy sales by class and then adjusting for losses and billing cycle differences.

d. Peak Demand Forecast

The Seminole peak demand forecast is derived after the monthly peak demands and hourly load forecasts have been created. The Seminole peak demand forecast represents the maximum demand on Seminole in each month after summing the Members' hourly load forecasts.

The first step is for Seminole's staff to develop econometric models for the winter and summer seasons to forecast monthly load factors for each Member. The months April through October constitute the summer season, and the months November through March constitute the winter season. Summer load factors are a function of cooling degree variables, air conditioning saturations, peak period cooling degree hours, and binary variables for non-weekday peak demands. Winter load factors are a function of heating degree variables, space heating saturations, peak period heating degree hours, and binary variables for non-weekday peak demands.

Second, monthly demand forecasts are developed by combining the Member load factor forecasts with the forecasts of energy purchases from Seminole. Next, hourly demand forecasts for each Member are developed using an algorithm containing the following inputs: normal monthly hourly profiles, maximum and minimum monthly demands, and energy. Finally, Seminole peak demands are derived by summing the Member hourly demands and identifying the monthly maximum demands. Existing demand side management (DSM) is embedded in Seminole's load history and is not modeled separately.

e. Forecast Assumptions

The primary drivers to develop these forecasts are economic and demographic trends, weather, and the price of electricity. NOAA weather data for six weather stations are assigned to Members and weighted based on geographic proximity. County level data is used to create the Member population, economic, and demographic databases. Population forecasts are provided by the Bureau of Economic and Business Research at the University of Florida. Economic forecasts are provided by Moody's Economy.com, and electricity price data is provided by Seminole's Members. The resulting forecasts are based upon a close interaction with the Members in the form of data exchanges, written correspondences, emails, and phone consultations.

f. Forecast Results

The historical and projected average annual growth rates in consumers, energy, and demand are summarized in Table VI.A.1.f.1 below. The forecasts of energy and demand used in the power supply planning process are presented in Appendix D.

Table VI.A.1.f.1
Seminole's 2005 Load Forecast Results
Compound Average Annual Growth Rates

Years	Total Consumers (%)	Energy (%)	Summer Peak (%)	Winter Peak (%)
1984-1994	4.3	6.0	5.7	4.8
1994-2005	3.2	5.4	5.2	4.0
2005-2015	2.8	4.1	3.9	4.1
2015-2025	1.9	3.3	3.1	3.2

2. Fuel Price Forecast

Seminole maintains forecasts of coal, petroleum coke, natural gas, and oil prices to be used in planning studies. Each fuel price is forecast at its source and reported as delivered prices by adding expected transportation to Florida. Since 2003 when Seminole's base load planning cycle began, Seminole has relied upon four different fuel price forecasts in the analyses leading to its decision to build SGS Unit 3.

a. Fuel Price Methodology

Seminole first prepares a forecast of fuel supply (commodity) and fuel transportation prices for those fuels (i.e., petroleum coke, coal, fuel oil, and natural gas) already under contract. These internally generated forecasts start with known prices and rates for contract fuels and their related transportation prices. Over the contract term, prices are escalated based on underlying contractual pricing formulae.

For fuel requirements not currently under contract, Seminole uses long term spot market prices. Most spot market prices are provided by an independent forecasting consultant, Global Insight. To address short-term price volatility, Seminole periodically updates the early years of its forecast by using other sources of price information (e.g., NYMEX pricing for natural gas and oil and recent bid prices for coal and pet coke). In the analyses undertaken to assess Seminole's 2012 need, Seminole's use of these short term price adjustments had minimal impact, because by the time of the in service date of the options being considered (2012), the fuel forecasts used only long term pricing.

Seminole develops the associated fuel transportation cost (including related services) internally. Fuel transportation includes costs paid directly to transporters (railroads, pipelines, trucking companies, etc.) plus those costs for related services required to deliver fuels to Seminole (i.e., railcars, import terminal services). Generally, Seminole uses the latest known and measurable contract rates and escalates those rates based on historical contract escalations. When a contract renewal is required, Seminole analyzes market conditions and historic price increases to insure that future costs provide for such events.

b. Fuel Price Forecast Results

The fuel price (commodity) forecasts that underlie Seminole's economic evaluations are included in Appendix F and the associated fuel prices including delivery are detailed in Mr. Reid's testimony and exhibits.

3. Financial and Economic Data

A number of factors contributed to Seminole's ultimate selection of a self-build 750 MW coal unit. The primary drivers for the economic analysis among generation alternatives are plant fixed cost and fuel cost. Seminole's relatively low financing costs help mitigate the ultimate cost of capital intensive projects. Differences between the capital costs and fuel costs of competing technologies are the most significant factors affecting the economic comparisons among Seminole's generation alternatives. Unless a firm fuel cost was included in an RFP proposal, Seminole used its fuel price forecast across all alternatives (self-build and purchased power) to ensure fairness in the evaluation. Other key assumptions which underlie Seminole's economic analyses are included in Appendix G.

B. Need for Base Load Capacity

Most electric utilities employ a mix of generation that includes resources generally characterized as base, intermediate, and peaking. Historically, these resource types relate to the portion of the utility load curve that each serves. Base load resources typically operate around the clock to serve consumer demands that exist during on-peak and off-peak periods. Intermediate resources typically cycle on during daytime hours and off during low-load nighttime hours. Peaking resources typically operate only during peak hours of the day and possibly only during peak seasons.

Seminole uses a combination of analytical techniques to determine how much of its total capacity need in future years should be met with each type of resource. These determinations of the proportion of each type of resource in the overall generation mix are only approximations which will change over time with certain key parameters. In order to provide wholesale electric service in the future at reasonable cost, Seminole has determined that it needs at least 750 MW of base load capacity to meet a portion of its total capacity needs by 2012.

C. Long-Term Energy Price Stability

Seminole's economic assessment demonstrated that the proposed coal unit is significantly more cost-effective than other alternatives, purchased or owned. However, such economic studies are based upon projections of parameters (input assumptions) that may vary from their projected values. Variations in key parameters such as fuel costs will certainly occur despite Seminole's best efforts to use the most current available industry information as a basis for its economic analyses. For this reason, Seminole must concern itself with the makeup of its generation mix (and underlying fuel mix) and its susceptibility to the impacts of changing costs. This was the basis for Seminole's emphasis on energy price stability in its April 2004 RFP, which is discussed below. In 2006, Seminole will be relying upon natural gas for only 37% of its system energy requirements. By 2013, if SGS Unit 3 is not built, Seminole will be relying upon natural gas for over 52% of its system energy requirements. Given the historical instability of natural gas supply due to storm risk and in consideration of the demonstrated price uncertainty for natural gas, over 50% reliance on natural gas is an uncomfortable result for Seminole and its Members. The timely completion and commercial operation of SGS Unit 3 will reduce Seminole's reliance on natural gas to 29% by 2013.

VII. MAJOR AVAILABLE GENERATING ALTERNATIVES EVALUATED

A. General Process

Seminole has conducted a competitive bidding program since the late 80's. This program is designed to ensure that Seminole's commitments for generating capacity are made only after consideration of all reasonable alternative sources of supply. Purchased power alternatives are solicited through an all-source bidding process. Self-build options are usually developed by engineering consultants' studies. Purchased power alternatives are compared among themselves and with self-build alternatives to ascertain economic value. Risk issues are usually evaluated subjectively and/or analytically using scenario analysis or probabilistic uncertainty techniques.

B. Self-Build Alternatives Considered

1. Nature of Alternatives Reviewed

Seminole's evaluation of self-build options was the result of the combined efforts of Seminole's staff and its consultant, Burns & McDonnell. Prior to Seminole's seeking competitive bids for base load capacity in April 2004, Seminole's generation planning group had identified pulverized coal as the proxy technology for a generic base load unit. Also, at that time Seminole was participating with several municipal utilities in a feasibility study for a new pulverized coal unit. Other base load technologies which were considered by Seminole staff in that time frame were advanced nuclear, circulating fluidized bed (CFB), integrated gasification combined cycle (IGCC), and gas combined cycle.

A resurgence of nuclear technology has been underway for a few years. Even before the Energy Policy Act of 2005, which provided new incentives for nuclear development, there was a program for early licensing underway which was sponsored by the Department of Energy (DOE). Three industry consortia had been formed and were engaged with the DOE to pre-license and potentially develop sites for new advanced nuclear plants. Seminole believes that advanced nuclear technology could represent an economic and environmentally positive alternative for Seminole's future base load capacity needs. However, Seminole concluded that participation in these projects would most likely have to be in partnership with others and that these projects would not be viable until well after Seminole's anticipated need in 2012. In fact, only recently have participation opportunities been suggested by participants in these consortia, and the earliest target date for commercial operation is the 2015/16 time frame.

Regarding CFB technology, Seminole concluded, based on industry information available at the time, that large scale CFB projects would be more costly than a pulverized coal project and further, that CFB technology did not provide any modularity (size) advantage or significant environmental emissions advantages. Further, CFB alternatives presented a waste disposal problem for Seminole which would otherwise be mitigated by a pulverized coal design (i.e., via wall board quality gypsum production and sale). Consequently, Seminole did not ask Burns & McDonnell to consider CFB technology.

Seminole considered IGCC to be a potentially promising technology, both operationally and environmentally. However, in 2004 there were only two commercial scale plants operating in the U.S., and both were built with federal assistance. The industry information available seemed to confirm that in the absence of more project experience in electric utility applications, IGCC technology would subject Seminole to availability and cost risks that were considered unacceptable for a utility of Seminole's size. Bearing those matters in mind, Seminole ultimately commissioned Burns & McDonnell to address the viability of IGCC technology in its feasibility study. A further test of the readiness and cost-effectiveness of IGCC technology would be the industry responses to Seminole's all-source competitive bidding process.

Lastly, Seminole considered gas combined cycle technology. Seminole concluded that gas combined cycle was a proven generation technology but was likely to be more costly than pulverized coal.

2. Selection of Seminole's Self-Build Alternatives

In conjunction with Seminole's RFP, Burns & McDonnell was commissioned to perform a feasibility study to assist Seminole in selecting its self-build alternative(s). The resulting August 2004 Feasibility Study concluded that a pulverized coal unit (either supercritical or subcritical design) was feasible at Seminole's existing SGS site, and would be more economical than a gas combined cycle alternative. Burns & McDonnell also agreed with Seminole that there is insufficient operational experience and information on the cost and reliability of IGCC technology for that alternative to be pursued at this time. The feasibility study also concluded that IGCC was not adequately proven in commercial scale applications and should not be considered to meet Seminole's 2012 base load capacity need. Seminole accepted the Burns & McDonnell's assessment of IGCC technology.

Thereafter, Seminole proceeded into its competitive bidding process with three self-build alternatives: a 600 MW class pulverized coal unit utilizing either supercritical or subcritical design, a 150 MW joint coal unit participation alternative, and a 500 MW class gas combined cycle option. All three self-build options were evaluated against all of the RFP alternatives as further described below.

C. Purchased Power Alternatives Considered

1. Development and Publication of RFP

To meet the 2012 base load capacity need, an "all-source" RFP for purchased power alternatives was issued to the wholesale market on April 19, 2004, with a deadline of September 1, 2004 for responses (See Appendix H). The RFP solicited proposals for up to 600 MW of firm base load capacity beginning as early as Summer 2009, and the RFP was structured to allow bidders a great deal of flexibility for meeting Seminole's needs in regard to type of capacity (i.e., Seminole did not specify a preferred technology) or contract term. The RFP document contained instructions and requirements for the bidders, a summary schedule of the bid process, and copies of the bid forms. The RFP was announced directly to over forty business contacts which had expressed interest to Seminole and was also publicly announced through an electronically distributed news release to various industry and general news publications (See Appendix I). In addition, an announcement also was posted on Seminole's website with instructions for bid submittal and links to the application forms.

2. Questions and Addenda

The RFP document provided that any questions or a desire for additional information be directed to Seminole via fax or e-mail. In response to inquires from prospective bidders, Seminole developed three clarifying RFP addenda (See Appendix H). The addenda were posted on Seminole's website and directly e-mailed to the list of known potential bidders.

3. Proposals Received

Seminole received fourteen proposals from five different entities. The bidders were independent power producers and investor-owned utilities. Base load and intermediate capacity was offered in amounts ranging from 100 MW to 750 MW, for terms from ten to forty years. The offers included capacity from one existing gas combined cycle unit and several new pulverized coal units and gas combined cycle units. The following table summarizes the responses received.

Table VII.C.3.1.
Bidder Responses to Seminole RFP

Bidder	Type	No. of Offers	MW	Term (Years)
Invenergy, LLC	IPP	2	520-650	20 or 30
Longleaf Energy Associates, LLC	IPP	1	400-600	20 or 30
Pasco Cogen, LTD	IPP	2	104-115	20
Peabody Generating Company, LLC	IPP	1	100-750	10-40
Southern Power Company	IOU	8	493-635	20

Following receipt of the bids, Seminole's staff performed an initial screening of the offers for completeness and responsiveness. Seminole also reviewed the offers involving construction of new capacity to determine if the proposed equipment was technically and environmentally viable and if the provided unit performance data was reasonable. None of the bids were excluded from further consideration as a result of either administrative or technical screening. All of the bidders were contacted on September 16, 2004 for clarification of specific terms and conditions of their offers, including pricing and unit characteristics.

4. Economic Evaluation of Purchased Power Alternatives

After completion of the bid clarification and qualification process described above, Seminole used a comparison of "bus bar costs" as an economic screening tool to rank the purchased power proposals. "Bus bar cost" is a representation of all of the costs of a generation alternative in terms of $ per MWh. Bus bar costs are formulated by dividing the total fixed and variable costs by the expected MWh of energy that would be generated. The bus bar cost calculation is performed at one or more specified capacity factors representing the expected range of operation of the generation resource being evaluated. Bus bar costs were levelized over 20 years. These results showed that the self-build coal alternatives had significantly lower bus bar costs than any of the purchased power alternatives. It was also evident that the self-build coal alternatives were lower cost than Seminole's self-build gas combined cycle alternative. On the basis of these findings, Seminole invited the lowest cost purchased power bidders to re-submit pricing to improve their proposals. Although one bidder improved its proposal marginally, the conclusion that a self-build coal alternative was Seminole's lowest cost alternative was unaffected. Seminole's bus bar cost comparison among self-build and purchased power alternatives is included in Appendix J.

5. Non-Economic Attributes Considered

Seminole's RFP stated that Seminole favored proposals and/or technologies which would yield stable energy costs. No technology preferences were specified. Seminole contemplated that bidders of gas-based technologies might bid a hedged gas price from gas reserves or liquefied natural gas. None of the gas plant bidders offered any hedging of prices; therefore, Seminole's fuel price forecast (Global Insight) was used for all fuels applicable to all gas plant bids. Had the costs between coal and gas alternatives been closer, the historical cost stability of coal over gas would have provided an additional benefit to coal alternatives. However, since the economics were significantly favorable to coal, this issue did not come into play.

6. Termination of Negotiations

A conclusion was reached by Seminole's staff, based on the bus bar cost comparisons described above, that the economic favorability of a self-build coal unit over any of the purchased power alternatives was so significant that further negotiations would not yield a change in the ranking of options. Based on the staff's recommendation, at its December 2004 meeting Seminole's Board approved discontinuing negotiations of the base load capacity proposals with the RFP bidders. The Board directed staff to proceed with planning activities associated with further development of a 600 MW self-build coal unit. Staff also reported to the Board its plans to proceed with a risk assessment of the planned coal strategy versus an all-gas strategy based on a self-build gas combined cycle alternative (i.e., such assessment would be based on a present worth revenue requirements assessment) and to continue work on further development of Seminole's prospective participation in the 150 MW joint coal unit.

D. Analysis of Other Purchase Options

Seminole's RFP provided that Seminole reserved the right to make resource commitments outside this RFP which result from (1) negotiated amendments with current power suppliers, (2) negotiated arrangements with parties that Seminole was currently engaged in negotiations with for all or portion of the 2012 base load capacity needs, or (3) negotiated arrangements for small power resources not exceeding a cap of 50 MW from such resources. Seminole continued parallel discussions with several third party power suppliers during the RFP process and ultimately entered into contracts for base load capacity with DG Telogia Power, LLC (approximately 12 MW from biomass fueled steam generation) and Bio-Energy Partners (approximately 7 MW from a landfill gas facility).

E. Revenue Requirements Comparison and Risk Assessment

Seminole contracted with R.W. Beck to develop customized analytical tools for the staff's use in conducting a probability based risk assessment between a coal-based scenario and an all-gas scenario based on an equivalent amount of gas combined cycle capacity. This assessment necessitated development of a present worth revenue requirements analysis of the cases so as to develop the underlying base case scenarios. The techniques used by the models developed by the consultant identified key input variables, developed a probability distribution representing the range of uncertainty of each key variable, and compared the case runs with results that were impacted by the aggregation of all the uncertainties in the model. This is an alternative approach to traditional scenario analysis wherein each key variable is allowed to vary high or low from the base case scenario (in isolation) to test the strength of the results.

Seminole's primary purpose of this study was to work with an independent entity specializing in risk analysis to confirm the validity of the economic comparison between coal and gas technologies when the key input assumptions in the competing cases are varied from the base case scenario (e.g., high/low fuel prices, high/low purchased power costs, etc.). The purchased power alternatives were not included in this risk assessment because of their significant economic disadvantages and because none of the purchased power proposals (neither coal nor gas offers) offered any specific provisions which significantly hedged Seminole's risks relative to Seminole's self-build alternatives.

The revenue requirements comparison and the associated risk assessment confirmed the significance of the economic savings of the coal case versus the gas case which had been indicated in the earlier bus bar cost comparisons. The risk assessment also demonstrated that the conclusions about projected savings were robust in the face of reasonable variances in key input assumptions. The economic results from these studies calculated a cumulative present worth revenue requirement savings of $476 million (in 2012 dollars through 2030) for Seminole's coal scenario over an all-gas scenario, using the base case assumptions. The risk analysis showed that even with reasonable variances in key input assumptions, there was an 80% probability that the coal-based strategy would continue to yield lower costs to Seminole than the gas scenario. The results of the risk assessment were reviewed with Seminole's Board at their February 2005 meeting.

F. Selection of SGS Unit 3

At the March 2005 meeting of the Seminole Board, staff reviewed the chronology of planning activities for base load capacity since 2003. The RFP bus bar evaluation which showed (a) a distinct economic advantage of coal generation over gas combined cycle generation and (b) a distinct advantage of self-build options over RFP options (and which had resulted in the elimination of all purchased power alternatives) was reviewed. Staff's updated assessment that the Seminole system needed as much as 750 MW of base load capacity by 2012 was reviewed. The technical staff also reviewed the Burns & McDonnell updated feasibility study showing that a 750 MW coal plant at the SGS was feasible and a technology study performed by Burns & McDonnell relating to SGS 3 unit design details. Based upon this review, Seminole's Staff recommended to the Board, and the Board approved, proceeding with the planning, permitting, and construction of SGS Unit 3 for commercial operation in May 2012.

G. Updated Economic Assessment

During the summer of 2005, all base case assumptions were reviewed and many major assumptions were updated, including the SGS Unit 3 project cost, the load forecast, and the fuel price forecast. Detailed modeling of the 750 MW SGS Unit 3 was included in the base case, and the self-build gas combined cycle unit case was also updated. These updated results showed that SGS Unit 3 would provide a cumulative present worth revenue requirements saving of $498 million relative to an all-gas scenario.

To provide a bridge between these results and the December 2004 base case assumptions that had been used to evaluate the 600 MW self build unit, a case study was created using the December 2004 assumptions to compare the 750 MW SGS Unit 3 with (1) Case 1 - Seminole's 600 MW coal unit in combination with the 150 MW participation in the joint coal unit, (2) Case 2 - an all-gas scenario comprised of an equivalent amount of gas combined cycle capacity, and (3) Case 3 - the best RFP alternative, a 600 MW supercritical pulverized coal unit, in combination with the 150 MW participation in the joint coal unit. This case study showed that the planned 750 MW SGS Unit 3 would provide a cumulative present worth revenue requirement savings of $123 million relative to Case 1, $600 million relative to Case 2 and $684 million relative to Case 3. These results are summarized in Mr. Mahaffey's testimony and associated exhibits and in Appendix J.

H. Conclusions Drawn from Economic and Risk Assessments

SGS Unit 3 is the best, most cost-effective supply side resource to meet the base load power supply needs of Seminole and its Member Systems and their member/consumers. A comprehensive analysis and comparison of the projected costs of Seminole's self-build and purchased power alternatives revealed that the proposed 750 MW unit will result in significant economic savings with little economic risk relative to other alternatives available to Seminole. Seminole's election of a coal unit as opposed to a gas unit will significantly reduce its reliance on natural gas. The supply and price uncertainty associated with natural gas as a base load fuel supply is a strategic concern for Seminole and its Members. SGS Unit 3 will mitigate the risks associated with potential over-reliance on natural gas in future years.

VIII. NON-GENERATING ALTERNATIVES

A. Conservation and DSM Efforts

As a generation and transmission rural electric cooperative that does not serve end use consumers, Seminole does not have the opportunity to offer conservation or DSM programs directly to retail consumers. Therefore, Seminole does not have conservation or DSM available that would mitigate the need for SGS Unit 3.

Seminole and its Members are excluded from the operation of the Florida Energy Efficiency and Conservation Act (FEECA). In contrast to investor-owned electric utilities, neither Seminole nor its Members are subject to the Commission's conservation and DSM goal setting and program and plan approval processes set forth in FEECA.

Even though Seminole and its Members are exempt from the conservation goals and plan approval requirements of FEECA, Seminole's Members provide specific conservation and DSM programs. The conservation and DSM offerings Seminole Members make available to their consumers include consumer awareness efforts, energy audits, energy surveys, energy loans, lighting conversion, distribution system voltage control, customer-based generator programs, contractually interruptible load, and direct load control programs. A summary of Seminole's Members' conservation and DSM activities is presented in Appendix L.

Through proper rate design, Seminole has developed appropriate price signals that encourage its Members to offer DSM when it is cost-effective to do so. As the Commission noted in Order No. PSC-01-0421-FOF-EG, Seminole provides price signals to its Members that are properly designed to provide incentives to lower on peak demand. It does this by using a demand charge that applies to Seminole's system coincident peak demand rather than the maximum non-coincident demand of individual Members. Over time, Seminole's price signals have contributed to the installation by the member/consumers of Seminole's Members of 237 MW of DSM or peak shaving capabilities in the form of load control switches, voltage control, and load management generation for peak shaving and local area reliability. Most of these DSM resources are dispatchable by Seminole and reduce Seminole's total system peaking generation requirements. These 237 MW of DSM installed on Seminole's system are reflected in Seminole's load forecast.

The impact of conservation efforts by the member/consumers of Seminole's Members are also reflected as load reductions (but not separately quantified) in the individual load forecasts of Members as well as Seminole's composite load forecast. Those impacts are captured in the variables used to forecast energy and demand. Therefore, forecasted energy and demand reflect not only historic conservation on Seminole's system, but also incremental conservation at the same rate of adoption.

Since Seminole's load forecast, which fully accounts for the historic conservation and DSM savings from existing programs, was used to assess Seminole's 2012 capacity need, Seminole's need for 1261 MW of additional capacity in 2012 to meet its reliability criteria captures the historic conservation and DSM efforts of Seminole's Members. Stated differently, Seminole's needs 1261 MW of capacity in 2012 after fully accounting for all current conservation and DSM on Seminole's system. Even after full consideration of all existing conservation and DSM, Seminole still needs SGS Unit 3 plus an additional 500+ MW to meet its reliability criteria in 2012.

B. The Potential for Additional Conservation and DSM

It is readily apparent there is not sufficient, reasonably achievable DSM and conservation available to Seminole and its Members to meet Seminole's 2012 capacity need of 1261 MW or Seminole's base load capacity need of 750 MW. To meet Seminole's 1261 MW 2012 capacity need with DSM and conservation, Seminole's Members would have to add 1,097 MW of incremental DSM and conservation over the next six years, or 183 MW per year. (Because DSM and conservation reduce system load, they also reduce the amount of capacity needed as a reserve margin over and above that load. Thus, 1,097 MW of reduced load equals 1,261 MW of supply side resources (1,261 ÷ 1.15 = 1,097).) Such a dramatic increase in conservation and DSM is not plausible.

Initially, it must be recognized that Seminole is not a centralized, vertically integrated utility serving one unseparated service area. The Seminole system is comprised of ten Members with ten separate service territories of varying sizes spread throughout Florida. The Members have different levels of resources, different cost profiles and different customer characteristics. No uniform, "one size fits all" approach to DSM and conservation program and plan design could be followed by Seminole's Members. They would have to design, indeed they have designed, their respective DSM and conservation programs based upon their unique systems and customer characteristics. So, even if a similarly sized, centralized, vertically integrated utility with a system wide DSM and conservation plan could implement the amounts of incremental DSM and conservation needed by Seminole, it is doubtful that Seminole's Members, who do not enjoy the advantages of a centralized, vertically integrated organization with a uniform conservation and DSM plan in a single territory, could do so.

More significantly, however, even a centralized, vertically integrated utility serving a single service territory comparable in size to Seminole's system could not add over the next six years almost 1,100 MW of DSM and conservation over and above the levels of conservation and DSM already being offered by Seminole. The easiest way to reach that conclusion is simply to look at the most aggressive DSM and conservation efforts of the utilities regulated by the Commission under FEECA.

Table VIII.B.1 shows the incremental DSM and conservation summer demand savings forecasted for the period 2005 through 2012 by each of the four largest investor owned utilities in Florida and the two largest municipal systems. The information is taken from data shown in each utility's 2005 Ten Year Site Plan. Each of these utilities are subject to Commission regulation under FEECA and had new conservation and DSM goals approved in the summer of 2004.

Table VIII.B.1.1.
Florida Utilities' Summer DSM and Conservation Growth
2005 – 2012

	DSM MW	Conservation MW	Total MW	Size Adjustment	Comparable DSM and Conservation
Gulf	0	76	76	1.23	93 MW
TECO	0	20	20	.82	16 MW
PEF	(141)	78	(63)	.38	(24) MW
FPL	185	409	594	.16	95 MW
JEA	0	0	0		0
OUC	0	0	0		0

As one can see from the table, the two utilities with the most aggressive rate of adding conservation and DSM are FPL and Gulf Power Company (Gulf). Of course, FPL is six times larger than Seminole, and Gulf is about 20% smaller than Seminole, so their forecasted levels of incremental DSM and conservation need to be adjusted for size. That is done in the table using their 2005 forecasted summer load relative to Seminole's.

If Seminole were to add DSM and conservation over the period 2005 through 2012 at the same rates as forecasted for Gulf and FPL, the two Florida utilities with the most aggressive growth rates in DSM and conservation, it would add approximately 93-95 MW, or roughly 16 MW per year. This aggressive rate of adoption falls well short of the levels necessary to avoid Seminole's 2012 capacity need – 1,097 MW or 183 MW per year – much less the base load capacity represented by SGS Unit 3.

Finally, there is yet another reason to conclude there is not sufficient incremental DSM and conservation available to Seminole to meet its 2012 need for capacity, particularly Seminole's need for 750 MW of base load capacity. DSM primarily affects the need for peaking capacity. Indeed, load control, voltage control and customer generation operate like peaking capacity, coming on for short durations when system incremental generation costs are high or when system demand is high and reserves are tight. Therefore, even though Members routinely review their DSM capabilities in light of the Seminole rate structure and add DSM when it is economically feasible, additional DSM will not affect Seminole's need for base load capacity. (Moreover, there is some question whether additional DSM on Seminole's system, which already equals 5.5% of load, would be cost-effective or accepted by member/consumers.) If Seminole's base load capacity need were to be avoided, it would have to be avoided by conservation programs that operate more like a base load unit rather than DSM programs that operate like a peaking unit. There is no basis to conclude there is 1,097 MW of reasonably achievable, untapped conservation available on Seminole's system over the next six years. Even FPL, which has load over six times larger than Seminole, forecasts only 409 MW of incremental conservation savings over the 2005-2012 period.

As has been discussed, because Seminole's incremental capacity need is so large (1,261 MW by 2012) and Seminole's load growth is so robust (150-200 MW per year), it would be unreasonable to conclude that enough cost-effective reductions in demand through conservation and DSM could be achieved by 2012 to eliminate the need for SGS Unit 3. Even a vertically integrated utility comparable to Seminole's size with centralized staff and resources to offer an aggressive, integrated DSM and conservation plan in a single Florida service territory could not add 1,097 MW of conservation and DSM over the course of the next six years, and Seminole's Members, while efficient, are not such a centralized, integrated utility. Moreover, DSM would not really avoid the need for Seminole's base load capacity, and there is not available to Seminole sufficient conservation savings alone to avoid Seminole's need for capacity in 2012, particularly its lowest cost supply side alternative. The reasonable conclusion to draw is that there is not sufficient reasonably achievable DSM and conservation available to Seminole and its Members to avoid the need for SGS Unit 3.

IX. ADVERSE CONSEQUENCES IF SGS UNIT 3 WERE NOT ADDED.

A. Adverse Effects on Seminole System Reliability

Over half of Seminole's generation portfolio consists of purchased power contracts. Contracts expiring in the time frame of the proposed unit addition combined with projected growth in our Member service areas leave a deficiency of over 1200 MW in total capacity need by 2012. The proposed unit addition satisfies a significant portion of this total need. In the event SGS Unit 3 is not constructed timely and in the absence of alternative capacity resources to meet the identified need, Seminole will not meet its reliability criteria. This would leave Seminole's Members and their member/consumers without reliable wholesale service.

Similarly, without SGS Unit 3 being added in 2012 and in the absence of alternative capacity resources to meet the identified need, Seminole's reserve margin would be negative: it would have less than no reserves. Similarly, without SGS Unit 3 becoming operational in 2012, Seminole's EUE would be 1.2%, which would exceed Seminole's EUE standard of 1%. Failure to achieve its reliability criteria would mean Seminole's system reliability would be below acceptable standards. This, in turn, would cause an unacceptably high risk of consumer service interruptions.

Other alternatives could perhaps mitigate this potential reliability problem, but those alternatives are limited and expensive, and they come with their own reliability issues. Alternative coal options are impractical by 2012. That leaves gas combined cycle. The gas combined cycle option, whether self-build or purchased, has been shown to be far more costly to Seminole, its Members, and their member/consumers. Moreover, recent events have shown that natural gas supply is vulnerable to weather-related curtailment both at the wellhead and due to pipeline outages.

B. Adverse Impact on Electricity Costs

Seminole's election to build a 750 MW coal unit, as opposed to a purchased power contract or building another type of unit (e.g., gas combined cycle, combustion turbine, etc.) was based on economic studies which demonstrated that the recommended unit will provide the lowest cost of base load power for Seminole's Members and their member/consumers. In the event SGS Unit 3 is not constructed timely, the economic studies which support this need application show that Seminole, its Members and their member/consumers would be significantly harmed through higher costs. If Seminole were forced to replace a coal unit at SGS with its next lowest cost option, which would be an equivalent amount of combined cycle capacity, it would cost Seminole, its Members and their member/consumers at least $498 million on a cumulative net present value basis.

C. Over-Reliance on Natural Gas Generation

If SGS Unit 3 is not completed by 2012, Seminole will be relying on natural gas for approximately 50% of its total system energy requirements. This level of reliance on natural gas would put Seminole and its Members and their member/consumers at risk due to supply and price uncertainty. This risk is in addition to the significant economic injury Seminole would suffer if SGS Unit 3 is not approved.

D. Economic Impact on Putnam County

The failure to add SGS Unit 3 would have an adverse consequence on Putnam County, Florida. The construction of SGS Unit 3 will add some 1,500 construction positions through 2012 and approximately 50 permanent positions in Putnam County, Florida. Of course, there will be secondary and tertiary economic benefits in and around Putnam County with the addition of these positions. Also, the tax base for the County and local governments would increase as well. All these significant economic benefits to Putnam County would be lost if SGS Unit 3 were not granted a determination of need.

X. CONCLUSION

An affirmative determination of need for SGS Unit 3 is warranted. Seminole has implemented a rigorous and comprehensive process to determine its capacity needs and the most economic means of meeting those needs.

Seminole needs over 1,200 MW of capacity to meet its reliability criteria in 2012. Seminole's analyses show that 750 MW of that capacity should be base load capacity. SGS Unit 3 is needed by Seminole, its Members and their member/consumers to maintain system reliability and integrity, to provide adequate electricity at a reasonable cost, and to avoid an undue reliance upon natural gas. Seminole's analyses show that SGS Unit 3 is the most cost-effective means for Seminole, its Members and their member/consumers to meet a portion of their capacity need in 2012.

Seminole has considered a wide variety of alternatives to SGS Unit 3, including numerous market alternatives identified through a vigorous and open capacity solicitation. SGS Unit 3 is the most economical option by almost $500 million in PWRR. There is not sufficient, reasonably achievable conservation and DSM available to either Seminole or its Members that would avoid the need for SGS Unit 3 in 2012.

Finally, there would be serious adverse consequences to Seminole, its Members and their members/consumers and the communities they serve if an affirmative determination of need for SGS Unit 3 were not made.