

2.0 NEED FOR THE PROPOSED FACILITY

This chapter of the SCA discusses the schedule for obtaining Florida PSC approval of Tampa Electric's determination of need petition for the proposed Polk 2-5 Conversion Project and summarizes the company's determination that the proposed Project is the best alternative to meet the electricity supply needs of its customers in the 2017 time frame.

2.1 NEED DETERMINATION SCHEDULE

Pursuant to Section 403.519, F.S., the PSC is the exclusive forum for the determination of need proceeding for proposed electrical generating facilities. When making its determination on a proposed power plant and associated facilities, including transmission lines, the PSC must take into account a number of factors, including the need for electric system reliability, integrity, and fuel diversity; whether the generating capacity is the most cost-effective alternative available; the need for adequate electricity at a reasonable cost; and whether renewable energy sources and technologies, as well as conservation measures, are used to the extent reasonably available (Section 403.519[4], F.S.).

Tampa Electric filed its petition for determination of need for the proposed Project with the PSC on September 12, 2012 (Docket No. 120234-EI). In conjunction with this filing, Tampa Electric also submitted its supporting study, Tampa Electric Company Determination of Need for Electrical Power: Polk Unit 2-5 Conversion Project, which provides information required under PSC Rule 25-22.081, F.A.C. Information regarding the need petition can be found on PSC's Website at <http://www.psc.state.fl.us/dockets/cms/docketDetails2.aspx?docket=120234>.

At the time of this SCA filing, the need petition is under review by the PSC, and the PSC hearing for consideration of the need petition is scheduled to be held on December 12, 2012. Per the docket schedule set forth by the PSC, the commission will issue its order on Tampa Electric's determination of need for the proposed Polk 2-5 Conversion Project on February 13, 2013.

The following subsection provides the executive summary from the determination of need study for Polk 2-5 Conversion Project submitted to the PSC.

2.2 DETERMINATION OF NEED STUDY EXECUTIVE SUMMARY

Tampa Electric has determined through its IRP process a need for the Polk 2-5 Conversion Project, with a targeted commercial operation date of January 2017. The existing Polk 2 through 5 CTGs will be converted to a natural gas CC facility located at PPS by integrating a new STG with an additional capacity of 459 MW summer and 463 MW winter. This incremental capacity is derived from waste heat from the four existing CTGs of 339 MW summer and 352 MW winter, as well as 120 MW summer and 111 MW winter from supplemental natural gas duct-firing in the four HRSGs.

Prospectively, Tampa Electric's firm load is expected to grow approximately 1.2 percent annually winter (1.0 percent summer) or 40 to 45 MW of firm demand per year. Tampa Electric will continue to meet capacity requirements with the most economical combination of demand-side management (DSM), conservation, renewable energy, purchased power, and generating capacity additions. In addition to normal load growth, Tampa Electric requires additional supply resources by 2017 to replace the purchased power contracts of 183 MW expiring on December 31, 2015; 117 MW expiring on December 31, 2016; and an additional 121 MW expiring on December 31, 2018.

Tampa Electric's IRP process incorporated an ongoing evaluation of demand and supply resources and conservation measures to maintain system reliability. By 2017, Tampa Electric's DSM programs will have produced summer and winter customer demand and energy reductions of 376.4 MW and 752.1 MW, respectively, and energy conservation of 1,000.7 gigawatt-hours. The reliability analysis determined that Tampa Electric will have capacity needs by 2017 of 294 MW. To develop the optimum expansion plan, the company researched current technologies for feasible options. The resulting list of supply resources was screened for technical feasibility, reliability, and relative economics. The initial screening resulted in the narrowing of technology alternatives to simple cycle natural gas and natural gas CC for further detailed analysis.

Tampa Electric evaluated these technologies using standard IRP techniques. Some of the economic and noneconomic factors that were considered included resource

reliability, efficiency, range of fuel capability and availability, capital and operating costs, ability to meet current and potential future environmental requirements, water use, and overall site benefits. As a result of this detailed analysis, Tampa Electric determined that natural gas CC technology is the best option to meet the 2017 need, and conversion of the four existing CTGs at PPS to a natural gas CC is the most cost-effective alternative.

Once this need was identified, Tampa Electric solicited market alternatives to its next planned generating unit as directed by the resource bid rule. The company issued a request for proposals (RFP) and considered price and nonprice attributes, operational performance, dispatchability, reliability, environmental compliance, and other issues. After carefully considering and integrating Tampa Electric's DSM load reduction and energy conservation programs and other supply resources, the Polk 2-5 Conversion Project was selected as the most cost-effective, reliable means of serving Tampa Electric's customers for the following reasons:

1. It is the most cost-effective next addition to the Tampa Electric system, when compared with all of the "self-build" alternatives.
2. It is the most cost-effective alternative, and the Project results in a savings of \$132.4 million cumulative present worth revenue requirements compared to the next best proposal in the RFP process.
3. It achieves significant energy efficiency savings by capturing the waste heat from four existing CTGs to generate up to 352 MW of net electrical output with no additional fuel input.
4. It provides up to 120 MW of additional low-cost peaking capacity from supplemental natural gas duct firing in the four HRSGs. This supplemental firing eliminates the need for future higher-cost simple cycle CTG peaking units.
5. The retention of simple cycle operating capability of the four existing CTGs provides operating flexibility and improves system reliability.
6. It achieves dramatic reduction in emissions rates from new environmental control equipment and efficiency improvements. The resulting NO_x emissions rate is reduced by 86 percent, while the CO₂ emissions rate is reduced 37 percent.
7. It conserves fresh water resources by using wastewater from the City of Lakeland and reduces nitrogen loading to Tampa Bay.
8. It enables the potential integration of solar thermal renewable capacity and energy in the future.

9. The existing PPS Site and supporting infrastructure for natural gas is uniquely compatible with the Project.
10. The transmission upgrade portion of the project will provide much needed infrastructure to reduce transmission congestion, improve grid reliability, and reduce losses.

In summary, the selection of the Polk 2-5 Conversion Project was supported by subsequent economic analyses of viable supply alternatives, demonstrating that the Project is the most cost-effective option compared to other technologies and available supply capacity from the Florida market. After consideration of all existing, new, and modified DSM programs and renewable energy initiatives, the construction of the Polk 2-5 Conversion Project with a January 2017 in-service date should not be deferred. A 2-year deferral of the recommended plan could increase costs to customers by \$100 million. Tampa Electric also determined that fuel diversity is a key objective, and the addition of natural gas CC technology in 2017 still maintains a prudent balance in Tampa Electric's capacity and energy mix. Finally, when considering the viability of uncommitted resources, the risk of emerging environmental regulations, and the uncertainty of voluntary DSM programs, the Project is needed as a firm resource within the Florida Reliability Coordinating Council region.

The Polk 2-5 Conversion Project is the best of the "self-build" alternatives and provides significant savings of \$132.4 million to Tampa Electric's customers when compared to the second most cost-effective alternative in the RFP, while providing additional benefits in the areas of reliability, fuel diversity, environmental impacts, and system efficiency generation. The results of these scenarios reinforce Tampa Electric's selection of the Polk 2-5 Conversion Project as the best alternative for Tampa Electric and its customers.