TECO
TAMPA ELECTRIC

ORIGINAL

070467-EI

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 07_____-EI

IN RE: TAMPA ELECTRIC'S

PETITION TO DETERMINE NEED FOR

POLK POWER PLANT UNIT 6

TESTIMONY AND EXHIBIT

OF

THOMAS J. SZELISTOWSKI

ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

THOMAS J. SZELISTOWSKI

Q. Please state your name, business address, occupation and employer.

A. My name is Thomas J. Szelistowski. My business address is 702 N. Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or "company") as Director, Energy Control Center.

Q. Please provide a brief outline of your educational background and business experience.

A. I received a Bachelor's of Electrical Engineering degree in 1983 from the Georgia Institute of Technology and a Master's degree in Business Administration from the University of Tampa in 1987. I am a registered professional engineer in the state of Florida. I joined Tampa Electric as a co-operative education student in 1978 and became full time employee as an engineer in 1983. From 1983 through 2001, I held various positions the Transmission Planning, Transmission Engineering, and

T&D Operations areas of Tampa Electric. In 2001, I was promoted to Director, Transmission and Distribution Operations. In this position, I was responsible for the construction and maintenance of the distribution and transmission facilities of Tampa Electric. In May 2007, I was named Director, Energy Control Center. My present responsibilities include the areas of day-to-day distribution outage restoration, transmission system operations, system reliability tracking and reporting, Energy Delivery emergency response and planning, wholesale energy accounting and billing, and Tampa Electric's long-term transmission and distribution infrastructure planning.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe how Tampa Electric determined the most cost-effective transmission plan for the interconnection and integration of Tampa Electric's proposed Polk Unit 6 that meets both North American Electric Reliability Council ("NERC") and Florida Reliability Coordinating Council ("FRCC") reliability standards. I will discuss the overall transmission evaluation process Tampa Electric conducted including the stability and steady state power flow study

results used in determining the most cost-effective manner to interconnect and integrate Polk Unit 6 into the transmission system. Finally, I will discuss the characteristics, estimated costs and construction schedule of the transmission system facilities required to interconnect and integrate Polk Unit 6 into Tampa Electric's system.

Q. Have you prepared an exhibit to support your testimony?

A. Yes. I sponsor Exhibit No. ___ (TJS-1) that consists of three documents:

Document No. 1	230 kV Lines Polk Power Substation to Pebbledale Substation
Document No. 2	Polk Unit 6 Interconnection and Integration
Document No. 3	Summary of Required Facilities, Ratings and Cost

Q. Are you sponsoring any sections of Tampa Electric's Determination of Need Study for Electrical Power: Polk Unit 6 ("Need Study")?

A. Yes. I sponsor section VII.D. of the Need Study entitled "Transmission Facilities".

Q. Please describe Tampa Electric's evaluation process that results in determining the most cost-effective transmission system requirements for new generation resources.

A. Tampa Electric's process begins with evaluating the proposed generating plant site location to determine its proximity to existing transmission facilities. To the extent there are existing transmission facilities nearby, the site is then assessed to determine its capability for reliably interconnecting and integrating the proposed new generation into the transmission system as a firm Tampa Electric generation resource.

Q. What factors are considered when integrating the proposed new generation into the transmission system?

A. There are numerous factors that are considered prior to integration of a new generating unit into the bulk electric system. They include:

- The megawatt ("MW") amount of generation being added at the generation site and various dispatch profiles of the new generation resource relative to existing generation resources serving Tampa Electric and

others utilities' load in the region;

- Compliance with NERC and FRCC reliability standards;
- Stability and system protection impacts;
- Impact on existing Tampa Electric or third party facilities;
- Capability to upgrade existing substation or transmission facilities;
- Ability to site new substation or transmission line facilities including right-of-way requirements, existing right-of-way capabilities, permitting requirements, and expected time frame to acquire right-of-way and necessary permits;
- Ability to construct the required transmission facilities without having to take clearances on existing operating facilities during periods that would result in an adverse reliability impact;
- Operating considerations such as maintenance requirements of the proposed interconnection and integration facilities and impacts to the ongoing operation of the system;
- The timing and amount of power needed for testing equipment such as pumps and motors;
- Expected in-service testing and commercial operations dates for new generation, which determines the date transmission interconnection and

integration facilities must be completed for the unit's testing; and

- The initial and ongoing costs of facilities and operations.

Q. How did Tampa Electric evaluate the impact of the Polk Unit 6 generation addition on the system?

A. Power flow studies are used to evaluate the impact of the generation additions on Florida's transmission system. The power flow studies include a review of stability requirements, system protection impacts and steady state requirements in compliance with NERC and FRCC reliability standards. These power flow studies are used to evaluate the performance of the system and to determine various project alternatives that would be needed to interconnect and integrate the new generation into the transmission system.

Q. How are project alternatives for adding or upgrading transmission facilities developed?

A. A Tampa Electric core team is used to develop and review potential alternatives and estimated costs. This core team is comprised of engineers from System Planning,

Substation Engineering, Transmission Engineering, and System Security. As part of their analysis, this team considers a number of the issues outlined previously including ability to construct, potential upgrade of existing facilities, right-of-way requirements, in-service dates and operating considerations. When the core team is satisfied that they have developed the most cost-effective transmission interconnection and integration plan that complies with NERC and FRCC reliability standards, the process is deemed complete.

Q. Did Tampa Electric utilize any previous studies to help determine the most appropriate transmission system requirements for Polk Unit 6?

A. Yes, Tampa Electric was an active participant in the 2005 Central Florida Study and 2006 Central Florida Re-Study at the FRCC. The Central Florida Re-study and its recommendations were used as a starting point for the Polk Unit 6 transmission study.

Q. What was the purpose of the Central Florida Re-Study?

A. The purpose of the Central Florida Re-Study was to review the transmission assets needed given the planned

generation being added in the Polk and Hardee County areas from 2007 through 2012. The original study was completed prior to the issuance of the state utilities' Ten-Year Site Plans in April 2006. Because there were a number of significant changes in planned generation from the previous plans, the Re-Study was requested by the FRCC to review the impacts of those changes on the state transmission system.

Q. How did Tampa Electric use the study results as a starting point for the Polk Unit 6 study?

A. The computer models, which provide information on how the transmission system performs under a given set of conditions, were used as the basis for the Polk Unit 6 study. These models included the transmission projects recommended in the 2006 Central Florida Re-Study. While the projects are not currently in place, they are projected to be in-service by the time Polk Unit 6 is expected to come on-line.

Q. Did Tampa Electric utilize any other previous studies to help determine the most appropriate transmission system requirements?

A. Yes. In Tampa Electric's Determination of Need for the Willow Oak to Davis 230 kV Transmission Line[1], Tampa Electric identified the need for a new 230 kV transmission line from Willow Oak Substation to Wheeler Substation to transfer power from a new baseload unit at Polk Station or to import the power from another resource. This transmission line was also included in the baseload flow cases used in the Polk Unit 6 study.

Q. How is the Polk Station connected to the bulk electric system?

A. The Polk Station switchyard is connected to the bulk electric system grid by four 230 kV lines. Two of these lines go from Polk to Tampa Electric's Pebbledale Substation.

Q. What were the results of the power flow studies that Tampa Electric performed?

A. The results of the power flow studies showed an overload might occur on either one of the existing Polk to Pebbledale 230 kV transmission lines for an outage of the other Polk to Pebbledale 230 kV transmission line. This

[1] Order No PSC-07-0522-FOF-EI in Docket 070193-EI, issued June 21, 2007.

result indicated that, under extreme conditions, there may not be enough transmission capability out of Polk Power Substation to transfer the entire plant's capacity.

Q. What projects did the core team recommend after reviewing the power flow study results?

A. The core team recommended upgrading both of the Polk to Pebbledale 230 kV transmission lines to eliminate any potential overload of one of the Polk to Pebbledale 230 kV lines due to an outage of the parallel Polk to Pebbledale 230kV line.

Description of Planned Project

Q. Please provide a general description of the existing transmission facilities at Polk Station.

A. As I previously stated, Polk Power Substation is connected to the bulk electric system grid by four 230 kV transmission lines. Two of these lines go from Polk Station to the Tampa Electric Pebbledale Substation. The third line goes from Polk Station to Mines Substation and the fourth from Polk Station to Invenergy's Hardee Station.

Q. Please provide a general description of the transmission facilities required for interconnection and integration of Polk Unit 6 to Tampa Electric's system.

A. There are two general types of transmission projects required: internal within the plant and external connections of the plant to Tampa Electric's bulk power system. Internally Polk Unit 6 will be connected to the existing Polk Power Substation located on-site with three new 0.7 mile 230 kV transmission lines connecting three new Polk 6 generator step-up transformers ("GSU"). Externally the two Polk to Pebbledale transmission lines will need to be upgraded to a higher capacity as a result of Polk Unit 6. These two lines, 230605 and 230606, are approximately ten and 14 miles, respectively and are reflected in Document No. 1 of my Exhibit No.___ (TJS-1).

Q. Please describe the physical characteristics of the internal facilities that connect Polk Unit 6 and its associated integrated gasification combined cycle ("IGCC") equipment to the Polk Power Substation and the new additions at Polk Power Substation.

A. The three GSU will be located near the combustion turbines, steam turbine and associated IGCC equipment. A

0.7 mile double circuit 230kV line will be built from two of the GSU to two new termination positions at the Polk Power Substation. A third 0.7 mile 230kV transmission line will be built from the remaining GSU to another new termination position at the Polk Power Substation. Polk Power Substation will have three new termination positions and six new circuit breakers as shown in Document No. 2 of my Exhibit No.___ (TJS-1).

Q. How did Tampa Electric evaluate the transmission related costs associated with the planned Polk Unit 6?

A. An estimating team made up of members from Substation Engineering, Transmission Engineering, Real Estate, System Security, Telecommunications, and Environmental Health and Safety reviewed the transmission interconnection and integration requirements to develop a scope of work. This included the review of existing drawings and site visits. Each member then estimated the costs to complete their scope of work.

Q. What is the total cost of the transmission interconnection and integration costs for Polk Unit 6?

A. The total estimated project cost is approximately $25

million. A summary of the facilities required and associated costs is provided in Document No. 3 of my Exhibit No.___ (TJS-1).

Q. How does the $25 million estimate compare to earlier estimates of transmission and interconnection costs for Polk Unit 6?

A. The $25 million estimate is lower than the initial estimate of $100 million used in Tampa Electric's 2013 baseload generation capacity request for proposals issued February 7, 2007. This lower cost estimate is the result of the stability study which was subsequently completed showing that two new lines that were assumed to be required for stability purposes are not needed.

Q. What is the schedule for construction of the transmission facilities needed for the interconnection and integration of Polk Unit 6?

A. The Polk Unit 6 interconnection work is scheduled to begin in December 2010 and is estimated to be completed by September 2011. This will allow time for testing of the unit and associated IGCC equipment prior to its commercial in-service date. The Polk Power Substation to

Pebbledale line construction will begin by September 2010 with an in-service date of March 2012. This ensures that all transmission facilities will be in-service prior to any full power testing of Polk Unit 6.

Q. Has this assessment, along with the Polk Unit 6 interconnection and integration requirements discussed above, been reviewed by the FRCC?

A. Yes. According to the FRCC's Regional Transmission Planning Process, Tampa Electric's interconnection and integration plan for Polk Unit 6 as discussed above was provided to the FRCC for review and affirmation that no reliability issues exist. FRCC's review is scheduled to be complete by August 23, 2007. I intend to supplement my testimony once the review by the FRCC is completed if there is any material difference identified.

Q. Please summarize your testimony.

A. Tampa Electric has completed stability, system protection and power flow studies to determine the impact of the interconnection and integration of Polk Unit 6 to the bulk electric system. The studies indicate new interconnection facilities at the Polk Power Substation

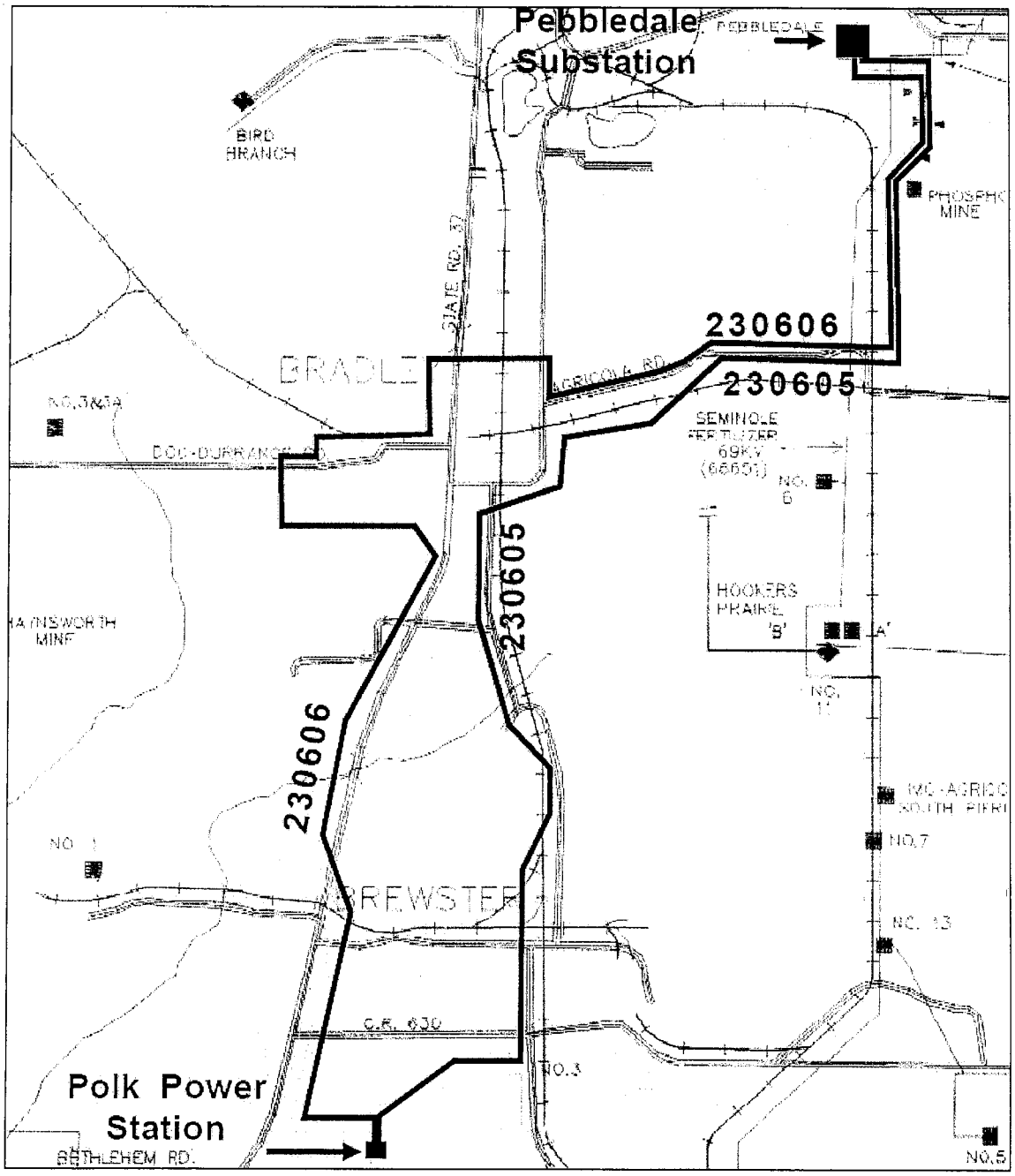
are required, and two existing transmission lines need to be upgraded to ensure the full capacity of Polk Station can be delivered to the grid under extreme conditions. The upgrade of the two 230 kV transmission lines is the most cost-effective way to fully integrate the capacity of Polk Unit 6.

Q. Does this conclude your testimony?

A. Yes, it does.

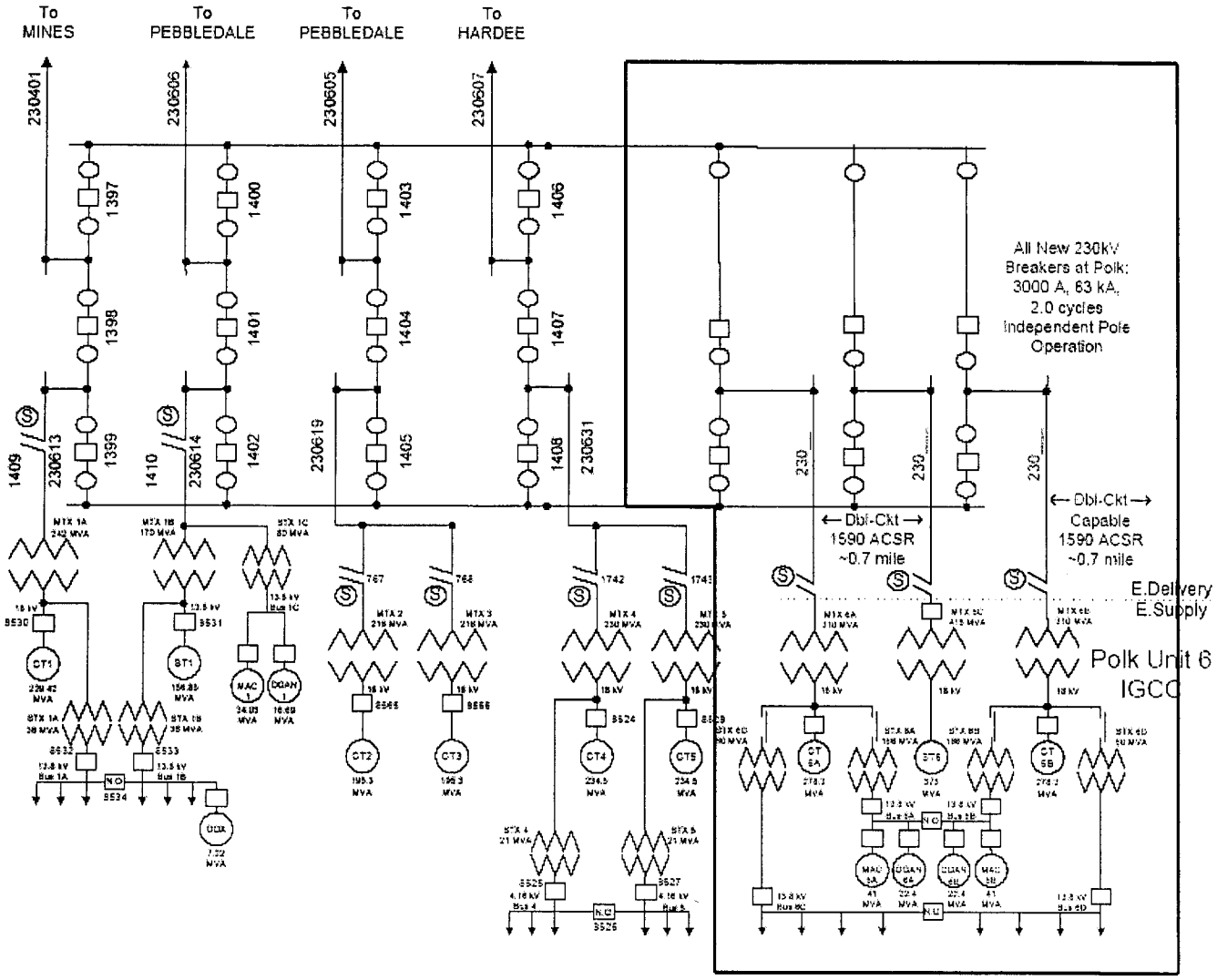
DOCKET NO. 07_____-EI
230 kV LINE PEBBLEDALE
EXHIBIT NO. _____(TJS-1)
DOCUMENT NO. 1
PAGE 1 of 1

230 kV Lines Polk Power Substation to Pebbledale Substation



DOCKET NO. 07_____-EI
POLK UNIT 6 INTERCONNECTION
EXHIBIT NO. _____(TJS-1)
DOCUMENT NO. 2
PAGE 1 OF 1

Polk Unit 6 Interconnection and Integration



NOTE: The boxed area represents the interconnections made as a result of Polk Unit 6.

Summary of Required Facilities Ratings and Cost

New Facilities:	Required Rating mva	Required Rating amps	Estimated Cost ($ 000's)
2 Double circuit lines to interconnect Steam Unit and CT1 and associated substation equipment (0.7 miles)	749	1,880	6,000
Single circuit line to connect CT2 and associated substation equipment (0.7 miles)	749	1,880	4,000
		Non Facility Total:	**$10,000**

Upgraded Facilities:	Existing Rating mva	Existing Rating amps	Required Rating mva	Required Rating amps	Estimated Cost ($ 000's)
Circuit 230305 (9.85 miles)	749	1,880	1,013	2,543	6,000
Circuit 230306 (13.46 miles)	637	1,880	1,013	2,543	9,000
		Upgraded Facility Total:			**$15,000**
			Total Cost:		**$25,000**

Note: The new facilities must be completed and in-service by September 1, 2011 and the upgraded facilities by March 1, 2012 for testing purposes.