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ORIGINAL

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July 20, 2007

HAND DELIVERED

Ms. Ann Cole, Director
Division of Commission Clerk
and Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

070467-EI

Re: Tampa Electric Company's Petition to Determine Need for Polk Unit 6 Electrical Power Plant

Dear Ms. Cole:

Enclosed for filing on behalf of Tampa Electric Company are the original and fifteen (15) copies of each of the following:

1. Petition of Tampa Electric Company to Determine Need for Polk Unit 6 Electrical Power Plant. 06167-07
2. Need Study for Electrical Power – Tampa Electric Company Polk Unit 6 06168-07
3. Prepared Direct Testimony of Charles R. Black 06169-07
4. Prepared Direct Testimony and Exhibit of Howard T. Bryant 06170-07
5. Prepared Direct Testimony and Exhibit of Paul L. Carpinone 06171-07
6. Prepared Direct Testimony and Exhibit of Lorraine L. Cifuentes 06172-07
7. Prepared Direct Testimony and Exhibit of Mark J. Hornick 06173-07
8. Prepared Direct Testimony and Exhibit of Chrys A. Remmers 06174-07
9. Prepared Direct Testimony and Exhibit of Michael R. Rivers 06175-07
10. Prepared Direct Testimony and Exhibit of William A. Smotherman 06176-07

CMP ____
COM 5
CTR 1 (original)
ECR ____
GCL 1
OPC 1
RCA ____
SCR ____
SGA ____
SEC ____
OTH ____

* CD forwarded to ECR.

11. Prepared Direct Testimony and Exhibit of Thomas J. Szelistowski 06177-07

12. Prepared Direct Testimony and Exhibit of Alan S. Taylor 06178-07

13. Prepared Direct Testimony and Exhibit of Joann T. Wehle 06179-07

14. CD containing pdf versions of all of the foregoing

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning same to this writer.

Thank you for your assistance in connection with this matter.

Sincerely,

Lee L. Willis

LLW/pp
Enclosures

cc: Office of Public Counsel (w/encls.)

ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Tampa Electric Company's Petition to) Determine Need for Polk Unit 6 Electrical) Power Plant)

DOCKET NO. 070467-EI

DATED: July 20, 2007

PETITION

Pursuant to Sections 366.04 and 403.519, Florida Statutes, and Rules 25-22.080, 25-22.081 and 28-106.201, Florida Administrative Code ("F.A.C."), Tampa Electric Company ("Tampa Electric" or "company") petitions the Florida Public Service Commission ("Commission") for an affirmative determination of need for Polk Unit 6 electrical power plant and associated facilities ("Project").

In support of this Petition, Tampa Electric states as follows:

1. The Petitioner's name and address are:

Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601

2. The names and addresses of Tampa Electric's representatives to receive communications regarding this docket are:

Paula K. Brown
Administrator, Regulatory Affairs
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601
Telephone: (813) 228-1444

Lee L. Willis
James D. Beasley
Ausley & McMullen
Post Office Box 391
Tallahassee, Florida 32302
Telephone: (850) 224-9115

3. Tampa Electric is a Commission regulated investor-owned utility with principal offices at 702 North Franklin Street, Tampa, Florida 33602. Tampa Electric is a utility as defined in Section 366.82(1), Florida Statutes, and is an applicant as defined in Section

403.503(4), for purposes of Section 403.519, Florida Statutes. Tampa Electric is the primarily affected utility within the meaning of Rule 25-22.081, F.A.C.

Introduction

4. Tampa Electric proposes to license, construct and operate a 632 megawatt ("MW") integrated gasification combined cycle ("IGCC") unit at Polk Station, a 2,800-acre site located in Polk County, Florida, 40 miles southeast of Tampa in the heart of central Florida's phosphate mining region. The site currently consists of Polk Unit 1, a 255 MW IGCC plant, and four combustion turbines totaling 645 MW.

5. The Polk Station site was selected as the result of Tampa Electric's extensive Power Plant Site Selection Assessment Program, which set out in 1989 to select the most suitable location for meeting the company's future power supply requirements. An integral part of the Polk site selection process was the formation and participation of a Siting Task Force composed of 17 private citizens from environmental groups, businesses and universities in Tampa Electric's service area and throughout Florida.

6. Polk Unit 6, using state-of-the-art IGCC technology, will provide for the environmentally responsible use of coal, petroleum coke ("pet coke") and biomass (collectively "solid fuel") to produce electricity to serve Tampa Electric's customers. Polk Unit 6 will be designed to meet customers' needs of approximately 632 MW of additional base load electric generating capacity, beginning in 2013. The solid fuel that Polk Unit 6 will be designed to use is plentiful and reliably available at reasonable costs from numerous sources. The solid fuel will be readily stored on-site, thereby enhancing reliability. Because the fuel supply for Polk Unit 6 will be less susceptible to disruption or interruption than natural gas, Polk Unit 6 will provide reliable

and cost-effective power. The employment of IGCC technology enables this resource to be used in the most environmentally responsible way.

7. Polk Unit 6 is needed to maintain electric system reliability and integrity while providing adequate power at a reasonable cost. Constructing and operating Polk Unit 6 will help improve and maintain fuel diversity on Tampa Electric's system, help reduce volatility in fuel costs charged to customers, increase electric system reliability and integrity, and provide adequate power at a reasonable cost. Polk Unit 6 is the most cost-effective alternative to meet the additional capacity needs of Tampa Electric's system.

8. Tampa Electric requests that the Commission, in its final order granting a determination of need for Polk Unit 6, find that the decision to construct Polk Unit 6 is prudent based on the estimated installed costs and the associated facilities as well as the other relevant assumptions.

Need for Additional Capacity

9. Tampa Electric's need for additional capacity is compelling. After taking into account existing power plant unit capacity, firm purchased power agreements, and an updated load forecast that considers demand-side management ("DSM") and renewable energy alternatives, Tampa Electric still requires an addition of approximately 576 and 482 MW for winter and summer, respectively, to maintain Tampa Electric's system reliability requirements by 2013. Without additional capacity to maintain its 20 percent reserve margin reliability criterion, Tampa Electric's 2013 reserve margin would decrease to 8.1 and 9.6 percent for winter and summer, respectively. Polk Unit 6 is therefore needed to maintain the electric system reliability and integrity for Tampa Electric while addressing the need for reliability and fuel diversity in Florida.

10. Tampa Electric is charged with serving its 654,000 existing customers, as well as new customers that locate in its service territory of approximately 2,000 square miles. The current population in the company's service area is approximately 1.2 million. Tampa Electric forecasts continued growth of customers in its service territory. The company is projecting approximately 164,000 new customers over the next ten years. Tampa Electric projects that its annualized retail customer growth will be 2.4 percent for 2007, 2.3 percent for 2008, and 2.3 percent for 2009. For the time period 2007 through 2013, annual customer growth is expected to average 2.2 percent. In addition to significant projected customer growth, Tampa Electric forecasts significant increases in per-customer electrical load and energy usage. Tampa Electric projects per-customer energy consumption to increase at an average annual rate of 0.5 percent. Combining the growth in customers and the growth in per-customer energy consumption, retail energy sales are expected to increase at an average annual rate of 2.8 percent over the next ten years.

11. In 2006, Tampa Electric experienced a coincident peak demand of 4,010 MW. The 2006/2007 winter peak was 3,398 MW; however, the winter was mild and the peak occurred on a relatively warm day. Typically there is a strong correlation between temperature and peak demand. This is evident by the unusually low winter peak demand of 3,398 MW occurring on a day where the peak temperature was 40 degrees Fahrenheit. Tampa Electric's Commission-approved forecasting methodology plans for system peaks on a winter day at 31 degrees Fahrenheit. To maintain service, the company must plan for load to be available for the coldest and highest demand day of the year. In forecasts prepared in connection with Tampa Electric's 2006 integrated resource planning ("IRP") process and Tampa Electric's Determination of Need Study for Electrical Power: Polk Unit 6 ("Need Study"), Tampa Electric forecasted its ten year

summer peak demand to grow from 4,010 MW in 2006 to 4,830 MW by the year 2013 or by 820 MW. As previously stated the unusually mild winter weather of the 2006/2007 season resulted in an extraordinarily low winter peak of 3,398 MW. The winter peak is forecasted to grow from 3,398 MW in the winter of 2006/2007 to 5,103 MW in the winter of 2012/2013 or by 1,705 MW. While the growth in winter peak demand appears large, it is reasonable given the fact that the calculation is based on growth from a point of unusually low demand in the winter of 2006/2007.

12. Tampa Electric meets its resource needs through generating units, purchased power and DSM. Tampa Electric's generating resources are located at five sites distributed geographically throughout its service territory and as of summer 2007, they total approximately 4,300 MW (summer) of capacity. In addition to the Polk Station site which consists of one IGCC unit and four combustion turbines, there are four pulverized coal units and three oil-fired combustion turbines at Big Bend Station, two natural gas-fired combined cycle ("NGCC") units at Bayside Station, two oil-fired diesel engines at Phillips Station, and two natural gas-fired diesel engines at Partnership Station. For 2007, Tampa Electric's projected fuel source mix to meet system energy requirements is expected to be 45 percent natural gas, 49 percent solid fuels and 6 percent other sources.

13. Tampa Electric has long-term firm sales contracts to sell up to 198 MW of capacity during 2007. Tampa Electric has capacity purchased power contracts with a variety of suppliers totaling 822 MW (summer) for 2007. Tampa Electric also has contracts to purchase firm capacity and energy from three cogeneration and small power production facilities totaling 63 MW for 2007. For 2013, Tampa Electric currently has long-term firm sales contracts to sell up to 89 MW of capacity and expects to have firm purchase agreements totaling 660 MW including cogeneration and small power production facilities.

14. Tampa Electric determined in its 2006 IRP and communicated in its 2006 Ten-Year Site Plan that it will need significant additional resources starting in 2013 to meet its 20 percent reserve margin criterion approved by the Commission in Order No. PSC-99-2507-S-EU. To accomplish this, Tampa Electric will need a minimum of either 576 MW of new supply, power plant construction or purchased power or new DSM to meet its 2013 winter reserve margin requirements.

15. New generating capacity with associated transmission facilities built in Tampa Electric's service area is the most cost-effective option to maintain system reliability. After conducting a request for proposal ("RFP") and considering alternative technologies, Tampa Electric determined that the addition of Polk Unit 6 into Tampa Electric's system is the best available option for meeting the company's system reliability needs.

16. Polk Unit 6 will add highly efficient and cost-effective generation that, as a utility-owned plant, will be committed to Florida's retail customers and subject to Commission oversight. As shown in the accompanying Need Study, Polk Unit 6 will produce adequate electricity at a reasonable cost, improve system efficiency, and maintain system reliability.

Fuel Diversity

17. Tampa Electric is proposing to construct an IGCC power plant because it is the most cost-effective alternative and because it will establish a more diversified fuel portfolio that, in turn, will enhance the reliability of Tampa Electric's power supply and help reduce volatility in customers' bills. Likewise, in considering the factors set forth under the Florida Power Plant Siting Act ("PPSA"), the Commission should place particular emphasis and weight on the need for fuel diversity, an important addition in 2006 to the statutory standard of review set forth in the PPSA.

18. Although the capital costs of the proposed IGCC plant are higher than those for a natural gas-fired plant, the fuel cost on a per kilowatt-hour ("kWh") basis is projected to be substantially lower than the cost of natural gas on the same basis. Thus, Polk Unit 6 will provide substantial fuel savings over the life of the unit, resulting in a lower fuel charge on customer bills, and making the Polk Unit 6 the most cost-effective alternative .

19. Polk Unit 6 will provide an investment in greater fuel diversity, compared to the addition of a natural gas-fired plant. This will help to mitigate the effects of delivery disruptions or price spikes of any one fuel, whether due to geo-political disturbances, acts of terrorism, natural disaster or simply long-term market forces of supply and demand. Polk Unit 6 will operate effectively using a wide variety of solid fuels. Polk Unit 6 is expected to burn synthesis gas ("syngas") produced from a variety of coals from many regions including Illinois basin, Central Appalachia and foreign sources, in addition to syngas produced from pet coke. Polk Unit 6 will also be capable of utilizing renewable biomass as a portion of its solid fuel feedstock. Natural gas will be used as its backup fuel. The use of a more varied array of fuel sources thus enhances the reliability and reduces the cost volatility of electric power. The addition of a highly efficient IGCC plant, equipped with state-of-the-art environmental controls will improve Tampa Electric's reliability while maintaining Tampa Electric's commitment to environmental stewardship.

20. While this Commission has always taken fuel diversity into account in approving new generation in the state of Florida, the 2006 Florida Legislature amended Section 403.519, Florida Statutes, which now requires this Commission to explicitly consider "the need for fuel diversity and supply reliability" when making its determination of need for new electric generating capacity, reflecting the increased emphasis on fuel diversity.

21. Polk Unit 6's role in maintaining fuel diversity and reducing Florida's dependence on fuel oil and natural gas is clear. With Polk Unit 6, Tampa Electric's natural gas fuel source mix percentage would be 34 percent in 2013. In contrast, if a natural gas-fired unit were built instead of Polk Unit 6, the natural gas fuel source mix would increase to 51 percent in 2013, resulting in commensurate increases in the amount of natural gas burned on Tampa Electric's system.

22. Polk Unit 6 will add significant value as a new fuel diverse generating resource on Tampa Electric's system, helping to mitigate the effects of delivery disruptions or price spikes of any one fuel, enhancing the reliability of the electric system, and reducing the price volatility of electric power. Specifically, Polk Unit 6, will permit Tampa Electric to: (a) use lower cost solid fuels that are abundantly available and much less susceptible to potential supply disruptions and price spikes of other fossil fuels; (b) reduce the fuel cost-related volatility of the price of electricity for customers; (c) increase the supply of reliable electricity; (d) diversify its generating technologies, fuel delivery methods and fuel types used to serve Tampa Electric's customers; and (e) decrease its reliance on natural gas as a relative percentage of Tampa Electric's fuel source mix to meet system energy requirements.

Fuel Transportation

23. Consistent with the varied fuel sourcing options for Polk Unit 6 are its varied transportation methods, which will allow for rail and waterborne with truck or rail short haul. The Polk Station site has direct rail access for the delivery of solid fuels and for other transportation needs required to support operations. Tampa Electric expects its transportation options to yield competitive transportation pricing for Polk Unit 6. Currently, Tampa Electric stores and blends coal for Polk Station at Big Bend Station and trucks the fuel to the Polk site.

This option will remain but the design for Polk Unit 6 also includes additional rail facilities and a storage yard that will hold up to 225,000 tons of solid fuel inventory.

IGCC Technology

24. Tampa Electric has operated IGCC technology for the past ten years. Polk Unit 1 became operational in 1996 and it has generated more electricity from syngas than any other plant in the world. Polk Unit 1 has very low emission rates for nitrogen oxides ("NO_x"), sulfur dioxide ("SO_2"), particulate matter and mercury and has been recognized by the Energy Probe Research Foundation as the cleanest coal plant in North America. Polk Unit 1 uses lower cost fuel and is more efficient than Tampa Electric's other coal-fired units, and as a result has the lowest dispatch costs on Tampa Electric's system.

25. The design of Polk Unit 6 will incorporate all of the lessons learned from over a decade of successful operations at Polk Unit 1. Polk Unit 6 will use as much of the proven hardware and process configuration from Polk Unit 1 as possible. Polk Unit 6 will have over twice the electrical output of Polk Unit 1. Polk Unit 6 will be a dual-train system that employs two gasifiers, (each approximately the same size and technology as the existing gasifier for Polk Unit 1), producing syngas for two upgraded combustion turbines each with a heat recovery steam generator. In contrast, Polk Unit 1 uses one gasifier and one combustion turbine. In this way, Polk Unit 6 will have greater output, greater reliability due to equipment sharing and sparing, and cost savings due to economies of scale. By leveraging the lessons learned from Polk Unit 1 and keeping design changes and scale ups to a minimum, it is expected that Polk Unit 6 will immediately perform better than Polk Unit 1.

26. The expected Equivalent Availability Factor ("EAF") for Polk Unit 6 is expected to be 95 percent, which is greater than that of Polk Unit 1. Design improvements based on the

lessons learned from Polk Unit 1, will contribute heavily to this improvement. In addition, having two gasifiers and two combustion turbines means that a single gasifier or combustion turbine outage will not prevent the entire unit from operating and the unit will still be capable of producing about half of the rated output. Additionally, the ability to utilize natural gas as the backup fuel during gasifier outages will enhance the availability of the unit. If the unit EAF was calculated based upon firing syngas only and without the backup fuel, the EAF would be 86 percent. This availability rate compares favorably to the typical availability rate range of 80 to 90 percent for a new conventional pulverized coal unit.

27. IGCC technology allows for the use of coal or coal mixed with less expensive solid fuel feedstock, such as pet coke to reduce the volatility of fuel prices and provide a diverse fuel mix. The gasification technology used on Polk Unit 6 will be capable of gasifying a wide variety of solid fuels as well as biomass, a renewable energy source, as a portion of the feedstock.

Environmental Performance

28. Polk Unit 6 will provide Tampa Electric needed power and fuel diversity in an environmentally responsible manner. As explained in the Need Study and supporting testimony, Polk Unit 6 will comply with all applicable environmental laws and regulations, and in many cases perform better than required. Polk Unit 6 will use proven air pollution control technologies to maintain emission levels that will be among the lowest in the country for similar new facilities. Not only will Polk Unit 6 minimize air emissions to the greatest extent practicable, but Tampa Electric is also designing the facilities with the aim that certain emissions control technologies may be added to the unit, if required. For example, Polk Unit 6 can be equipped for carbon capture if and when regulations require. Tampa Electric has been recognized as an

environmental leader in the utility industry, with emission rates for NO_x, SO_2 and CO_2 among the lowest nationwide. With the addition of Polk Unit 6, Tampa Electric will continue to be among the cleanest generating utilities in the nation.

29. Polk Unit 6 will improve on the already outstanding environmental performance of Polk Unit 1 through process enhancements. Specifically, Tampa Electric will install and operate the environmental controls necessary to meet or exceed all applicable environmental laws and regulations. These technologies will incorporate proven state-of-the-art systems and processes to minimize emissions. Polk Unit 6 is expected to use the Selexol process for improved sulfur removal from the syngas, a selective catalytic reduction ("SCR") system for additional NO_x emissions control and an activated carbon bed for mercury removal from the syngas. These enhancements will result in even lower SO_2, particulate matter, NO_x and mercury emission rates than Polk Unit 1. The EPA has reported the most effective coal generation technology for removal of the aforementioned constituents is IGCC.

30. IGCC technology allows for the cleanest use of the country's most abundant solid fuel and provides the best option for CO_2 emissions reduction on a coal unit in the event of new legal requirements. Studies by the US Department of Energy, US Environmental Protection Agency, the Electric Power Research Institute, universities and power industry engineering firms have concluded that both capital costs and the cost of electricity are lower for IGCC technology with CO_2 capture than for any other coal based generating technology. IGCC's advantage arises from the fact that the CO_2 is captured prior to combustion, allowing the CO_2 to be removed while the syngas is still under high pressure and devoid of the large quantity of atmospheric nitrogen present in post-combustion flue gas. The equipment necessary for CO_2 removal on an IGCC unit is smaller because there is a small volume of gas to be processed relative to post combustion flue

gas. Another advantage of the IGCC technology is that some of the physical solvent systems presently in use for sulfur removal are also able to remove CO_2. Therefore, equipment modifications to an IGCC system for carbon capture are far less extensive than for other coal based technologies.

31. Granting the determination of need for Polk Unit 6 will permit Tampa Electric to meet customer's needs for additional reliable and fuel diverse capacity by constructing and operating what will be among the most efficient and environmentally benign coal-fired electric generating facilities in the United States.

32. Consistent with Tampa Electric's longstanding commitment to good environmental stewardship, the technology selected by Tampa Electric for Polk Unit 6 together with the company's environmental compliance plan constitute the most cost-effective environmental choice to maintain fuel diversity for electric supply to Tampa Electric's customers.

Project Costs

33. The total estimated installed cost for Polk Unit 6 in 2013 dollars is $2.013 billion dollars. This estimate includes direct costs, in-service capital expenditures, owner's costs, contingencies, and transmission and integration costs. The expected costs are based on Tampa Electric's construction management contractor approach. This approach utilizes oversight and planning to help control costs for key elements including skilled labor and materials. This approach is expected to result in a lower cost to customers compared to what would be incurred if Tampa Electric were to seek by contract to fix all cost elements at the present time or enter into an Engineering, Procurement and Construction ("EPC") agreement. Both the fixed cost approach and the EPC approach, which fixes some costs and indexes others, would include a

significant risk premium for the contractor, which is avoided with Tampa Electric's construction management approach coupled with its experience with IGCC technology. The gasification equipment represents about half of the total direct project costs described above, while the balance of the plant, including the power block, accounts for the remainder of the costs.

Economic Evaluation

34. Tampa Electric selected the IGCC technology to meet its capacity and fuel diversity needs based on its evaluation of various solid fuel based and natural gas based generating alternatives. The company's screening analysis considered supercritical pulverized coal ("SCPC"), circulating fluidized bed and IGCC solid fuel technologies, NGCC and natural gas peaking technologies and renewable options. Based on the feasibility and expected utilization of the various options and the size of the capacity need, Tampa Electric selected SCPC, IGCC and NGCC technologies for further analysis. Tampa Electric's evaluations included both qualitative and quantitative analyses of these options. Tampa Electric concluded that the best way to meet its capacity and fuel diversity needs is by adding a 632 MW IGCC unit in 2013. Polk Unit 6 is projected to provide $184 million in savings to Tampa Electric's customers compared to an NGCC unit and $93 million in savings compared to an SCPC unit. This savings amount is based on the difference between the cumulative net present value of the revenue requirements between Polk Unit 6 and the NGCC or SCPC unit. The savings will be made primarily due to the lower fuel cost of the Polk Unit 6 compared to anNGCC or SCPC unit.

35. Tampa Electric's economic analysis shows that adding Polk Unit 6 to Tampa Electric's electric generating portfolio provides a benefit for customers due primarily to the projected differential between natural gas and coal prices, with coal expected to remain substantially lower in cost in the future. In future periods when natural gas prices are high, all

other things being equal, the lower cost of the solid fuel used by Polk Unit 6 will clearly benefit customers. If natural gas prices in the future are lower, the fuel price differential will be smaller, but customers will benefit from the lower cost of gas used in natural gas-fired generating units.

IGCC Tax Credits and Impacts

36. Another benefit to customers is that Tampa Electric's proposed Polk Unit 6 project was awarded $133.5 million in tax credits by the Federal Internal Revenue Service ("IRS"). On November 30, 2006, the IRS announced that it had allocated nearly $1 billion of tax credits to nine planned clean coal projects, out of a total of 49 applicants, as outlined in the Federal Energy Policy Act of 2005. Tampa Electric's planned Polk Unit 6 project was one of the nine projects awarded the credits.

37. To be eligible for the tax credits, no later than November 2008, Tampa Electric is required to have: (a) secured all federal and state environmental authorizations or reviews necessary to commence construction of the IGCC; (b) purchased or entered into binding contracts to purchase the main steam turbines; and (c) submitted required documentation to the IRS for certification. Also, the IGCC facility must be placed in service within five years of the date of the issuance of the certification which would likely require the unit to be placed in service by November 2013. If any of these conditions are not met, the tax credits are subject to recapture in accordance with established IRS rules.

38. Tampa Electric's customers will benefit as the tax credits are amortized over the 25-year life of the gasifier beginning in 2013. This deferral and amortization over the life of the asset is an IRS prescribed treatment referred to as the 'normalization treatment' and has been applied to similar tax credits in the past. The amortization effectively lowers the cumulative net

present worth revenue requirement for the new IGCC baseload unit by approximately $63 million.

Transmission

39. Tampa Electric needs to reliably interconnect and integrate Polk Unit 6 generation with Tampa Electric's transmission system to deliver approximately 630 MW of new generation from the Polk Station site. This will require three short 230kV lines and three new step-up transformers within the plant as well as the upgrade of two existing lines which deliver power from the plant to Tampa Electric's bulk electric system. In total, Tampa Electric needs to construct three 0.7 mile new 230kV transmission lines, add three new termination positions and six new 230 kV circuit breakers at the Polk Power substation and upgrade two existing ten mile and 14 mile 230 kV transmission lines to reliably interconnect Polk Unit 6 into the bulk electric system and to move power from Polk Station to customer load. The cost of the transmission facilities required to interconnect and integrate Polk Unit 6 is estimated to be approximately $25 million.

Analysis of Generating Alternatives and Fuel Diversity

40. Tampa Electric examines a variety of generation construction options in the course of determining the most economical self-build options for its system. Several factors influence the decision regarding the different types of alternatives that could reasonably be included in the resource planning process.

41. Tampa Electric's examination of construction options with which it could meet its 2013 capacity needs focused on solid fuel technologies that could be developed, permitted and constructed in time to serve the projected load. These technologies were examined within

Tampa Electric's IRP process which employs a multi-year, expansion plan analysis to evaluate the economics of competing generating options.

42. NGCC plants could be constructed in sufficient time to serve the load for the 2013 time period. However, if the 2013 need was satisfied with construction of NGCC plants, the natural gas portion of the fuel source mix serving Tampa Electric's customers would increase from 45 percent in 2007 up to 51 percent in 2013. Moreover, by mid-2009, the two pipelines serving Peninsular Florida will be fully subscribed. Therefore, the addition of incremental gas-fired generation will require an expansion of the existing pipelines and/or a new interstate pipeline into Florida.

43. In contrast, with the proposed addition of Polk Unit 6, the share of electricity produced from solid fuels would be 64 percent in 2013, as opposed to 47 percent under an all-gas expansion plan. With the proposed addition of Polk Unit 6, the share of electricity produced with natural gas would be about 34 percent in 2013, rather than 51 percent in 2013 under an all-gas plan. Thus, the addition of Polk Unit 6 will maintain the contribution of solid fuel-fired generation on Tampa Electric's system, rather than dramatically reducing it like the all-gas expansion plan would do.

44. The primary benefits of Tampa Electric's proposed project includes a more balanced fuel mix and greater fuel diversity with better system reliability and reduced price volatility. An electric system that heavily relies on a single fuel and a single technology to generate all the electricity needed to meet its customer's demand, all else equal, is less reliable than a system that uses a more balanced, fuel-diverse generation portfolio. In addition, greater fuel diversity mitigates the impact of wide or sudden swings in the price of one fuel, a phenomenon that has characterized the natural gas market over the last several years.

45. An electric system that relies exclusively on one fuel is more susceptible to events that cause delays or interruptions in the production or delivery of that fuel. This can adversely affect system reliability. For example, in 2005 a significant number of natural gas production facilities in the Gulf of Mexico were shut down as a result of hurricanes. The shutdown of these facilities, which occurred with very little advance warning, significantly reduced the quantities of natural gas available to Tampa Electric to meet electricity demand and caused price spikes. Had Tampa Electric's system relied more heavily on natural gas to produce electricity it would have been difficult, if not impossible, to continue to meet its customers' demand for electricity until some gas production capability was restored. Adding solid fuel, particularly coal where inventory can be maintained on site, provides a physical hedge against the unavailability of natural gas or fuel oil which improves Tampa Electric's overall system reliability.

46. The initial screening of supply side alternatives narrowed the list to the most viable supply side technologies including SCPC, NGCC and IGCC. Because solid fuel-fired generation is the only fuel-diverse capacity addition available to meet the projected increased demand in 2013, despite the successful implementation of Tampa Electric's DSM, renewable energy and other efforts, Tampa Electric selected IGCC as the technology that could most cost-effectively and reliably contribute to the fuel diversity and capacity needs of Tampa Electric's system in this time period.

47. A projected relative rate impact analysis was calculated comparing IGCC as the optimal solid fuel technology to NGCC which results in the IGCC plan being $2.72 per MWH higher than the NGCC plan in 2013. This is primarily due to higher capital costs; however, the rate impact for IGCC is estimated to be lower by 2017 and through the balance of the remaining life of the unit due primarily to lower fuel and purchased power costs.

48. Based upon extensive quantitative and qualitative evaluation of alternative technologies, Tampa Electric selected IGCC as the best choice to provide a reliable power source at a reasonable cost to meet a growing demand for electricity and to utilize a comparatively low cost fuel to reduce the volatility in fuel prices that customers pay directly. Polk Unit 6 would provide needed diversity to Tampa Electric's system and its customers and would also, over the long-term, provide the lowest cost resource addition that could be made between now and 2013. For the reasons stated in this Petition, the accompanying Need Study and supporting testimony, Polk Unit 6 is the most cost-effective alternative source of power and will also achieve the goals set out in Section 403.519, Florida Statutes, including the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas and contribute to the long-term stability and reliability of the electric grid.

Request for Proposals for 2013 Base Load Capacity

49. Tampa Electric diligently explored the possibility of purchasing its needed base load capacity requirements beginning in 2013. The company retained Alan S. Taylor of Sedway Consulting to assist with the drafting of the RFP document and to provide guidance to Tampa Electric to ensure that the RFP was open and inviting to potential bidders as possible. Following a prebid meeting of potential participants on January 29, 2007, Tampa Electric issued an RFP on February 7, 2007 for its 2013 baseload generation capacity need. The company extensively advertised the issuance of the RFP in major newspapers, periodicals and trade publications and set up a website, www.tampaelectric.com/2013rfp to enable interested parties to have ready access to the RFP and answers to questions posed by potential participants.

50. In the hopes of broadening the opportunity for more participation, on March 9, 2007, the company notified all potential participants that it lowered the minimum block size

requirement in the RFP from 150 MW to 75 MW and provided a revision to the RFP to incorporate this change.

51. The RFP expressed a preference for solid fuel-fired capacity located in or near to load centers and which is fully dispatchable under Tampa Electric's control. Despite stating its preference for solid fuel generation, Tampa Electric was prepared to consider all reasonable offers.

52. Despite the additional flexibility that was offered to potential bidders, no proposals were received by the May 8, 2007 deadline.

Analysis of Non-Generating Alternatives and Renewable Generation

53. Tampa Electric also considered DSM alternatives. With respect to DSM, Tampa Electric's programs include cost-effective conservation and load management programs designed to reduce load requirements and encourage conservation. Tampa Electric has long been a leader in the field of DSM. Without its DSM, Tampa Electric would require far more additional capacity to meet its present and projected needs.

54. Tampa Electric's DSM efforts from their beginning in 1981 through 2006 have resulted in a cumulative summer peak reduction of approximately 222 MW, a cumulative winter peak reduction of approximately 659 MW and estimated cumulative energy savings of approximately 600 gigawatt-hours ("GWH"). These reductions are valued at the generator level. Accounting for line losses and reserve margin requirements, Tampa Electric's DSM efforts have eliminated the need to construct more than three power plants of 180 MW of winter capacity.

55. Tampa Electric filed with the Commission 13 new and modified commercial DSM programs for 2007 through 2012 that provide customers additional options to better manage their energy consumption. Tampa Electric's new DSM programs are projected to result

in demand reductions of 48 MW in the winter and 41 MW in the summer beyond the company's current Commission-approved DSM Goals. Through 2012 the total DSM available is expected to be about 707 MW in the winter and 263 MW in the summer. This is the equivalent of avoiding approximately four 180 MW generating units. Nevertheless, despite Tampa Electric's successful large-scale conservation achievements since the early 1980s and its substantial increases in DSM projected into the future, there is not sufficient additional cost-effective DSM available to mitigate the need for Polk Unit 6.

56. In 2006, Tampa Electric purchased 495,000 MWH of electricity from nine renewable generation suppliers. The types of purchases included 73 percent from municipal solid waste, 26 percent from waste heat and one percent from biomass. Tampa Electric also produced 21 MWH of renewable electricity to supply its Renewable Energy Program. According to U. S. Energy Information Administration data published in June 2006, after adjusting for hydroelectric and geothermal sources which are not available renewable resources in Florida, Florida ranks second only to California in terms of production of electricity from renewable resources. On April 2, 2007, Tampa Electric filed proposed standard offer contracts and associated tariffs for renewable generation in compliance with amendments to Rule 25-17.0832, Florida Administrative Code, adopted on February 22, 2007. In addition, Tampa Electric will continue to encourage existing and potential renewable generators by facilitating dialogue with these entities and offering to negotiate contract terms that allow developers of renewable resources to choose from a portfolio of diverse generating units. Tampa Electric will continue to seek opportunities to encourage development of cost-effective renewable resources. In fact, on June 29, the company issued an RFP seeking renewable energy that includes new or

existing generating sources on a firm or as-available basis. The type of renewable energy being sought is consistent with the definition found in the Florida Statutes.

Adverse Consequences of Delay

57. As noted above and detailed in the Need Study, Tampa Electric needs Polk Unit 6 to maintain Tampa Electric system reliability requirements arising in 2013. Without the units or an alternative arrangement to maintain its reliability criterion of a 20 percent reserve margin for those years, Tampa Electric's winter and summer reserve margins would decrease to 8.1 and 9.6 percent respectively, in 2013. Polk Unit 6, therefore, is needed to maintain the electric system reliability and integrity for Tampa Electric. Thus, a delay in licensing Polk Unit 6 may adversely affect Tampa Electric's system reliability and integrity in beginning in 2013, and would delay the benefits associated with maintaining fuel diversity. The adverse consequences of delay are described in greater detail in the Need Study.

58. Delay will also cause Tampa Electric to lose the tax credits of $133.5 million awarded by the IRS which requires the IGCC facility to meet specifically defined milestones including a required in-service date of November 2013. If all of the requirements are not met, the tax credits are subject to recapture in accordance with established IRS rules.

59. Tampa Electric submits that Polk Unit 6 satisfies all of the requirements contained in Section 403.519, Florida Statutes, and applicable Commission rules, and will be the most cost-effective way to maintain solid fuel-fired generation as a major element of the generating portfolio serving Tampa Electric's customers beginning in 2013, the year in which additional capacity is needed to meet customers increased demand for electricity. If approved and constructed, Polk Unit 6 will maintain the balance of fuel diversity, reduce Florida's dependence

on fuel oil and natural gas, and contribute to the long-term stability and reliability of the electric grid.

Need Study and Prefiled Testimony

60. Tampa Electric submits in support of this Petition and incorporates herein by reference its detailed Need Study and appendices that develop more fully the information required by Rule 25-22.081, Florida Administrative Code. Tampa Electric is also submitting the testimony of 11 witnesses supporting Tampa Electric's request that the Commission grant an affirmative finding of need for Polk Unit 6.

Disputed Issues of Material Fact and Ultimate Facts Alleged

61. Tampa Electric is not aware of any disputed issues of material fact affecting this proceeding. In any event, consistent with the requirements of Section 403.519, Florida Statutes, Tampa Electric will show that: (a) Polk Unit 6 is needed to maintain electric system reliability and integrity and to provide adequate electricity at reasonable cost, taking into account the need for fuel diversity and supply reliability; (b) Polk Unit 6 is the most cost-effective option for providing fuel diverse generation capacity needed to meet the needs of Tampa Electric's customers beginning in 2013; (c) there is no reasonably available conservation, renewable or other non-generation alternative that would mitigate the need for Polk Unit 6; and (d) the circumstances of this matter support a specific determination of the prudence of Tampa Electric's decision to construct Polk Unit 6, the institution of an annual review process with respect to Polk Unit 6, and provision for cost recovery for Polk Unit 6 through future rates.

Conclusion

62. The proposed Polk Unit 6 and its associated facilities are the most cost-effective and environmentally sound means of maintaining the benefits of fuel diversity for meeting

Tampa Electric's growing capacity needs. Polk Unit 6 presents several key advantages to Tampa Electric and its customers. Most importantly, this resource addition maintains fuel diversity and prevents a major reduction in the portion of power produced by Tampa Electric using solid fuels. Polk Unit 6 is critically needed to meet Tampa Electric's reliability needs in 2013. Polk Unit 6 will increase electric system reliability and integrity and provide adequate power at reasonable cost. Polk Unit 6 is the most cost-effective alternative for meeting Tampa Electric's system capacity needs while maintaining fuel diversity.

WHEREFORE, for the reasons set forth above, and as more fully set forth and described in the supporting testimony and documents included with its Petition, Tampa Electric respectfully requests that the Commission grant an affirmative determination of need for Polk Unit 6 and, in connection with the determination of need, in acknowledging the magnitude of Polk Unit 6, the associated uncertainties in market conditions, costs, and scheduling, and the significant financial commitment that Tampa Electric and its customers will need to make to bring Polk Unit 6 on line. In so doing, the Commission should:

(a) find that Polk Unit 6 is needed to maintain electric system reliability and integrity and to provide adequate electricity at reasonable cost, taking into account the need for fuel diversity and supply reliability;

(b) find that Polk Unit 6 is the most cost-effective option for providing fuel diverse generation capacity needed to meet the needs of Tampa Electric's customers beginning in 2013;

(c) find that there is no reasonably available conservation, renewable or other non-generation alternative that would mitigate the need for Polk Unit 6;

(d) find that the decision to construct Polk Unit 6 is reasonable and prudent, based on the estimated installed costs as well as the other relevant assumptions;

(e) direct that if, following a determination of need, the Commission at any time determines construction should not be continued or if other conditions preclude continuation, all prudently incurred costs, including associated carrying costs, shall be accumulated and recovered over a five year period beginning when new base rates next go into effect as permitted under Section 366.93, Florida Statutes; and

(f) affirm that after Polk Unit 6 is placed in service, all prudently incurred non-fuel costs other than those recoverable through advanced cost recovery, the ECRC or like means, shall be recoverable through base rates.

Tampa Electric further requests that the Commission grant such additional appropriate relief as the case and law may permit.

DATED this 20th day of July 2007.

Respectfully submitted,

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