

State of Florida



Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: April 26, 2018

TO: Office of Commission Clerk (Stauffer)

FROM: Division of Engineering (Thompson, Ellis, King, Wright)
Division of Accounting and Finance (Barrett, Cicchetti)
Division of Economics (Bryant, Higgins, McNulty, Wu)
Office of the General Counsel (Dziechciarz, Murphy)

Handwritten initials and signatures: W, SC, MC, TB, MCB, WAM, GATH, RD, CM, ALM

RE: Docket No. 20170266-EC – Petition to determine need for Seminole combined cycle facility, by Seminole Electric Cooperative, Inc.

Docket No. 20170267-EC – Joint petition for determination of need for Shady Hills combined cycle facility in Pasco County, by Seminole Electric Cooperative, Inc. and Shady Hills Energy Center, LLC.

AGENDA: 05/08/18 – Regular Agenda – Post-Hearing Decision – Participation is Limited to Commissioners and Staff

COMMISSIONERS ASSIGNED: Graham, Polmann, Clark

PREHEARING OFFICER: Clark

CRITICAL DATES: 05/8/18 – Commission vote. Petitioners waived 135 day order issuance requirement from Section 403.519(4), Florida Statutes, with understanding that staff intends to issue recommendation for consideration by the Commission at the 05/08/18 Agenda Conference.

SPECIAL INSTRUCTIONS: None

LIST OF ABBREVIATIONS & ACRONYMS

AE/Tierra	Advance Energy and Tierra Resource Consultants
BR	Brief
CAGR	Compound Annual Growth Rates
Commission	Florida Public Service Commission
CPP/CC Portfolio	Clean Power Plan/Combined Cycle Portfolio
CPVRR	Cumulative Present Value Revenue Requirement
CTG	Combustion Turbine Generators
DEF	Duke Energy Florida
DSM	Demand-Side Management
EIA	Energy Information Administration
EXH	Exhibit
F.A.C.	Florida Administrative Code
FEECA	Florida's Energy Efficiency Conservation Act
FPL	Florida Power & Light
F.S.	Florida Statutes
GWh	Gigawatt Hour
HRSG	Heat Recovery Steam Generator
Intervenors	Michael Tulk, Patrick Daly and Quantum Pasco Power, L.P.
LFS	Load Forecast Study
MW	Megawatt
NEL	Net Energy Load
NO _x	Nitrogen Oxide
NPV	Net Present Value

NYMEX	New York Mercantile Exchange
Petitioners	Seminole Electric Cooperative, Inc. and Shady Hills Energy Center, LLC
PPA	Power Purchase Agreement
PV	Photovoltaic
Quantum	Quantum Pasco Power, L.P.
RFP	Request for Proposals
SCCF	Seminole Combined Cycle Facility
Seminole	Seminole Electric Cooperative, Inc.
Seminole Facility	Seminole Combined Cycle Facility
SGS	Seminole Generating Station
Shady Hills	Shady Hills Energy Center, LLC
Shady Hills Facility	Shady Hills Combined Cycle Facility
SHCCF	Shady Hills Combined Cycle Facility
STG	Steam Turbine Generator
TECO	Tampa Electric Company
TR	Transcript

Case Background

On December 21, 2017, the petition for determination of need for the Seminole Combined Cycle Facility (Seminole Facility) was filed by Seminole Electric Cooperative, Inc. (Seminole) and the Joint Petition for Determination of Need for the Shady Hills Combined Cycle Facility (Shady Hills Facility) was filed by Seminole and Shady Hills Energy Center, LLC (Shady Hills) (collectively, Petitioners). The Seminole Facility is a proposed 1,122 megawatt (MW) (winter capacity) new natural gas fired 2x1 combined cycle generating unit to be located at Seminole's existing Seminole Generating Station (SGS) in Putnam County, Florida. This plant would utilize existing facilities, including transmission lines and SGS infrastructure. The Shady Hills Facility is a proposed 573 MW (winter capacity) new natural gas fired 1x1 combined cycle facility to be constructed, owned, and operated by Shady Hills in Shady Hills, Florida, adjacent to the existing Shady Hills power plant. This plant would provide all of its generating capacity to Seminole pursuant to a tolling agreement between Seminole and Shady Hills. The petitions were filed pursuant to Sections 366.04 and 403.519, Florida Statutes (F.S.), and Rules 25-22.080, 25-22.081 and 28-106.201, Florida Administrative Code (F.A.C.).

Docket Nos. 20170266-EC and 20170267-EC were consolidated for hearing purposes by Order No. PSC-2018-0018-PCO-EC, issued on January 5, 2018. On January 17, 2018, Michael Tulk and Patrick Daly filed a Motion to Intervene in both dockets. Quantum Pasco Power, L.P. (Quantum) also filed a Motion to Intervene in both dockets on January 17, 2018. On January 24, 2018, Order No. PSC-2018-0062-PCO-EC, was issued granting Michael Tulk and Patrick Daly intervention. Order No. PSC-2018-0063-PCO-EC, also issued on January 24, 2018, granted intervention to Quantum. (Michael Tulk, Patrick Daly, and Quantum Pasco Power, L.P. are collectively referred to as Intervenors). On March 12, 2018, a prehearing conference was held. The hearing was held on March 21 through 22, 2018.

The Florida Public Service Commission (Commission) has jurisdiction over the subject matter of this proceeding pursuant to Sections 366.041 and 403.519, F.S.

Discussion of Issues

Issue 1A: Is there a need for the proposed Seminole Combined Cycle Facility, taking into account the need for electric system reliability and integrity, as this criterion is used in Section 403.519(3), Florida Statutes?

Issue 1B: Is there a need for the proposed Shady Hills Combined Cycle Facility, taking into account the need for electric system reliability and integrity, as this criterion is used in Section 403.519(3), Florida Statutes?

Recommendation: Yes. Seminole's models and forecasts of seasonal peak demand and net energy for load through 2027 are reasonable based on methodological changes which Seminole initiated in 2014 through 2017. With the expiration of existing power purchase agreements (PPAs), staff recommends that Seminole has demonstrated a need for the Shady Hills Facility in 2021 and the Seminole Facility in 2022 to maintain its system reliability and integrity. (Thompson, McNulty, Higgins, Bryant)

Position of the Parties

Seminole Issue 1A: Yes. Seminole has demonstrated a reliability need for 901 MW of additional generating capacity by the end of 2021 and 1,265 MW by the end of 2022, as well as a need for the additional capacity to be provided by the SCCF and SHCCF because it will displace higher cost coal-fired generation.

Petitioners Issue 1B: Yes. Seminole has demonstrated a reliability need for 901 MW of additional generating capacity by the end of 2021 and 1,265 MW by the end of 2022, as well as a need for the additional capacity to be provided by the SCCF and SHCCF because it will displace higher cost coal-fired generation.

Intervenors Issue 1A: No. Seminole's need forecasts are not reliable because they have historically been biased toward significantly overstating forecast values as compared to actual values observed. Seminole's new load forecasting methodology is at best unproven. Even if Seminole's need forecasts were accurate, Seminole can more cost-effectively meet those (probably overstated) needs using PPAs through 2027, as shown by Seminole's NO BUILD RISK Portfolio, followed by lower-CPVRR additions properly evaluated in the mid-2020s.

Intervenors Issue 1B: No. Seminole's need forecasts are not reliable because they have historically been biased toward significantly overstating forecast values as compared to actual values observed. Seminole's new load forecasting methodology is at best unproven. Even if Seminole's need forecasts were accurate, Seminole can more cost-effectively meet those (probably overstated) needs using PPAs through 2027, as shown by Seminole's NO BUILD RISK Portfolio, followed by lower-CPVRR additions properly evaluated in the mid-2020s.

Parties' Arguments

Petitioners

The Petitioners maintain that Seminole's current load forecast is reasonable for purposes of this proceeding. (Petitioners BR 8-9) The Petitioners' witness Wood testified that Seminole's load forecast has undergone significant improvements beginning with Seminole's 2014 Load Forecast Study (LFS) and continuing through the study that produced the load forecast supporting the Petitioners' petitions in this proceeding, the 2017 LFS. (Petitioners BR 7-8) The Petitioners' witness Hong further testified that improvements to Seminole's load models and forecasts have been shown to be effective in maintaining a reasonable level of forecast error since 2014 through a technique of isolating forecast model error called ex-post analyses.¹ (Petitioners BR 8)

The Petitioners state that Seminole's gap analysis, used to identify deficiencies between forecasted requirements and current available capacity, shows that Seminole will need 901 MW of generation by the end of 2021 to meet Seminole's members' energy needs and its reserve margin requirements. The Petitioners assert that Seminole's future capacity need results primarily from the expiration of PPAs and that this need will grow to 1,265 MW in 2022, with the expiration of an additional PPA and expected load growth. (Petitioners BR 6) Regarding the Intervenors' argument that Peninsular Florida reserve margins are projected to be adequate to meet Seminole's need through at least 2026, the Petitioners argue that Seminole tested the marketplace through the request for proposals (RFP) process and developed a balanced portfolio including existing capacity resources located within Peninsular Florida. (Petitioners BR 9) The Petitioners further argue that Intervenors can cite no Commission precedent for the proposition that Seminole must rely on excess Peninsular Florida capacity, in lieu of new generation resources, without regard to cost-effectiveness or other relevant considerations, such as transmission impacts. (Petitioners BR 9)

Intervenors

The Intervenors maintain that Seminole has consistently and significantly overstated its projected winter and summer peak demand and its net energy for load (NEL) as demonstrated by the Intervenors' witness Sotkiewicz's forecast error calculations (units and rates) based on Seminole's 2005 through 2012 forecasts. Therefore, Seminole's current forecasts cannot be used as a basis for supporting Seminole's purported need for the combined capacity of the Seminole Facility and the Shady Hills Facility. (Intervenors BR 14) According to witness Sotkiewicz, Seminole's winter peak forecasting errors five-years out have averaged 1,381 MW (39 percent), which he notes is more than Seminole's projected "Winter Need Gap" of 1,336 MW for 2024 as testified to by the Petitioners' witness Diazgranados. (Intervenors BR 13-14)

The Intervenors maintain that, while Seminole's forecasting methodology has been updated, it is unproven in any comparison of forecast versus actual values. The Intervenors assert that Seminole's load forecasts have a demonstrated bias toward over-forecasting load requirements three to five years into the future over the last decade, and thus are a cause for extreme doubt as

¹Witness Wood described ex-post forecast error analyses as an "after-the-event" evaluation of model error with observed (actual) explanatory variable data which removes the error associated with long-term forecasts of weather and economy, thereby allowing insight into model improvements. (TR 631-632)

to Seminole's need for the Seminole Facility and the Shady Hills Facility for system reliability and integrity. (Intervenors BR 9)

The Intervenors assert that Peninsular Florida's reserve margins are projected to be adequate to meet all reliability criteria through at least 2026, without the Seminole Facility or the Shady Hills Facility. (Intervenors BR 13) The Intervenors further assert that the additional flexibility of shorter-term PPAs through the No Build Risk: All PPA Portfolio (No Build Portfolio) will allow Seminole to better match resources with needs. (Intervenors BR 16)

Staff Analysis: The Petitioners' need assessment process demonstrated that, in order to meet Seminole's established reliability criteria, approximately 1,265 MW of additional capacity will be needed by the end of 2022. (TR 57) This capacity need results primarily from the scheduled expiration of several PPAs and expected load growth. (EXH 3)

Seminole's Load Model and Forecasting Overview

Seminole's load forecasts submitted in support of its proposals in this proceeding, including its forecasts of consumers (i.e. number of customers), winter and summer peak demand, and NEL, are aggregates of the forecasts Seminole prepares for each of its nine members. Witness Wood testified that Seminole creates econometric models to prepare forecasts for its members using model assumptions collected from the members, government agencies, universities, and third party providers. (TR 285) The annualized load forecasts for the years 2017 through 2027, which are used to support its petition in this proceeding, appear in Seminole's December 2017 Need Study. (EXH 3) In addition to the base forecasts, Seminole includes both high case and low case projections of demand based on the 10th and 90th percentile ranks of temperature distribution derived from past temperatures. (EXH 74)

Seminole's forecast of winter peak demand is of particular importance in this proceeding for evaluating the need for the proposed generating plant additions because Seminole is a winter peaking utility. (TR 283-284; TR 443) Witness Wood testified that Seminole's winter peak demand models regress independent variables with the highest peak during November through March, while the summer peak demand models regress independent variables with the highest peak during April through September. (TR 287) Seminole's member-specific winter peak demand models include variables such as: member forecasted consumer growth or population projections; heating degree days interacting with heating end-use equipment/appliance forecasts; load factor; and in most cases, Seminole's wholesale electricity price (in real terms). (EXH 64)

A key consideration in this docket is whether the additional capacity associated with the Seminole Facility and Shady Hills Facility is needed to meet Seminole's winter peak demand, and if so, when. (TR 628-629) The discussion below addresses whether Seminole's winter peak demand forecast is reasonable prior to considering the generation and purchase power aspects of Seminole's need proposal.

History and Forecast of Seminole's Winter Peak Demand

Presented in Table 1-1 below is staff's overview of Seminole's actual and projected peak demand and NEL requirements for the period 2012 through 2027.

**Table 1-1
 Seminole Historical and Projected Peak and Net Energy for Load Requirements**

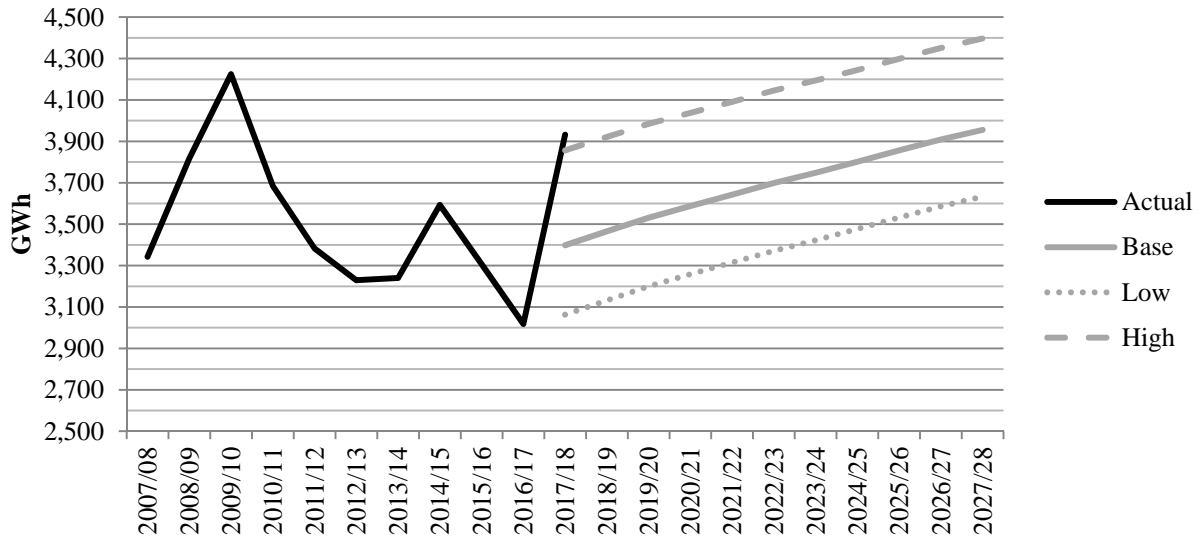
Year	Winter Peak (MW)	Summer Peak (MW)	Net Energy for Load (GWh)
2012 (actual)	3,229	2,890	13,256
2017 (actual)	3,932	3,114	14,325
2018 (projected)	3,466	3,140	14,601
2022 (projected)	3,699	3,297	15,306
2027 (projected)	3,955	3,516	16,437
Actual Growth (2012-2017)	703	224	1,069
Projected Growth (2018-2022)	233	156	705
Projected Growth (2018-2027)	490	375	1,836
CAGR, 2012-2017*	4.02%	1.50%	1.56%
CAGR, 2018-2022*	1.64%	1.22%	1.19%
CAGR, 2018-2027*	1.48%	1.26%	1.32%
*CAGR = ((Ending Value / Beginning Value) ^ (1/Number of Periods)) - 1			
Note: Growth figures may not compute due to rounding.			

Source: EXH 3; EXH 85; TR 340

The 2018 through 2022 compound annual growth rates (CAGR) of Seminole’s forecasted winter peak, summer peak, and net energy for load are less than the actual CAGRs over the recent period of 2012 through 2017. Staff understands the CAGR of winter-peak requirements for the period of 2012 through 2017 to be skewed by a colder-than-projected 2017- 2018 winter season. (EXH 79) Seminole showed a forecasted 2017-2018 winter peak requirement of 3,398 MW in its December 2017 Need Study, when its actual 2017-2018 winter peak demand was 3,932 MW, for an under-forecast of 534 MW. Seminole’s winter-peak growth for the 2018 through 2022 period is projected to be approximately 233 MW. (EXH 3; TR 340)

A graphical representation of Seminole’s winter demand beginning in 2007, including actual data showing the 2017-2018 winter, and forecasted data through 2027, with Seminole’s alternative high and low forecasts, appears below in Figure 1-1.

**Figure 1-1
Winter Peak Demand**



Source: EXH 3; TR 340; TR 354

Seminole's Historical Load Forecast Error

The Intervenor's witness Sotkiewicz testified that Seminole's extreme historical winter demand forecast errors, indicating an overforecasting bias, are evidence that Seminole's current load forecast cannot be used as a basis for claiming need for either the Seminole Facility or the Shady Hills Facility. (TR 572; TR 575) In his rebuttal testimony, Seminole witness Wood provided four reasons why he believes witness Sotkiewicz was incorrect in his assessment of Seminole's load forecast error. (TR 625-632) The reasons include:

1. Forecast Process Improvements - Witness Wood testified that Seminole has implemented a series of improvements to its load forecasting process and methodology from 2014 through 2017 that are relevant to this case. Such improvements included: various changes to its end use model; transitioning to forecasting total energy requirements rather than usage per customer using hourly delivery point data, transitioning to "SAS on Windows PC" software in place of "SAS on Mainframe" for modeling and forecasting; expanding its weather stations from 8 to 25 while also enhancing its weather station selection process; and, replacing saturation and efficiency variables with Itron, Inc. energy intensity variables. (TR 626; TR 656-657; EXH 64)
2. Incorrect Forecast Error Calculations - Witness Wood presented a "corrected" analysis of witness Sotkiewicz's calculation of Seminole's historic forecast errors three, four, and five-years out. Witness Wood's "corrected" analysis indicated such error rates were significantly lower than the error rates presented by witness Sotkiewicz, albeit still high (e.g., 21 percent error rate for winter peak demand forecasts five years-out, as opposed to 39 percent per witness Sotkiewicz). (TR 629-631; EXH 66)

3. Other Florida Utilities Had High Forecast Errors - Witness Wood testified that witness Sotkiewicz's approach yields a similar magnitude of historical forecast errors for Seminole, Duke Energy Florida (DEF), and Tampa Electric Company (TECO), and that many utilities during the period in question (2005 through 2013) had high forecast errors due to the effects of the Great Recession. (TR 628-629; EXH 65)

4. Reasonably Low Ex-Post Forecast Errors - Witness Wood testified Seminole has been conducting ex-post forecast error analyses of its annual load since 2015. Witness Wood testified that Seminole's 2017 ex-post forecast error analysis ranged from 2.3 to 3.5 percent for the winter demand model, and Seminole witness Hong testified that such error rates were "reasonably low." (TR 632; TR 672)

First, staff reviewed the extent of Seminole's changes to its load model and forecast process. The following is a list of the model changes Seminole adopted beginning in 2015, which were expected to improve Seminole's winter peak demand model and forecast methodologies and data accuracy:

- A. Weather Data – Seminole expanded the number of weather stations from 8 to 25, increased types of weather data used, and improved its weather station selection methodology to reduce forecast error. (EXH 64)
- B. Load Data – Seminole used hourly delivery point data to model and forecast total energy and demand requirements rather than continuing to rely upon forecasts of consumer meters, usage per meter, and extrapolated loss and load factors. (EXH 64)
- C. Appliance Saturation and Efficiencies – By joining Itron's Energy Forecasting Group, Seminole enhanced its ability to account for trends in structural changes, end-use appliance saturation, and efficiencies, thereby taking advantage of the latest trends and indices, adapted to Seminole's Member data. (EXH 64)
- D. Forecast Technology – Converting to "SAS on Windows PC" from "SAS on the Mainframe" reportedly allowed Seminole to include new data and make its modeling and forecasting process more flexible and robust. (EXH 64; TR 625-626)

These identified changes in methodology and data, incorporated over the 2014 through 2017 time period, appear to be broad-based modifications to the methodology and data used in Seminole's prior load models and forecasts. These changes appear to be improvements, offering a higher level of precision, a greater level of detail, and a more flexible and robust forecasting software platform for modeling and forecasting operations.

With regard to witness Wood's second reason for rejecting witness Sotkiewicz's allegation of overforecast bias, witness Wood's series of corrections to witness Sotkiewicz's historical load forecast error included: (a) the graduated removal of Lee County Electric Cooperative's load forecast data from Seminole's load forecasts shown in the 2005, 2006, and 2007 Ten-Year Site

Plans²; (b) recognition that Seminole's LFSs are prepared in the year prior to the Ten-Year Site Plan in which they appear; and (c) recognition of the biennial production of load forecast studies before 2008.³ (TR 627-628) Staff notes that witness Sotkiewicz did not refute witness Wood's corrections in his Supplemental Testimony, nor did he amend his own testimony to include witness Wood's corrections. (TR 602-603) Staff has reviewed witness Wood's corrections to witness Sotkiewicz's analyses of Seminole's historical forecast error rates and witness Wood's corrections appear to be well-supported. (EXH 95; EXH 97)

Staff reviewed Seminole's corrected historical average winter peak demand forecast error rate five-years out, equal to positive 21 percent, with regard to the proposed in-service date of the Seminole Facility, and staff considers this error rate, while lower than the rate estimated by witness Sotkiewicz, to be high. (EXH 66) Also, in order to apply historical load forecast error as a proxy for the first year the Shady Hills Facility is proposed to come on line, in late 2022, Seminole would have had to present a six-year out historical load forecast error rate. Seminole did not provide such information in this proceeding. The effectiveness of the changes Seminole made to its load forecast process and methods from 2014 to 2017 to address high historical forecast errors is the subject of witness Wood's ex-post forecast error analysis.

Staff reviewed witness Wood's third reason to reject witness Sotkiewicz's allegation of overforecast bias, wherein witness Wood testified that other utilities with similar size and geographic characteristics also experienced high load forecast errors during the historical forecast period included in witness Sotkiewicz's testimony. (TR 628-629) Staff agrees that the historical load forecast errors for forecasts prepared through 2012 were similarly high for the two other utilities witness Wood selected for comparison purposes, DEF and TECO. Witness Wood testified that, as a point of comparison, many utilities in Florida struggled with load forecast errors beginning with the onset of the Great Recession in 2008. (TR 627) At hearing, witness Wood testified, "I would say the majority of [Seminole's] error was caused by the great recession and the onset of federally implemented energy efficiency codes and standards," but he admitted that the absence of the load modeling and forecasting enhancements that Seminole adopted later contributed to the high error rates. (TR 660-661) It may be reasonable to expect that the Great Recession initially had a negative impact on forecast accuracy; however, staff notes that the record does not contain metrics identifying the specific causes of Seminole's load forecast errors.

Witness Wood's analyses of Seminole's, DEF's, and TECO's comparative load forecast errors do not include a comparison of 2013 load forecast errors.⁴ (EXH 65) Staff notes that Seminole reported continued high winter peak demand forecast error rates as late as the 2013 LFS (e.g.,

²Reflects removal of Lee County Electric Cooperative data for forecasts appearing in the 2005-2007 Ten-Year Site Plans for forecast periods beginning in 2008, when reductions in load to that utility became known and recognized. (TR 627-628)

³Seminole's 2005 Ten-Year Site Plan reflects the 2003 LFS; Seminole's 2006 and 2007 Ten-Year Site Plans both reflect the 2005 LFS. Thus, new forecasts were not produced in the 2005 and the 2007 Ten-Year Site Plans. (TR 628)

⁴In his analysis, witness Wood included data through the 2013 Ten-Year Site Plans, but the 2013 Ten-Year Site Plan is based on forecasts prepared in 2012, not 2013, consistent with his testimony that forecasts are prepared the year prior to the Ten-Year Site Plan in which they appear. (EXH 65; TR 628)

16.9 percent error rate for its forecasts prepared three-years out, which was the 2015-2016 winter season), despite a large increase in heating degree days compared to the prior winter season, 2014-2015. (EXH 66; EXH 79) This is an indication that the issue of high historical load forecast errors for Seminole may not be fully attributed to the impacts of the Great Recession, which officially ended in June 2009. (TR 648) Based on Seminole's high historical average forecast error rates (overforecasts) contained in Seminole's load forecast studies through 2013, it appears that significant improvements in Seminole's load forecast process and methods were necessary to improve the accuracy of Seminole's load forecasts. (EXH 66) As discussed above, Seminole launched a series of changes to its load model and forecast process in its 2014, 2015, 2016, and 2017 LFSs designed to improve load forecast accuracy. (EXH 64; TR 656) In addition to the changes to Seminole's load forecast process and methods, staff reviewed whether the evidence in this case suggests that such changes have resulted in reasonably accurate forecasts.

In this regard, Witness Wood's fourth reason to reject witness Sotkiewicz's allegations of overforecast bias relates to Seminole's initiation of its ex-post forecast error analysis for demand and energy beginning in 2015. Seminole's analysis is an error-estimating procedure that is based on replacing the original estimated weather and economic data with actual weather and economic data in the forecast model to generate an "after the fact", or ex-post, forecast devoid of weather and economy errors. (TR 631-632) The difference in the actual demand and the ex-post demand forecast is the remaining error rate which is meant to be an indicator of the magnitude of the error in Seminole's model. (TR 631-632) The ex-post forecast error for Seminole's 2017 winter peak demand based on the 2016 LFS (two-years out) was 3.5 percent. Seminole's ex-post forecast for Seminole's 2016 winter peak forecast error (one-year out) was 2.3 percent. (TR 672) Witness Hong testified that this level of error was reasonably low. (TR 672) This lends some credibility to the notion that the modeling changes, which Seminole made beginning in 2014, have resulted in a reasonable level of error rates one and two-years out. However, staff notes that the error rates of most interest in this proceeding are for the forecasts that are five and six-years out.

In addition to reviewing witness Wood's reasons for rejecting witness Sotkiewicz's allegations of overforecast bias, staff conducted two other areas of review using record evidence to examine whether Seminole had adequately addressed the high historical forecast errors in its more recent load forecasts. First, staff reviewed Seminole's recent ex-ante forecast error, which is forecast error without adjustments for weather and economic data. Seminole's 2014 through 2017 winter demand forecasts, conducted during the period of modeling/forecasting method changes, may or may not produce error rates that would follow the pattern of the forecasts that came before (overforecasts). In reviewing such error rates, consideration may be given to significant impacts due to weather or other volatile and uncontrollable factors which may have been present. The related ex-ante analysis appears below in Table 1-2.

**Table 1-2
 Seminole Winter Peak Demand Ex-ante Forecast Error Rates, 2011-15 Load
 Forecast Studies**

Actual Winter Peak Demand Period	Actual Demand	"3- Load Forecast Study Year			"4- Load Forecast Study Year		
		Load Forecast Study Year	Years Out" MW Error	Percent Error	Load Forecast Study Year	Years Out" MW Error	Percent Error
2014-15	3,593	2012	3,949	9.91%	2011	4,054	12.83%
2015-16	3,307	2013	3,866	16.90%	2012	4,022	21.62%
2016-17	3,018	2014	3,516	16.50%	2013	3,978	31.81%
2017-18	3,932	2015	3,539	-9.99%	2014	3,588	-8.75%

Note: Bolded entries denote results beginning with Seminole's 2014 LFS.

Sources: EXH 57; EXH 65; EXH 66; TR 340

Table 1-2 shows that the three available data points for three and four-year out winter peak demand error since the initiation of load forecast process changes in 2014 were the three-year out forecasts of 2016-2017 and 2017-2018 winter seasons, and the four-year out forecast for the 2017-2018 winter season. Two out of the three error rates noted above are negative, indicating underforecasts had occurred, which is not unexpected since winter peak temperatures were lower than normal for the 2017-2018 winter season. (TR 354-355) The three-year error rate for 2016-2017 was strongly positive at 16.50 percent, but that occurred in a year when the actual temperatures in January and February of 2017 were very mild (higher than normal). (EXH 79) From the available data, these forecast data points appear to indicate Seminole's recent winter peak demand forecasts are less prone to being overforecasts at three and four-years out than they were historically. (EXH 66)

Staff's second additional area of review was to determine whether Seminole's 2014 through 2017 load forecasts show significant decreases in demand and energy compared to the 2013 load forecasts for the relevant years in this proceeding (i.e., 2021 through 2023). If Seminole's load modeling/forecasting changes were effective in making Seminole's forecast more accurate, the forecast amounts would be expected to decrease significantly, based on Seminole's history of high overforecasts. The related review is shown below in Table 1-3 for Seminole's winter peak demand.

**Table 1-3
 Year over Year Percent Change in Winter Peak Demand Forecasts**

Load Forecast Study	Winter Season			
	2021-22		2022-23	
	MWs	Percent Change	MWs	Percent Change
2013	4,540	-	4,651	-
2014	3,831	-15.6%	3,887	-16.4%
2015	3,744	-2.3%	3,787	-2.6%
2016	3,750	0.2%	3,803	0.4%
2017	3,643	-2.9%	3,699	-2.7%
2017-2013	-897	-19.8%	-952	-20.5%

Source: EXH 112; TR 628

Table 1-3 above indicates that significant reductions occurred in Seminole’s 2014 winter peak demand forecast relative to Seminole’s 2013 winter peak demand forecast, and additional, albeit smaller, reductions occurred in the 2015 and 2017 winter peak forecasts. Seminole’s 2017 LFS’s overall reduction in its winter peak demand forecast for the projected in-service year of the Seminole Facility is 897 MW, or 19.8 percent, relative to Seminole’s 2013 LFS’s forecast.

Staff has reviewed Seminole’s load models and forecast methods, assumptions, data, data sources, statistics, and error rates and recommends that Seminole’s load models and forecasts appear reasonable to staff. Moreover, the Intervenors have not provided any alternative load forecasts in this proceeding.

Summary of Load Forecasting

Witness Sotkiewicz testified that he strongly doubts the accuracy of Seminole’s load forecasts because Seminole has historically experienced high load forecast error rates, and its new forecasting methodology and new inputs remain unproven. (TR 602-603) Staff recommends that witness Sotkiewicz is not persuasive based on Seminole’s broad-based load modeling and forecasting changes, reasonable levels of winter peak demand ex-ante and ex-post forecast errors in recent years, as well as significantly reduced winter peak demand forecasts beginning in 2014 and extending through 2017. Additionally, it would be difficult, if not impossible, to address matters such as generation expansion without the ability to evaluate the suitability of updated utility load forecasts for regulatory purposes, including those cases wherein a utility’s forecasts are deemed to have high historical forecast error rates. The above quantitative and qualitative analyses, taken together, appear to indicate that Seminole’s changes to its load modeling/forecasting methods and processes have improved its forecasting accuracy. In sum, staff recommends that Seminole’s models and forecasts of customers, winter and summer peak demand, and net energy for load are reasonable for purposes of considering the need for the Seminole Facility and the Shady Hills Facility.

Reserve Margin

According to the Petitioners' witness Diazgranados, Seminole has two principal reliability criteria: (1) a 15 percent reserve margin; and, (2) a loss of load probability of one day in ten-years. (TR 442) The record indicates that Seminole's forecasted load and winter peak reserve margin are the primary drivers for its need. (TR 443) As shown in Table 1-4 below, beginning in the 2021/22 timeframe, Seminole's winter reserve margin is expected to be below its required 15 percent reserve margin criterion if no capacity is added. (EXH 74) The expiration of multiple PPAs will cause a drop of 947 MW in available capacity, and load growth is projected to increase Seminole's winter peak demand by 229 MW by 2023, as shown below. (EXH 74) The Petitioners assert that this would possibly leave Seminole's members and member-consumers at a high risk of service interruptions. (TR 451)

**Table 1-4
Winter Reserve Margin with No Additional Capacity**

Year	Capacity Available (MW)	System Firm Peak Demand (MW)	Reserve Margin
2018/19	4,496	3,470	30%
2019/20	4,746	3,537	34%
2020/21	4,595	3,595	28%
2021/22	3,849	3,643	6%
2022/23	3,549	3,699	-4%

Source: EXH 74

Seminole proposes to meet its need with what it has denoted as the Clean Power Plan/Combined Cycle (CPP/CC) Portfolio. (TR 443-444; TR 447-448) As further discussed in Issues 5A and 5B, this portfolio includes adding the Shady Hills Facility in 2021, the Seminole Facility in 2022, retiring one of the two SGS coal units in 2022, and multiple PPAs. (EXH 74) As shown in Table 1-5 below, Seminole's projected winter reserve margin with the CPP/CC Portfolio is expected to satisfy Seminole's reserve margin criterion. (EXH 74)

**Table 1-5
CPP/CC Portfolio Winter Reserve Margin**

Year	Capacity Available (MW)	System Firm Peak Demand (MW)	Reserve Margin
2018/19	4,496	3,470	30%
2019/20	4,746	3,537	34%
2020/21	4,595*	3,595	28%
2021/22	4,200	3,643	15%
2022/23	4,264	3,699	15%

*Note: There appeared to be a typo in the response, therefore, this value was taken from the No Planned Capacity Excel sheet.

Source: EXH 74

Witness Sotkiewicz argued that Seminole's need forecasts are not reliable because Seminole has been biased in overstating forecast values, and further argues that Seminole's updated forecasting methodology is unproven. (TR 602-603) As previously discussed, staff recommends that Seminole's updated forecasting methodology is sufficient. However, as indicated by witness Diazgranados, the primary driver of Seminole's need is the loss of PPAs. (TR 443) The PPAs expiring result in a loss of available capacity to Seminole that will need to be replaced to provide reliable service to Seminole's members.

The Intervenors argue that Peninsular Florida reserve margins are projected to be adequate to meet all reliability criteria through at least 2026 without constructing the Seminole Facility or the Shady Hills Facility. However, the Petitioners argue that the Intervenors can cite no Commission precedent for the proposition that Seminole must rely on excess Peninsular Florida capacity, in lieu of new generation resources, without regard to cost-effectiveness or other relevant considerations, such as transmission impacts. Also, the Petitioners' witness Ward noted that approximately 80 percent of Seminole's member load is located in the DEF balancing area. (TR 138) He further asserted that having excessive generation resources outside of that balancing area would require wheeling through multiple areas. (TR 138) Because wheeling would add additional transmission costs and risks to Seminole's members, and reduce Seminole's electric system reliability and integrity, staff disagrees with the Intervenors' argument and recommends that the Petitioners' argument is persuasive.

The Intervenors also argue that Seminole can meet its needs more cost-effectively with PPAs through 2027. (TR 574-575) Cost-effectiveness will be addressed in Issues 5A and 5B. Based on the foregoing, staff recommends that Seminole does have a reliability need and the record demonstrates that the portfolio including the Seminole Facility and the Shady Hills facility will sufficiently address this need.

Conclusion

Seminole's models and forecasts of seasonal peak demand and net energy for load through 2027 are reasonable based on methodological changes which Seminole initiated in 2014 through 2017. With the expiration of existing PPAs, staff recommends that Seminole has demonstrated a need for the Shady Hills Facility in 2021 and the Seminole Facility in 2022 to maintain its system reliability and integrity.

Issue 2A: Are there any renewable energy sources and technologies or conservation measures taken by or reasonably available to Seminole Electric Cooperative, Inc., which might mitigate the need for the proposed Seminole Combined Cycle Facility?

Issue 2B: Are there any renewable energy sources and technologies or conservation measures taken by or reasonably available to Seminole and Shady Hills Energy Center, LLC, which might mitigate the need for the proposed Shady Hills Combined Cycle Facility?

Recommendation: No. Staff recommends that renewable energy resources and conservation measures are incorporated into Seminole's system planning to the extent reasonably available, including the recent addition of 40 MW of summer solar photovoltaic (PV) capacity. As a wholesale provider of electricity, Seminole provides appropriate price signals to encourage conservation. (Wright)

Position of the Parties

Seminole Issue 2A: No. As a winter-peaking utility, Seminole experiences its highest demand when solar energy is not a viable capacity source. As such, additional renewable energy is not reasonably available to mitigate Seminole's need. Seminole's wholesale rate structure provides price signals that encourage Members to implement conservation measures aimed at reducing Seminole's system peak. Despite the conservation savings achieved by its Members, Seminole needs additional capacity and conservation measures are not reasonably available to mitigate that need.

Petitioners Issue 2B: No. As a winter-peaking utility, Seminole experiences its highest demand when solar energy is not a viable capacity source. As such, additional renewable energy is not reasonably available to mitigate Seminole's need. Seminole's wholesale rate structure provides price signals that encourage Members to implement conservation measures aimed at reducing Seminole's system peak. Despite the conservation savings achieved by its Members, Seminole needs additional capacity and conservation measures are not reasonably available to mitigate that need.

Intervenors Issue 2A: Yes. Seminole received numerous proposals totaling more than 3,000 MW of solar generating capacity; thus, there are renewable energy options that are at least "reasonably available" to Seminole to meet its needs. Further, solar costs and solar-with-storage costs are declining, but Seminole failed to adequately examine these important options. Seminole and its Member Coops should also be able to achieve substantial additional peak reductions, comparable to other FEECA utilities, through conservation.

Intervenors Issue 2B: Yes. Seminole received numerous proposals totaling more than 3,000 MW of solar generating capacity; thus, there are renewable energy options that are at least "reasonably available" to Seminole to meet its needs. Further, solar costs and solar-with-storage costs are declining, but Seminole failed to adequately examine these important options. Seminole and its Member Coops should also be able to achieve substantial additional peak reductions, comparable to other FEECA utilities, through conservation.

Parties' Arguments

Petitioners

Petitioners assert that Seminole's generating mix already includes reasonably available renewable resources. (Petitioners BR 11) Petitioners also argue that the results of Seminole's RFP process show that additional renewable energy resources would not be cost-effective compared to the Seminole Facility or Shady Hills Facility. (Petitioners BR 11) Moreover, Petitioners maintain that Seminole is a winter-peaking utility and solar energy is not a viable capacity source to offset its peak demand. Nevertheless, Petitioners note that Seminole has included 40 MW (summer) of solar in the selected resource plan. (Petitioners BR 11)

Petitioners assert that, as a wholesale supplier of electric energy to its members, Seminole is not directly responsible for demand-side management (DSM) programs but that Seminole's wholesale rate structure provides members price signals that encourage conservation. (Petitioners BR 12) Petitioners also argue that Seminole assists its members in evaluating and implementing DSM measures. (Petitioners BR 12) Petitioners state that Seminole recently engaged Advanced Energy and Tierra Resource Consultants (AE/Tierra) to identify potential new conservation programs and to evaluate their cost-effectiveness. (Petitioners BR 13) Petitioners note that none of the additional measures evaluated by AE/Tierra satisfied the Rate Impact Measure test. (Petitioners BR 14)

Intervenors

Intervenors argue that there is more than 3,000 MW of solar generating capacity available to meet Seminole's needs. (Intervenors BR 30) Further, Intervenors attest that solar costs and solar-with-storage costs are declining, and that Seminole failed to adequately examine these important options. (Intervenors BR 35) Intervenors also assert that there is likely significant additional conservation potential to help mitigate the need for either the Seminole Facility or Shady Hills Facility. (Intervenors BR 31) Intervenors note that, through 2016, utilities subject to Florida's Energy Efficiency Conservation Act (FEECA) have achieved 17 percent of the Florida Reliability Coordinating Council region's projected 2017 firm winter peak demand in winter peak demand reductions. Intervenors maintain that Seminole, by comparison, has achieved 5.8 percent of its firm winter peak as winter peak demand reductions. (Intervenors BR 31) Therefore, Intervenors contend that if such winter peak demand reductions have been achieved by Florida's FEECA utilities, these reductions are at least reasonably attainable to Seminole and its members. (Intervenors BR 31)

Staff Analysis:

Renewable Energy Sources and Technologies

Witness Ward argues that Seminole's generation portfolio currently incorporates various renewable generation resources. (TR 56) In terms of winter capacity, biomass facilities account for 13 MW, landfill gas-to-energy facilities for 16.8 MW, and waste-to-energy facilities for 58 MW, in addition to 2.2 MW of summer solar PV capacity from the Cooperative Solar facility. (TR 56; EXH 5; EXH 3) A provision in Seminole's Member Wholesale Power Contract gives

Seminole's members the flexibility to install distributed renewable generation with capacity amounts up to five percent of the member's three-year average peak demand. (TR 54; EXH 74)

Seminole recently added renewable resources to its system, namely 40 MW of summer capacity from the Tillman Solar Center, a solar PV facility. (TR 59; EXH 6) When evaluating responses to its March 2016 RFP, witness Ward states that Seminole had concerns with the viability of solar capacity sources to offset its winter peak demands. (TR 59; EXH 27) Petitioners attest that Coronal, the bidder associated with the Tillman Solar Center, provided the lowest-priced offer and that Coronal would honor this price for a project within the 40 MW to 75 MW range. (EXH 79) Seminole opted for the 40 MW size to evaluate the effects of a mid-size solar facility on its system. (EXH 79)

Petitioners' witness Peters argues that, while the renewable resource responses to Seminole's RFP largely consisted of solar facility proposals, a number of non-solar proposals were also received. These covered a wide-range of renewable technologies including landfill gas, waste-to-energy, wind, and battery storage. (TR 404; EXH 27) Witness Ward notes that Seminole ultimately rejected all of the non-solar proposals because they were not as economical as the traditional generating proposals received. (TR 71; EXH 80) Sedway Consulting, Seminole's contracted independent evaluator, performed a parallel RFP analysis and the results corroborated Seminole's decisions. (EXH 27) Further discussion on the evaluation of the RFP process can be found in staff's recommendation for Issues 5A and 5B.

Under cross-examination by Intervenors, Petitioners' witness Taylor testified that Seminole received RFP responses totaling approximately 3,000 MW of solar generating capacity. (TR 530) Intervenors argue that these proposals demonstrate that there are "significant amounts" of renewables reasonably available to Seminole. Witness Taylor also testified that the cost of solar and solar-with-storage facilities are declining. (TR 531-532) Intervenors' witness Sotkiewicz stated that should Seminole use an "All-PPA Portfolio" for the next 7-10 years, this would give Seminole an opportunity to observe whether additional improvements in renewable technologies, such as solar-with-storage, come about. (TR 594) As discussed above, Seminole already incorporates renewable energy resources into its system as reasonably available and, through its RFP process, sought input from the wholesale power markets in identifying viable commercial alternatives to serve the energy demands of its members' systems. Therefore, solar and solar-with-storage providers were given an opportunity to compete on equal terms with more traditional generation facilities. Staff does not recommend that witness Sotkiewicz's argument is persuasive because Seminole retains the opportunity to observe advances in renewable technology regardless of what generation resources are incorporated into its system. Based on the forgoing, staff recommends that renewable energy resources are incorporated into Seminole's system planning to the extent reasonably available.

Conservation Measures

Witness Ward states that Seminole is a not-for-profit rural electric cooperative organized under Chapter 425, F.S. (TR 53) Staff notes that Seminole is not subject to FEECA's conservation requirements.⁵ Nevertheless, witness Wood argues that Seminole has implemented a number of

⁵See Sections 366.80-366.85 and 403.519, F.S.

programs within its system that promote the use of DSM or conservation to its members. (TR 292-294; EXH 3)

Seminole's wholesale rate structure, for example, includes price signals meant to reflect Seminole's cost of supplying power in aggregate. (TR 292) These signals incentivize energy conservation during different times and are as follows: (1) a production demand charge during certain months of the year, designed to encourage member conservation during heavy-demand seasons; (2) monthly member demand charges calculated relative to Seminole's peak in that month; discouraging coincident peaking with Seminole; and, (3) Time-Of-Use fuel rates, on-peak/off-peak energy charges meant to encourage members to minimize their systems' energy use during certain times of the day. (EXH 86) Seminole supplements its wholesale rate structure by administering a coordinated load management demand reduction strategy that provides real-time notification to its members signaling when Seminole's monthly peak is expected to occur. (TR 292) Seminole, with its members, also participates in an Energy Efficiency Working Group which was formed in 2008 to coordinate and promote energy conservation and DSM programs, meeting at least two times a year. (TR 293) This group facilitates Seminole's sharing of program implementation training, technical assistance, and consumer educational material with its members. (TR 293; EXH 78) Also, as part of the Energy Efficiency Working Group, Seminole conducts cost-effectiveness studies on proposed DSM and conservation measures, provides this information to its members, and, based on member requests, assists in program implementation. (EXH 78; EXH 74) Witness Wood argues that Seminole engaged AE/Tierra to evaluate potentially available DSM and conservation measures to mitigate Seminole's capacity needs, but that none of the additional programs evaluated by AE/Tierra satisfied the Rate Impact Measure test. (TR 296; EXH 17)

Intervenors assert that there are likely conservation measures, at least reasonably available to Seminole, to help mitigate the need for either the Seminole Facility or Shady Hills Facility, and support this position by comparing Seminole's winter peak demand reductions to Florida's utilities that are subject to FEECA. (EXH 108; EXH 109; Seminole's 2017 Ten-Year Site Plan) Witness Sotkiewicz did not provide testimony regarding the reasonable availability of any conservation measures to Seminole. As discussed above, Seminole is a wholesale provider of electricity and provides appropriate pricing signals to its members. These signals facilitate incorporation of DSM and conservation measures into Seminole's members' systems. FEECA utilities, on the other hand, interface directly with their retail customers. Staff believes that the situational differences between Seminole and FEECA utilities may contribute to the disparity in conservation. As such, staff recommends that this disparity is not, in and of itself, indicative that there are additional conservation measures available to Seminole.

Based on the forgoing, staff recommends that Seminole currently incorporates a number of conservation measures into its system, and that there are no additional conservation measures reasonably available to Seminole which might mitigate the need for the proposed Seminole Facility or Shady Hills Facility.

Conclusion

Staff recommends that there are no renewable energy sources and technologies or conservation measures reasonably available to Seminole or Shady Hills which might mitigate the need for the proposed Seminole Facility or Shady Hills Facility. Staff recommends that renewable energy resources and conservation measures are incorporated into Seminole's system planning to the extent reasonably available, including the recent addition of 40 MW of summer solar PV capacity. As a wholesale provider of electricity, Seminole provides appropriate price signals to encourage conservation.

Issue 3A: Is there a need for the proposed Seminole Combined Cycle Facility, taking into account the need for adequate electricity at a reasonable cost, as this criterion is used in Section 403.519(3), Florida Statutes?

Issue 3B: Is there a need for the proposed Shady Hills Combined Cycle Facility, taking into account the need for adequate electricity at a reasonable cost, as this criterion is used in Section 403.519(3), Florida Statutes?

Recommendation: Yes. Staff recommends that Seminole's financial, fuel, and environmental cost estimates are reasonable. (Thompson, Barrett, Wu)

Position of the Parties

Seminole Issue 3A: Yes. SCCF is a highly efficient combined cycle unit, which yields lower production costs than other options. Locating SCCF at SGS provides substantial cost benefits by enabling SCCF to share existing infrastructure and transmission capacity. The results of Seminole's RFP and resource planning processes show that SCCF, together with removing a coal unit from service and SHCCF, is the most cost-effective alternative to meet Seminole's needs, resulting in \$363 million of projected NPV savings.

Petitioners Issue 3B: Yes. SHCCF is a highly efficient combined cycle unit, which yields lower production costs than other options. The location of SHCCF provides substantial cost benefits by enabling SHCCF to share existing infrastructure and operational staffing. The results of Seminole's RFP and resource planning processes show that SHCCF, together with SCCF and removing a coal unit from service, is the most cost-effective alternative to meet Seminole's needs, resulting in \$363 million of projected NPV savings.

Intervenors Issue 3A: No. The SCCF is not the most cost-effective alternative available to meet the needs of the ultimate retail customers who would be required to pay more than \$8.2 BILLION for the SCCF's construction costs, fuel, and other costs, much of which are fixed. More cost-effective alternatives are available, and accordingly, the SCCF is not needed to meet the need for adequate electricity at a reasonable cost.

Intervenors Issue 3B: No. The SHCCF is not the most cost-effective alternative available to Seminole to the needs of the ultimate retail customers who would be required to pay more nearly \$4.8 BILLION for power from the SHCCF pursuant to the 30-year Tolling Agreement. More cost-effective alternatives are available, and accordingly, the SHCCF is not needed to meet the need for adequate electricity at a reasonable cost.

Parties' Arguments

Petitioners

The Petitioners state that the Seminole Facility will include a new, state-of-the-art natural gas-fired 2x1 combined cycle facility and onsite associated facilities, adjacent to the existing SGS coal units that will utilize existing infrastructure. (Petitioners BR 16) The Petitioners assert that their project cost estimate for the Seminole Facility is based in large part on an executed fixed-price contract for power island equipment and a near-final fixed-price contract for engineering,

procurement, and construction services. (Petitioners BR 17) Seminole further asserts that the power island equipment and engineering, procurement, and construction contracts were competitively bid and will comprise approximately 80 percent of the Seminole Facility's total installed cost. (Petitioners BR 17) The Petitioners argue that, based on the evidentiary record, there is no valid reason to question the reasonableness of their cost estimate for the Seminole Facility, and that the selected resource plan, including the Seminole Facility, resulted in net present value (NPV) savings of approximately \$363 million as compared to the next ranked alternative portfolio over the study period. (Petitioners BR 18)

The Petitioners state that the Shady Hills Facility will include a new, state-of-the-art natural gas-fired 1x1 combined cycle generating unit and onsite associated facilities, that will be designed, constructed, owned, and operated by Shady Hills on a portion of the existing Shady Hills power plant site in Shady Hills, Florida. (Petitioners BR 18-19) The Petitioners argue that locating the Shady Hills Facility at the Shady Hills site enables the Shady Hills Facility to take advantage of nearby access to existing utility infrastructure. The Petitioners assert that the Shady Hills Facility will sell its electric capacity, energy, and ancillary services to Seminole pursuant to a 30-year tolling agreement beginning on December 1, 2021. (Petitioners BR 19) The Petitioners argue that the record demonstrates that the Shady Hills Facility will help satisfy the need for adequate electricity at a reasonable cost. (Petitioners BR 20)

Intervenors

The Intervenor's assert that the Seminole Facility and the Shady Hills Facility are not needed for adequate electricity because the CPP/CC Portfolio is not the most cost-effective alternative. (Intervenors BR 17) The Intervenor also argue that the proposed Seminole Facility and the proposed Shady Hills Facility would represent uneconomic duplication of generating facilities as a result. (Intervenors BR 20) The Intervenor argue that Seminole's discount rate exceeds its projected inflation rates; therefore, delay in committing to the Seminole Facility and the Shady Hills Facility will benefit retail customers by reducing cumulative present value revenue requirements (CPVRR). (Intervenors BR 20) The Intervenor further argue that there is a risk that Seminole's escalation or inflation assumptions are wrong, and that this risk should discourage moving forward with the Seminole Facility and the Shady Hills Facility. (Intervenors BR 27) The Intervenor assert that, even if escalation in capacity costs were exactly equal to Seminole's discount rate, customers would still see \$69 million in savings over the 2018 through 2027 period with the No Build Portfolio. (Intervenors BR 29)

Staff Analysis: As discussed in Issues 1A and 1B, Seminole's capacity need results primarily from the scheduled expiration of PPAs. (EXH 3) The cost-effectiveness of the proposed projects is discussed in Issues 5A and 5B. Below is a discussion of the various economic assumptions made by Seminole associated with the construction of the Seminole Facility and the Shady Hills Facility, and staff's analysis regarding the reasonableness of these assumptions.

Proposed Plant Descriptions

The Seminole Facility

The Petitioners' witness Kezell described the proposed Seminole Facility. (TR 163-167) It will be a 2x1 combined cycle facility that will utilize two natural gas fired combustion turbine generators (CTGs) each coupled with an associated heat recovery steam generator (HRSG) that will produce steam to drive a single steam turbine generator (STG). (TR 164) The HRSGs will be provided with duct burners to provide supplemental firing for additional steam production during peak demand periods. (TR 164) Witness Kezell testified that Seminole retained Black & Veatch to help evaluate numerous power generation technologies, and that combined cycle technology was selected because the high fuel efficiency and flexible dispatch capability offered by these systems will allow the Seminole Facility to match varying system load at a low cost and with limited environmental impact. (TR 165) The Seminole Facility will have an output of 1,122 MW (winter capacity). (TR 444)

Witness Kezell stated that Seminole regularly develops generic power plant models with estimated thermodynamic and economic characteristics that are used in its generation planning process. (TR 165) Witness Kezell further stated that Seminole developed its 2x1 CC Midulla Generating Station in 2002, and has operated this facility since. (TR 165) Witness Kezell testified that the Seminole Facility will have significant flexibility in terms of its operational characteristics; specifically, the gas turbines will have an extended "turndown" capability allowing them to meet their required emission levels while firing the turbines down to as low as 25 percent of their full-fire levels. (TR 166) He asserted that this capability will allow the Seminole Facility to remain operational during low load periods, typically experienced at night, and avoid thermal stress, wear, and high emission concentrations typically associated with a shut-down/start-up cycle. (TR 166-167) Also, the Seminole Facility will be capable of running in 1x1 mode with only one of the CTGs in operation. The Seminole Facility will be capable of continuing to generate by bypassing the STG with steam generated in the HRSGs, and sending it directly to the condenser if the steam turbine trips. (TR 167) Duct firing will provide approximately 53 MW of peaking capacity, and the heat rate of the facility with and without duct firing will be approximately 6,218 and 6,349 British thermal units/kilowatt-hour higher heat value, respectively. (TR 167)

The Petitioners maintain that the Seminole Facility is expected to begin commercial operation in December 2022. (TR 56) The Seminole Facility will be located on the south side of Seminole's existing SGS site. (TR 171) The site will require a new natural gas lateral to be developed and installed, but witness Kezell testified that the total installed costs were minimized with the selection of this site. (TR 171) Witness Kezell asserted that, by building the Seminole Facility at the SGS site, Seminole will be able to take advantage of existing transmission and water resource infrastructure. (TR 171) Because locating the Seminole Facility at Seminole's existing SGS site will allow Seminole to avoid the cost of developing a new site and the cost of facilities already at the SGS site, staff believes that the Seminole Facility provides an economic advantage.

The estimated capital cost of the Seminole Facility is approximately \$727 million. (TR 172) Witness Sotkiewicz argued that Seminole's cost estimate for the Seminole Facility is not reliable because Florida Power & Light Company's (FPL) estimate for essentially the same unit, the Dania Beach Clean Energy Center, is approximately 13 percent to 15.2 percent more expensive than the Seminole Facility. (TR 585-586) Witness Kezell rebutted this argument by asserting that witness Sotkiewicz failed to recognize that costs for individual combined cycle projects vary due to a number of company-specific, design-specific, and site-specific factors. (TR 692) Witness Sotkiewicz admitted that he had not had the opportunity to thoroughly evaluate Seminole's estimates; whereas, witness Kezell thoroughly discussed how the cost estimate was derived, and explained why the cost of the Seminole Facility was different than the cost of the Dania Beach Clean Energy Center. (TR 586; TR 694-703) For example, witness Kezell explained that differentiations between factors such as allowance for funds used during construction, dual fuel design, differences in gas turbines, construction schedule, per diem costs, demolition of existing infrastructure, site differences, construction parking, environmental mitigation, and cooling water infrastructure could all account for disparities between Seminole's and FPL's cost estimate. (TR 695-700) Witness Kezell further asserted that the estimate for the Seminole Facility is accurate because it is based on a fixed price contract for power island equipment and an anticipated fixed price contract for engineering, procurement and construction services. (TR 692) Witness Ward also stated that Seminole received a competitive market rate from the original equipment manufacturers and engineering, procurement, and construction companies to build the Seminole Facility in the 2022 timeframe. (TR 128) Staff recommends that the Petitioners' explanation of the capital cost estimate for the Seminole Facility is persuasive.

The Shady Hills Facility

The Petitioners' witness Mathur provided a description of the proposed Shady Hills Facility. (TR 22-25) The Shady Hills Facility will be a 1x1 combined cycle facility that will utilize one natural gas fired CTG, one HRSG, and one STG. (TR 23) The Shady Hills Facility will have an output of 573 MW (winter capacity) and have 30 to 35 MWs of duct firing capability for peaking capacity. (TR 23) The facility will tie to a new DEF substation that will connect to the DEF 230 kilovolt high voltage transmission grid in Pasco County, Florida. (TR 24)

Witness Mathur stated that the Shady Hills Facility will be located on Shady Hills' existing site in Shady Hills, Florida, allowing it to take advantage of existing transmission and water resource infrastructure. (TR 25) This facility is expected to begin commercial operation in December 2021. (TR 25) Witness Mathur stated that the Shady Hills Facility will be supported by a 30-year tolling agreement with Seminole, allowing Seminole to have the right to schedule the dispatch of the plant, provide fuel for such scheduled operation, and receive all of the power produced. (TR 22) He further stated that Seminole will make fixed payments related to the demonstrated capacity of the Shady Hills Facility, and make variable payments when the plant is dispatched per Seminole's schedules. (TR 22) Witness Mathur testified that the terms of the tolling agreement provide Seminole with security of power supply at a competitive price for 30 years. (TR 22) Witness Mathur further testified that General Electric Energy Financial Services has a long history of developing and investing in combined cycle power plants, and is confident in its ability to meet the projected milestones and specifications of the Shady Hills Facility. (TR 20) Similar to the Seminole Facility, staff recommends that the Shady Hills Facility has an economic

advantage by being located at the existing Shady Hills site because the cost of developing a new site will be avoided and existing infrastructure can be used.

Financial Assumptions

The instant dockets are the result of a multi-stage resource planning process that looked at numerous options to address Seminole's forecasted need for additional capacity. Seminole used data from Moody's Economic and Consumer Credit Analytics (Moody's Analytics), the Energy Information Administration (EIA), and the University of Florida's Bureau of Economic and Business Research for its forecasting and financial modeling. (TR 286; TR 288; TR 290; TR 345; TR 351-352; TR 635; TR 471; EXH 92) For its CPVRR calculations, Seminole used a discount rate of 6.0 percent, which represents its cost of capital, and used data from Moody's Analytics for escalation.⁶ (TR 471; TR 712) The Intervenor's witness Sotkiewicz did not present alternative rates. Because Seminole used financial assumptions that were derived from varied and trusted sources for its CPVRR analysis, staff believes the financial assumptions are reasonable.

Fuel Costs

Fuel cost is one of the primary drivers for Seminole's economic analysis among generation alternatives in this proceeding. (EXH 3) Seminole's fuel price forecasts are derived from a combination of published market indices, independent price forecasts, and necessary escalators. (EXH 3) The New York Mercantile Exchange (NYMEX) futures forward market prices were used for projecting Henry Hub natural gas prices. (EXH 3) The EIA's Annual Energy Outlook was referenced for the rate of escalation embedded in deriving the price forecast beyond the availability of forward NYMEX prices. (TR 207-208) The forecast of coal price was based upon the commodity coal prices provided by Energy Research Company, LLC. (TR 208) The projection of fuel transportation and other variable costs related to fuel delivery was updated based on the estimates obtained from L.E. Peabody & Associates, Inc. (TR 208) The Petitioners' witness Wagner testified that these sources of forward energy prices are commonly accepted in the utility industry. (TR 207)

For scenario analysis and resource planning evaluations, Seminole utilized a statistical based approach to develop alternative (i.e., high/low) natural gas price projections. Using a similar process adopted by the EIA, Seminole's alternative natural gas price forecasts stem from a statistical confidence interval representing positive/negative one standard deviation around its base case forward curve. (EXH 74)

Seminole utilized its fuel price forecasts and its alternative natural gas forecasts to prepare its original economic analysis. Seminole then utilized its updated fuel price forecasts, including its updated alternative natural gas forecasts, to prepare the updated economic analysis. (EXH 3) The Petitioners assert that the use of the updated fuel price forecast, instead of the original one, did not change the preferred resource portfolio. (EXH 90) Also, the Petitioners confirmed that Seminole utilized its fuel price forecast across all self-build and purchased power alternatives, unless a firm fuel cost was included in an RFP proposal, to ensure fairness in evaluation. (EXH 3)

⁶Generally, an escalation rate in CPVRR calculations serves as a proxy for inflation. Moody's Analytics forecasted inflation over the next 20-30 years at values ranging from 2.2 percent to 2.9 percent.

Based on the foregoing, staff recommends that Seminole's fuel price forecasts are reasonable for the purpose of economic evaluations of its potential resource options. Staff notes that the Intervenor did not proffer an alternative fuel price forecast in the proceeding for the purposes of evaluating Seminole's proposals of the Seminole Facility and Shady Hills Facility, or any other potential resource plan, and did not contest Seminole's fuel price forecasts.

Environmental Costs

The Petitioners assert that the Seminole Facility and the Shady Hills Facility will be designed with technologies to minimize air emissions. (EXH 3) The CTGs will be equipped with dry low-nitrogen oxide (NOx) combustors to control NOx emissions. (EXH 3) The HRSGs will be equipped with selective catalytic reduction systems to further reduce NOx emissions. (EXH 3) According to the Petitioners, regarding the Seminole Facility, emissions of carbon monoxide and volatile organic compounds will be limited through use of oxidation catalyst systems. (EXH 3) Emissions of other regulated air pollutants, such as sulfur dioxide and particulate matter, will be controlled through use of pipeline quality natural gas and good combustion practices. (EXH 3) In addition, the Petitioners assert that the Seminole Facility and the Shady Hills Facility will minimize greenhouse gas emissions through the use of clean-burning natural gas along with the highly efficient, combined cycle electric generating technologies. (EXH 3)

Seminole's economic sensitivity analyses include the scenarios of various Carbon Taxes based on Minnesota Public Utilities Commission's Carbon Tax assumptions. (EXH 74) These assumptions assume High, Mid, and Low Carbon Tax starting at \$34.0/ton, \$21.5/ton, and \$9.0/ton, respectively, in 2019 and escalating afterward. (EXH 3; EXH 74) The Petitioners explain that this is the only publicly available directive information provided by its independent evaluator, Sedway Consulting, that could be used to form an adequate basis for Seminole's sensitivity analyses. (EXH 74) However, the Petitioners confirm that neither the Carbon Tax assumptions nor the Carbon Tax scenarios established upon those assumptions were used in any of the other economic sensitivity analyses, including the base case. Specifically, Seminole assumed zero Carbon Tax in deriving the portfolio evaluation results presented in Figure 13 of Seminole's Need Study, the Summary of Updated Economic Analysis. (EXH 74; EXH 3)

Based on the foregoing, staff recommends that Seminole's Carbon Tax forecast, including the underlying assumptions and the derived scenarios, as well as their utilization are reasonable for the purpose of evaluating the proposed Seminole Facility and Shady Hills Facility resource plan. Staff notes that no other Carbon Tax forecast was presented in the proceeding, and the Intervenor has not challenged Seminole's Carbon Tax assumptions/scenario nor its utilization.

Conclusion

Seminole's financial, fuel, and environmental cost estimates are reasonable. Therefore, staff recommends that the Seminole Facility and the Shady Hills Facility would provide adequate electricity at a reasonable cost.

Issue 4A: Is there a need for the proposed Seminole Combined Cycle Facility, taking into account the need for fuel diversity and supply reliability, as this criterion is used in Section 403.519(3), Florida Statutes?

Issue 4B: Is there a need for the proposed Shady Hills Combined Cycle Facility, taking into account the need for fuel diversity and supply reliability, as this criterion is used in Section 403.519(3), Florida Statute?

Recommendation: Staff recommends that the proposed addition of the Seminole Facility and Shady Hills Facility, coupled with the retirement of one of the SGS coal units, will increase Seminole's natural-gas fired winter capacity from 67.4 percent to 81.5 percent. By not equipping the Seminole Facility or Shady Hills Facility with dual-fuel capabilities, Seminole may need to rely on Florida's other electricity generators to meet their needs during natural gas curtailment events. As such, Seminole is taking measures to maintain supply availability to its natural-gas fired generating facilities. (Wright)

Position of the Parties

Seminole Issue 4A: Yes. Seminole seeks to maintain a diversified portfolio of owned and purchased generating assets with a variety of fuel types, sources and delivery options. This enables Seminole to manage fuel price stability and reliability. Seminole's decision to maintain the operation of an existing coal-fired unit will continue to provide diversification in Seminole's fuel portfolio. Additionally, Seminole is implementing a natural gas transportation plan to enhance the diversification and reliability of delivered gas supply.

Petitioners Issue 4B: Yes. Seminole seeks to maintain a diversified portfolio of owned and purchased generating assets with a variety of fuel types, sources and delivery options. This enables Seminole to manage fuel price stability and reliability. Seminole's decision to maintain the operation of an existing coal-fired unit will continue to provide diversification in Seminole's fuel portfolio. Additionally, Seminole is implementing a natural gas transportation plan to enhance the diversification and reliability of delivered gas supply.

Intervenors Issue 4A: No. Seminole's proposed MAX RISK Portfolio – called the “Clean Power Plan-Combined Cycle” Portfolio – including the SCCF, will actually reduce fuel diversity by increasing the State's dependence on natural gas as a generating fuel. The SCCF lacks dual-fuel capability.

Intervenors Issue 4B: No. Seminole's proposed MAX RISK Portfolio – called the “Clean Power Plan-Combined Cycle” Portfolio – including the SHCCF, will actually reduce fuel diversity by increasing the State's dependence on natural gas as a generating fuel. The SHCCF lacks dual-fuel capability.

Parties' Arguments

Petitioners

Petitioners argue that the Seminole Facility and Shady Hills Facility will be solely fueled by natural gas but will serve to replace expiring PPAs that were predominately natural gas-fired. (Petitioners BR 21) Petitioners maintain that adding dual-fuel capability to these units would not be cost-effective and is not necessary to maintain fuel supply reliability. (Petitioners BR 24) Petitioners assert that Seminole's decision to maintain the operation of one SGS coal-fired unit will provide continued diversification in its fuel portfolio. (Petitioners BR 21) Petitioners further aver that Seminole is implementing a natural gas transportation plan that will enhance the diversity and reliability of its natural gas supply. (Petitioners BR 22) Petitioners maintain that the Commission should, as it has in the past for new combined cycle facilities, approve this need determination despite projected increases in Seminole's reliance on natural gas-fired generation. (Petitioners BR 23)

Intervenors

Intervenors argue that Seminole's CPP/CC Portfolio, which includes the solely gas-fired Seminole Facility and Shady Hills Facility and the retirement of a coal plant, will reduce fuel diversity in Seminole's system and in Florida as whole. (Intervenors BR 29) Intervenors also note that Seminole can address its capacity and fuel-diversity needs arising from the closing of one of its SGS coal plants by acquiring additional PPAs from dual-fueled facilities like the Pasco Power Plant. (Intervenors BR 30)

Staff Analysis:

Fuel Diversity

Fuel diversity in a generation portfolio works to mitigate the effects of extreme price fluctuations, supply interruptions, and transportation instabilities. (EXH 3) Witness Wagner argued that the Seminole Facility and Shady Hills Facility are primarily serving to replace Seminole's expiring PPAs, and that retention of one of the SGS coal units will preserve Seminole's fuel diversity. Staff believes that a portfolio-level review of Seminole's generating capabilities is better suited to evaluate any changes in its system's fuel mix as a whole. (TR 211; EXH 10) Witness Kezell stated that Seminole itself subscribes to this perspective when evaluating the necessity of backup fuel in its system. (TR 169) Table 4-1 below shows the effects of the CPP/CC Portfolio on the percent of Seminole's total winter net capacity generated by its two major fuel sources, natural gas and coal.

**Table 4-1
 Seminole's Fuel Mix Changes**

	Units	Winter 2017/2018 (Pre-CPP/CC)	Winter 2022/2023 (Post-CPP/CC)
Natural Gas Fired System Net Capacity	%	67.4	81.5
Coal Fired System Net Capacity	%	29.5	15.6
Note: Numbers may differ slightly due to rounding.			

Source: EXH 74

Intervenors' witness Sotkiewicz and Petitioners' witness Ward agree that implementation of the CPP/CC Portfolio into Seminole's system will increase Seminole's reliance on natural gas. (TR 588; TR 127) Staff agrees with both witnesses on this subject.

Witness Kezell defended Seminole's decision to not equip the Seminole Facility with dual-fuel capabilities by citing the P2021 Single Fuel Facility Analysis by Black & Veatch. (TR 169; EXH 10) The report estimated the cost of adding dual-fuel capability to the Seminole Facility to be approximately \$20.3 million. (EXH 10) The P2021 Single Fuel Facility Analysis concludes that "[Seminole] will be adequately served without additional dual fuel capabilities at the portfolio level." (EXH 10) However, the report appears to draw this conclusion based on analysis of Seminole's system in a hurricane-like scenario during which electrical transmission and distribution capabilities are also impacted, which results in reduced load, as opposed to a cold-weather scenario that Seminole has experienced in the past. (EXH 10) Retrofitting dual-fuel capability into the Seminole Facility was estimated by Seminole to cost approximately \$37.6 million. (EXH 79) Petitioners maintain that a similar cost analysis was not performed for the Shady Hills Facility because there are no provisions in the Tolling Agreement associated with the unit that would obligate Shady Hills to incorporate any future plant alterations for dual-fuel capabilities. (EXH 79)

According to the P2021 Single Fuel Facility Analysis, 77 percent of the natural gas combined cycle and combustion turbine units in the Florida Reliability Coordination Council are equipped with dual-fuel capabilities. (EXH 10) Witness Sotkiewicz argues that Seminole should acquire PPAs with such dual-fuel facilities to address Seminole's capacity needs. (TR 580) Staff believes that PPAs should be comprehensively evaluated and that dual-fuel capability should be one of a number of considerations.

Seminole's decision neither to equip the Seminole Facility with dual-fuel capabilities, nor to negotiate for such capability in the Shady Hills Facility, may result in Seminole relying on Florida's other electricity generators to meet Seminole's needs during natural gas curtailment events. As discussed below, Seminole is taking steps to diversify its natural gas supply.

Fuel Supply Reliability

Petitioners' witnesses Wagner and Mathur testify that the Seminole Facility and the Shady Hills Facility, respectively, will interconnect with the Florida Gas Transmission pipeline to receive their natural gas supplies. (TR 210; TR 24; EXH 3) Witness Wagner further argues that implementation of Seminole's natural gas transportation plan will improve Seminole's fuel supply reliability. (TR 212; EXH 3) Witness Sotkiewicz states that "a shift toward more natural gas likely does not cause any [supply reliability] issues." (TR 588) Staff agrees and recommends that Seminole's natural gas transportation plan will improve Seminole's fuel supply reliability because it includes contracts with four different parties that will diversify Seminole's delivered gas supply. In addition, Seminole plans to finalize contracts that will provide firm transportation of natural gas from multiple geographical locations over the life of the Seminole Facility and Shady Hills Facility.

Conclusion

Staff recommends that the proposed addition of the Seminole Facility and Shady Hills Facility, coupled with the retirement of one of the SGS coal units, will increase Seminole's natural-gas fired winter capacity from 67.4 percent to 81.5 percent. By not equipping the Seminole Facility or Shady Hills Facility with dual-fuel capabilities, Seminole may need to rely on Florida's other electricity generators to meet their needs during natural gas curtailment events. As such, Seminole is taking measures to maintain supply availability to its natural-gas fired generating facilities.

Issue 5A: Will the proposed Seminole Combined Cycle Facility provide the most cost-effective alternative available, as this criterion is used in Section 403.519(3), Florida Statutes?

Issue 5B: Will the proposed Shady Hills Combined Cycle Facility provide the most cost-effective alternative available, as this criterion is used in Section 403.519(3), Florida Statutes?

Recommendation: Yes. The proposed portfolio containing both the Seminole Facility and the Shady Hills Facility is expected to result in NPV savings of approximately \$363 million in comparison to the next least cost portfolio over the study period. Therefore, staff recommends that the Seminole Facility and the Shady Hills Facility will provide Seminole's members with the most cost-effective alternatives available. (Thompson)

Position of the Parties

Seminole Issue 5A: Yes. Seminole's analyses demonstrate that the resource plan containing SCCF is the most cost-effective alternative to meet Seminole's capacity needs and would result in projected NPV savings of approximately \$363 million as compared to the next ranked alternative over the study period. An independent evaluation conducted by Alan Taylor of Sedway Consulting, Inc., confirms that the selected resource plan that includes SCCF is the most cost-effective alternative.

Petitioners Issue 5B: Yes. Seminole's analyses demonstrate that the resource plan containing the SHCCF tolling agreement is the most cost-effective alternative to meet Seminole's capacity needs and would result in projected NPV savings of approximately \$363 million as compared to the next ranked alternative over the study period. An independent evaluation conducted by Alan Taylor of Sedway Consulting, Inc., confirms that the selected resource plan that includes SHCCF is the most cost-effective alternative.

Intervenors Issue 5A: No. More cost-effective alternatives are available, including the Seminole-identified NO BUILD RISK Portfolio consisting of PPAs, followed by resource options that will almost certainly be more cost-effective when properly evaluated in light of actual load growth and then-current costs for gas-fired capacity, solar, and solar with storage. Because escalation rates are projected to be significantly less than Seminole's discount rate, delay will reduce CPVRRs for retail customers while minimizing customer risks.

Intervenors Issue 5B: No. More cost-effective alternatives are available, including the Seminole-identified NO BUILD RISK Portfolio consisting of PPAs, followed by resource options that will almost certainly be more cost-effective when properly evaluated in light of actual load growth and then-current costs for gas-fired capacity, solar, and solar with storage. Because escalation rates are projected to be significantly less than Seminole's discount rate, delay will reduce CPVRRs for retail customers while minimizing customer risks.

Parties' Arguments

Petitioners

The Petitioners explain that, although Seminole is not subject to the Commission's bid rule, Rule 25-22.082, F.A.C., Seminole issued a competitive RFP in March 2016, for potential power purchase options to meet its projected capacity needs.⁷ (Petitioners BR 25-26) The Petitioners assert that the results of narrowing the proposals, along with utilizing modeling tools, showed that the CPP/CC Portfolio, which includes the Shady Hills Facility in 2021, the Seminole Facility in 2022, and the removal of one of the SGS coal units, was the least cost portfolio with NPV savings of approximately \$363 million over the study period as compared to the next ranked portfolio. (Petitioners BR 28-29) The Petitioners argue that the results of these analyses support the conclusion that the CPP/CC Portfolio provides the most cost-effective solution for Seminole's need. (Petitioners BR 28)

Intervenors

The Intervenors argue that the CPP/CC Portfolio is not the most cost-effective alternative available to Seminole. The Intervenors assert that the No Build Portfolio, followed by additions of either self-built capacity or additional PPAs in the mid-2020s, would be more cost-effective every year from 2018 through 2026. (Intervenors BR 17) The Intervenors further assert that Seminole did not analyze an all PPA Portfolio with removal of one of its coal units. The Intervenors argue that this shows bias in Seminole's analyses in favor of the CPP/CC Portfolio and shows evidence of imprudence by Seminole. (Intervenors BR 18) The Intervenors explain that since the CPP/CC Portfolio is not the most cost-effective alternative, no economic need has been demonstrated for the Seminole Facility and the Shady Hills Facility. The Intervenors also assert that the 121 MW of capacity from the facility operated by Quantum offers a viable, competitive option to meet the needs of the retail customers. (Intervenors BR 32)

Staff Analysis:

Initial Proposals

Although not required to do so by Commission Rules, in an effort to secure the most adequate and cost-effective options for its members, Seminole conducted a RFP process, for both a self-build resource at its SGS site and market alternatives. (TR 165-166; TR 170-171; TR 399-400) As discussed in Issues 3A and 3B, for the self-build alternative, witness Kezell testified that Seminole retained Black & Veatch to help evaluate numerous power generation technologies as potential future resources before selecting combined cycle technology. (TR 165) Seminole initiated a power island equipment purchase bidding process, followed by an engineering, procurement, and construction services bidding process, to develop accurate self-build cost estimates which would compete with market alternatives. (TR 166) Witness Kezell stated that Seminole evaluated several different technologies from three different vendors: General Electric, Mitsubishi, and Siemens. (TR 166) In February 2016, witness Kezell asserted that Seminole issued an RFP to these three vendors, and only General Electric and Mitsubishi responded with compliant bids. (TR 166) Each vendor submitted two proposals: one for a 1x1 configuration and one for a 2x1 configuration. (TR 166) Witness Kezell maintained that these four proposals were

⁷The Petitioners' brief erroneously referenced Rule 25-17.082 instead of Rule 25-22.082. (Petitioners BR 25)

evaluated along with the market alternatives and, ultimately, General Electric's proposal for the 2x1 configuration was found to be the most economic option. (TR 166) As discussed in Issues 3A and Issue 3B, witness Ward stated that Seminole received a competitive market rate from the original equipment manufacturers and engineering, procurement, and construction companies for the self-build alternative. (TR 128)

As discussed by the Petitioners' witness Peters, Seminole issued an RFP on March 31, 2016, outlining that it was looking for up to 600 MW starting in June 2021, with needs up to 1,000 MW by June 2022. (TR 402) Seminole's RFP was open to all parties, resulting in over 200 proposals that spread across a wide spectrum of alternatives. (TR 402-404; TR 410) As a result, Seminole brought together various in-house subject matter experts to evaluate the proposals. (TR 404) Witness Taylor, an independent evaluator and President of Sedway Consulting, was also retained by Seminole to provide independent monitoring and evaluation services during Seminole's RFP processes, overseeing both the self-build and market alternative RFP processes. (TR 505)

Seminole utilized Planning and Risk and System Optimizer software tools to select which generation/PPAs provided the greatest overall economic value within an entire portfolio with varying combinations of start dates, term lengths, and MW sizes. (TR 406) Witness Diazgranados testified that System Optimizer and Planning and Risk are industry-recognized utility tools. (TR 446-447) According to witness Diazgranados, System Optimizer is used to develop an optimal resource mix to satisfy future needs. (TR 446) Witness Diazgranados stated that Planning and Risk is a detailed production cost model which commits resources in each hour over the thirty-three year study period from 2018-2051, based on costs and operational constraints. (TR 447) Witness Peters stated that during the process of narrowing down the number of proposals to a manageable short-list, certain bids were removed from consideration for non-economic reasons such as: transmission availability, fuel accessibility and availability, build and construction risks, technological/commercial risks, environmental factors, credit capabilities, term flexibility, and scheduling flexibility. (TR 406) Staff notes that Quantum, one of the Intervenor, responded to Seminole's RFP and was included in the shortlist of alternatives, but ultimately was not selected during the evaluation process. (TR 418; TR 433; EXH 27) Quantum's facility offers 121 MW of capacity while Seminole's RFP outlined that Seminole was looking for up to 600 MW starting in June 2021, with needs up to 1,000 MW by June 2022. (TR 402) The Intervenor argue that Quantum offers a viable, competitive option to meet Seminole's member consumers needs. However, Quantum was included in an Alternate No Build Risk: All PPA Portfolio, and the record shows that the portfolio including the Quantum facility was approximately \$770 million NPV less cost-effective than the CPP/CC Portfolio over the study period. (TR 710; EXH 83; EXH 92) Due to this, staff recommends that the Intervenor's argument is not persuasive.

According to witness Taylor, Sedway Consulting's independent evaluation consisted of overseeing both Seminole's self-build and market alternative RFP processes. (TR 505) With the self-build RFP process, Sedway Consulting was involved with the monitoring and evaluation of proposals that might be selected in developing a resource that Seminole would own and operate. (TR 505) Also, Witness Taylor testified that Sedway Consulting monitored Seminole's market alternatives RFP process. (TR 505-506) In doing so, witness Taylor reviewed Seminole's RFP

processes, and performed a parallel and independent economic evaluation of the self-build and PPA proposals submitted in response to Seminole's RFPs. (TR 506) As with Seminole, Sedway Consulting took into consideration non-economic factors as well. Proposals from one bidder were removed because development efforts were in an early stage which translated into greater risk and uncertainty associated with these units. (EXH 51) Ultimately, witness Taylor concluded that Seminole's best option for meeting its long-term capacity needs was a combination of self-build and market alternatives. (TR 506-507) This included the Seminole Facility and the Shady Hills Facility, as well as a combination of PPAs, and a decision to remove from service one of the SGS coal units. (TR 506-507) Witness Taylor testified that Seminole's evaluation process was conducted fairly, and that the market alternative proposals and Seminole's self-build resource were evaluated on an equal footing. (TR 510) Because the Petitioners conducted RFP processes in order to evaluate various alternatives to fulfill Seminole's need, and hired an independent evaluator to ensure that the most cost-effective alternatives were selected, staff recommends that the Petitioners' analyses of alternatives were thorough.

Portfolios

Based on Seminole's economic and risk evaluation of all available alternatives, four portfolios of generation resources were developed to fulfill Seminole's need. (TR 444; TR 446) Witness Diazgranados asserted that the first iteration ran through System Optimizer, the SGS 2x1 Portfolio, was to develop a portfolio for the need starting in winter of 2022 with all resources available. (TR 446) The next portfolio developed, the Limited Build Risk: Shady Hills Portfolio (Limited Build Portfolio), was a limited build, allowing one 1x1 combined cycle unit to be built. (TR 446) The next portfolio developed, the No Build Portfolio, consisted of only PPAs. (TR 446) Last, the CPP/CC Portfolio was developed taking into account removal of one coal unit from service. (TR 446) According to witness Diazgranados, removing a coal unit from service for the CPP/CC Portfolio was due to regulatory uncertainty and long-term economics of coal-fired generation. (TR 446) According to the record, the CPP/CC Portfolio, containing the Seminole Facility and the Shady Hills Facility, was approximately \$363 million, in NPV revenue requirement terms, less expensive than the next least cost portfolio over the study period. (TR 451) The record further indicates that each portfolio also contained generic combined cycle and combustion turbine units in later years to backfill as PPAs expired. (EXH 74; EXH 78) Table 5-1 below summarizes each of the portfolios.

**Table 5-1
 Portfolios**

Year	SGS 2x1	Limited Build	No Build	CPP/CC
2021	Multiple PPAs	Shady Hills Facility Multiple PPAs	Multiple PPAs	Shady Hills Facility Multiple PPAs
2022	Seminole Facility			Seminole Facility Retire SGS Unit
2023				
2024		Additional PPA	Additional PPA	Additional PPA
2025				
2026				
2027+	Generic CCs/CTs	Generic CCs/CTs	Generic CCs/CTs	Generic CCs/CTs

Source: EXH 74

SGS Coal Unit Removal

Due to regulatory uncertainty and long-term economics of coal-fired generation, Seminole decided to remove one of its 664 MW SGS coal units from service in the CPP/CC Portfolio. (TR 446) Staff notes that these dockets are not for approval of the removal of one of Seminole’s SGS coal units. The Petitioners state that the cost of maintaining and satisfying operational requirements associated with coal units make them a less attractive option given the high efficiencies of the models of combined cycle generation and low natural gas price projections. (EXH 74) Witness Taylor asserted that coal-fired resources are fairly inflexible in some aspects, for example, their inability to shut down at night and start back up in the morning. (TR 555-556) Because these units would have to be carried through the night, unlike natural-gas fired combined cycle generation, staff recommends that witness Taylor’s assertion is persuasive. The Seminole Facility will have significant flexibility in that the “turndown” capability will allow the gas turbines to meet their required emissions levels, while firing the turbines down to as low as 25 percent of their full-fire levels. This, in turn, will allow the Seminole Facility to remain operational during low load periods typically experienced at night. (TR 166) This will allow it to avoid the thermal stress, wear, and high emission concentrations typically associated with a shut-down/start-up cycle, as can be associated with coal units. (TR 166-167) The Intervenors assert that Seminole did not evaluate an all PPA Portfolio with removal of a coal unit. While this is true, staff would note that all three remaining portfolios proposed by the Petitioners did not include the removal of a coal unit from the analyses, and there is no requirement to do so. As later shown in Table 5-2, of these three, the No Build Portfolio is still the most expensive alternative over the study period.

Board of Trustees’ Decision

Seminole is owned by its members and governed by a Board of Trustees. Each of Seminole’s members has two voting representatives and one alternate representative on Seminole’s Board of Trustees. (TR 54) Public witness Duncan and Public witness Hackett, two members of Seminole’s Board of Trustees, testified at the hearing held on March 21, 2018, in support of approval of the CPP/CC Portfolio which includes the Seminole Facility and the Shady Hills Facility. (TR 7-14) Ultimately, Seminole’s Board of Trustees unanimously deemed the CPP/CC

Portfolio that includes both the Seminole Facility and the Shady Hills Facility, as the best portfolio overall to meet Seminole’s members needs over the study period. (TR 450-451) Also, according to witness Ward, Seminole’s Board of Trustees made a determination that the No Build Portfolio is not a portfolio they wished to pursue based on reliability and overall cost. (TR 107)

Economic Analyses

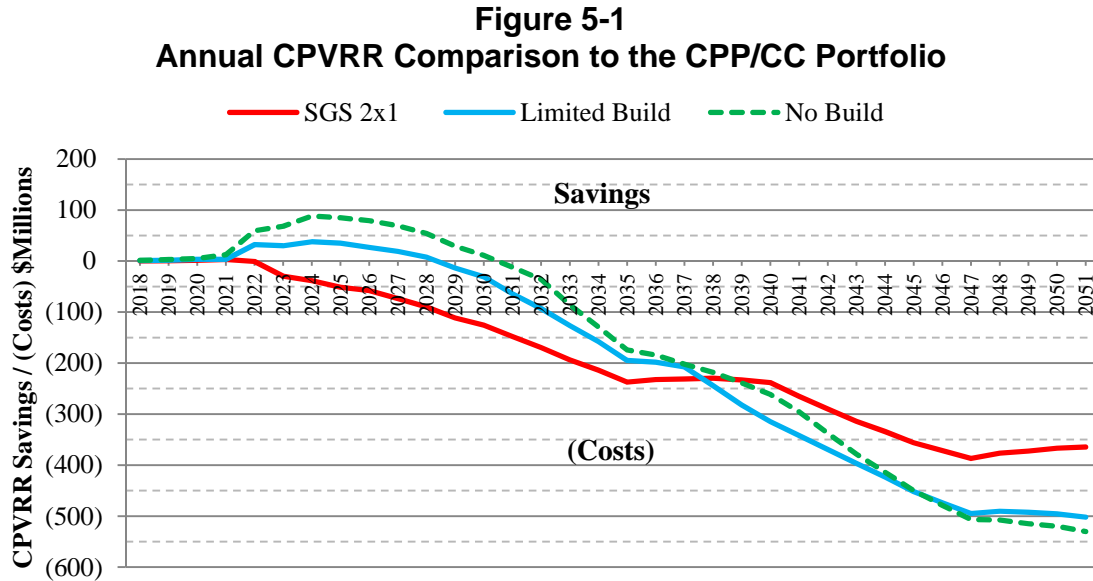
As previously discussed, the RFP processes resulted in four combinations of portfolios for evaluation by Seminole. (TR 446) Because these portfolios represent the least cost alternatives based on the Petitioners’ economic analyses, staff recommends that these portfolios represent reasonable alternative scenarios for cost-effectively meeting the needs of Seminole’s members over the study period. Seminole’s annual revenue requirement analysis provides the total cost for each portfolio over the study period from 2018 through 2051. (EXH 74; EXH 83) Table 5-2 below shows the total cost associated with each portfolio.

**Table 5-2
 Total Revenue Requirements (\$million NPV)**

Portfolio	Total	Difference from the CPP/CC Portfolio
SGS 2x1 Portfolio	20,982	(363)
Limited Build Portfolio	21,120	(502)
No Build Portfolio	21,148	(530)
CPP/CC Portfolio	20,618	-
Note: Numbers may differ slightly due to rounding.		

Source: EXH 74; EXH 83

As shown in Table 5-2 above, the CPP/CC Portfolio, which includes both the Seminole Facility and the Shady Hills Facility, is the least cost portfolio and is approximately \$363 million less expensive than the SGS 2x1 Portfolio, the next least cost portfolio. (TR 450-451) Staff notes that the SGS 2x1 Portfolio and the Limited Build Portfolio, each including both SGS coal units, are also more cost-effective than the No Build Portfolio over the study period. As indicated in the record, due to regulatory uncertainty and long-term economics of coal-fired generation, Seminole decided to consider a portfolio with removal of one of the coal units, the CPP/CC Portfolio. (TR 446) Once the coal unit was removed, the record indicates that a portfolio including the Seminole Facility and the Shady Hills Facility was the optimal portfolio identified via System Optimizer. (TR 447) Based on the record, the CPP/CC Portfolio, including both the Seminole Facility and the Shady Hills Facility, ultimately was the most cost-effective portfolio over the study period. Figure 5-1 below, shows CPVRR savings and costs for each portfolio as compared to the CPP/CC Portfolio.



Source: EXH 74, EXH 83

As shown above, the No Build Portfolio is expected to produce CPVRR savings through 2031. (EXH 74; EXH 83) However, the No Build Portfolio is expected to be over \$500 million CPVRR more expensive than the CPP/CC Portfolio over the study period. (EXH 74; EXH 83) The next least cost portfolio over the study period is expected to be the SGS 2x1 Portfolio. (EXH 74; EXH 83)

The Intervenor’s witness Sotkiewicz argued that the CPP/CC Portfolio is not the most cost-effective alternative available to Seminole, and that delaying the Seminole Facility or the Shady Hills Facility will reduce CPVRRs to customers. (TR 603) According to witness Ward, the No Build Portfolio is the least cost portfolio over approximately the first seven years of the study period. (TR 128) However, the Petitioners state that Seminole evaluated both the total revenue requirements for a period of 2018 through 2051, as well as a period of 2018 through 2027, and that the CPP/CC Portfolio was the most cost-effective, risk-managed resource plan for both periods. (EXH 78) Although the No Build Portfolio has NPV savings of approximately \$69 million in the 2018 through 2027 time period in comparison to the CPP/CC Portfolio, staff disagrees with witness Sotkiewicz’s argument. Staff recommends that witness Ward’s argument is persuasive because the No Build Portfolio has the additional risk and uncertainty associated with having to go back into the market for replacement resources as the PPAs expire. Staff notes that the No Build Portfolio also has potential additional transmission costs and risks associated with having to transfer energy through multiple areas for Seminole’s member load.

The Petitioners also argue that it is an industry standard practice to evaluate new generation facilities over a reasonable life expectancy, and that most natural gas generating facilities have a life of 30 plus years. (EXH 78) Because Seminole was evaluating new generation facilities (both owned and PPAs), staff recommends that it is appropriate to have a study period that would cover the life expectancy of these units, and recommends that the Petitioners argument is persuasive. The Petitioners state that traditionally, revenue requirements for cooperative owned

generation decline over the life of the facility, whereas PPA pricing is usually flat or even escalating. (EXH 78) Witness Sotkiewicz testified that delaying the in-service dates of the Seminole Facility and the Tolling Agreement for the Shady Hills Facility will improve the CPVRR and rate impacts to customers. (TR 603) However, witness Ward stated that Seminole is choosing not to delay the Seminole Facility to fulfill its needs with PPAs during the first ten years of the study period due to having received a competitive market rate from the original equipment manufacturers and engineering, procurement and construction companies to build the Seminole Facility in the 2022 timeframe. (TR 128) He further stated that he would not be able to say with certainty that the same cost would be available in another seven to ten years. (TR 128) Witness Diazgranados also testified that if building either of the facilities were delayed until later in the study period, such delay would not reduce the CPVRR of payments from customers. (TR 481) She further testified that the No Build Portfolio includes generic combustion turbine units as backfill units as PPAs expire, using Seminole's two percent escalation rate, which is more costly over the study period. (TR 481)

Staff is not persuaded by the Intervenors' recommendation of a short term approach because this viewpoint would favor building a less efficient combustion turbine facility, since it is initially less expensive and quicker to build, over a more efficient combined cycle facility. Staff recommends and the record shows that the CPP/CC Portfolio containing the Seminole Facility and the Shady Hills Facility is the most cost-effective portfolio over the study period, and staff recommends that the Seminole Facility and the Shady Hills Facility are the best alternatives to reliably meet Seminole's members' and member-consumers' needs.

Conclusion

The proposed portfolio containing both the Seminole Facility and the Shady Hills Facility is expected to result in NPV savings of approximately \$363 million in comparison to the next least cost portfolio over the study period. Therefore, staff recommends that the Seminole Facility and the Shady Hills Facility will provide Seminole's members with the most cost-effective alternatives available.

Issue 5C: Did Seminole Electric Cooperative, Inc. accurately and appropriately evaluate reasonable alternative scenarios for cost-effectively meeting the needs of its customers over the relevant planning horizon for the Seminole Combined Cycle Facility?

Issue 5D: Did Seminole Electric Cooperative, Inc. accurately and appropriately evaluate reasonable alternative scenarios for cost-effectively meeting the needs of its customers over the relevant planning horizon for the Shady Hills Combined Cycle Facility?

Recommendation: Yes. As discussed in Issues 5A and 5B, Seminole solicited RFPs to fulfill its capacity need and hired an independent evaluator to ensure that it selected the best overall alternatives. (Thompson)

Position of the Parties

Seminole Issue 5C: Yes. When removing a coal unit was assumed in Seminole's economic analyses, the model selected new units as components of portfolios it identified as potentially cost-effective. Similarly, Mr. Taylor's independent analysis identified new units as components of the most cost-effective plan. No evidence of record suggests an "All-PPA" portfolio would be cost-effective under any scenario. Additionally, an All-PPA portfolio would force Seminole to rely on resources in balancing areas where the power is not needed.

Petitioners Issue 5D: Yes. When removing a coal unit was assumed in Seminole's economic analyses, the model selected new units as components of portfolios it identified as potentially cost-effective. Similarly, Mr. Taylor's independent analysis identified new units as components of the most cost-effective plan. No evidence of record suggests an "All-PPA" portfolio would be cost-effective under any scenario. Additionally, an All-PPA portfolio would force Seminole to rely on resources in balancing areas where the power is not needed.

Intervenors Issue 5C: No. Seminole did not accurately or appropriately evaluate all reasonable alternative power supply options for meeting the needs of its Member Cooperatives and the retail customers who depend on Seminole. Even when Seminole's own analyses showed that the NO BUILD RISK Portfolio would save approximately \$136 Million in CPVRR terms from 2018 through 2027, Seminole neither attempted to negotiate for later in-service dates for the SCCF or SHCCF, and did not consider other available alternatives.

Intervenors Issue 5D: No. Seminole did not accurately or appropriately evaluate all reasonable alternative power supply options for meeting the needs of its Member Cooperatives and the retail customers who depend on Seminole. Even when Seminole's own analyses showed that the NO BUILD RISK Portfolio would save approximately \$136 Million in CPVRR terms from 2018 through 2027, Seminole neither attempted to negotiate for later in-service dates for the SCCF or SHCCF, and did not consider other available alternatives.

Parties' Arguments

Petitioners

The Petitioners assert that Seminole evaluated over 200 proposals in response to its RFP and developed reasonable portfolios for evaluation. (Petitioners BR 32) The Petitioners argue that there is no basis to suggest that the type of "No Build-All-PPA" portfolio advocated by the Intervenors would be cost-effective under any scenario, whether or not a coal unit is assumed to be taken out of service. (Petitioners BR 32) The Petitioners further argue that an all PPA Portfolio, as recommended by the Intervenors, would force Seminole to rely on PPA sources in balancing areas where the power is not needed to serve Seminole's load; therefore, requiring Seminole to wheel it to a different balancing area. (Petitioners BR 32) Seminole argues that this would increase costs and raise reliability concerns given the fact that Seminole is a transmission-dependent wholesale provider. (Petitioners BR 33-34)

Intervenors

The Intervenors argue that Seminole used inflation rates reflecting the annual increases in costs to build new facilities that are below Seminole's cost of borrowing reflected in its discount rate of six percent. (Intervenors BR 22) The Intervenors claim that delay will improve the CPVRRs, thus delaying the need for the Seminole Facility and the Shady Hills Facility. (Intervenors BR 22) The Intervenors further claim that Seminole failed to try to obtain both medium-term benefits available from the No Build Portfolio, through at least 2026, and to similarly realize the CPVRR benefits that should be available through deferring additional capacity commitments. (Intervenors BR 22) The Intervenors state that Seminole did not try to negotiate for later in-service dates with General Electric or Shady Hills, and suggest that the Commission should deny both petitions. (Intervenors BR 23)

Staff Analysis: As discussed in Issues 5A and 5B, Seminole solicited RFPs for both self-build and market alternatives for its capacity need. Seminole's subject matter experts and its independent evaluator, witness Taylor, evaluated and narrowed down the responses and utilized modeling tools to further evaluate the alternatives. The Petitioners concluded that the CPP/CC Portfolio, including both the Seminole Facility and the Shady Hills Facility, was the best portfolio to meet Seminole's needs. As previously discussed, staff recommends that the portfolios presented were reasonable, and were evaluated over the relevant planning horizon.

Conclusion

As discussed in Issues 5A and 5B, Seminole solicited RFPs to fulfill its capacity need and hired an independent evaluator to ensure that it selected the best overall alternatives. Therefore, staff recommends that the Petitioners accurately and appropriately evaluated reasonable alternative scenarios for cost-effectively meeting the needs of Seminole's customers over the relevant planning horizon for the Seminole Facility and the Shady Hills Facility.

Issue 6A: Based on the resolution of the foregoing issues and other matters within its jurisdiction which it deems relevant, should the Commission grant Seminole Electric Cooperative, Inc.'s petition to determine the need for the proposed Seminole Combined Cycle Facility?

Issue 6B: Based on the resolution of the foregoing issues and other matters within its jurisdiction which it deems relevant, should the Commission grant Seminole and Shady Hills Energy Center, LLC's joint petition to determine the need for the proposed Shady Hills Combined Cycle Facility?

Recommendation: Yes. (Thompson)

Position of the Parties

Seminole Issue 6A: Yes. The SCCF is part of a resource plan that will ensure that Seminole can meet its Members' needs at a reasonable cost. The results of the RFP and resource planning processes demonstrate that the selected plan is the most cost-effective, risk-managed alternative. Seminole and its Members utilize reasonably available renewable resources and conservation programs. However, a significant capacity need remains and the selected resource plan is the least cost alternative to meet that need.

Petitioners Issue 6B: Yes. The SHCCF is part of a resource plan that will ensure that Seminole can meet its Members' needs at a reasonable cost. The results of the RFP and resource planning processes demonstrate that the selected plan is the most cost-effective, risk-managed alternative. Seminole and its Members utilize reasonably available renewable resources and conservation programs. However, a significant capacity need remains and the selected resource plan is the least cost alternative to meet that need.

Intervenors Issue 6A: No. Seminole has not credibly demonstrated that it has either a reliability need or an economic need for its proposed MAX RISK Portfolio, including the SCCF and SHCCF. Even assuming the accuracy of Seminole's dubious load forecasts, the MAX RISK Portfolio is not the most cost-effective alternative available and would reduce fuel diversity. Seminole's proposals would unnecessarily impose \$13 BILLION in cost risk on customers. The Commission should deny both petitions.

Intervenors Issue 6B: No. Seminole has not credibly demonstrated that it has either a reliability need or an economic need for its proposed MAX RISK Portfolio, including the SCCF and SHCCF. Even assuming the accuracy of Seminole's dubious load forecasts, the MAX RISK Portfolio is not the most cost-effective alternative available and would reduce fuel diversity. Seminole's proposals would unnecessarily impose \$13 BILLION in cost risk on customers. The Commission should deny both petitions.

Parties' Arguments

Petitioners

The Petitioners state that, for the reasons discussed in Issues 1A through 5D, the Commission should grant the petitions for determination of need for the Seminole Facility and the Shady Hills Facility because the analyses presented demonstrate that these two facilities are needed to meet the electrical demands of Seminole and its members and otherwise satisfy all of the criteria set forth in section 403.519, F.S. (Petitioners BR 34) The Petitioners argue that non-approval would mean that Seminole's members and member-consumers would be denied the most cost-effective, risk managed power supply solution, and Seminole's required reserve margin would fall below the minimum reserve level in 2021. (Petitioners BR 34-35) The Petitioners assert that the adverse impact would be \$530 million of additional NPV revenue requirements without consideration of transmission impacts, as well as continuation of service of the coal unit, if both projects were to be denied. (Petitioners BR 35) The Petitioners explain that if only the Seminole Facility is denied, the impact would be approximately \$502 million, along with the continuation of the coal unit. (Petitioners BR 35) The Petitioners further explain that if only the Shady Hills Facility is denied, the impact would be approximately \$363 million, along with the continuation of service of the coal unit. (Petitioners BR 36)

Intervenors

The Intervenors argue that Seminole's load forecasts are unproven and questionable, that the No Build Portfolio is the more cost-effective alternative for meeting the retail customers' needs, and that adding the capacity represented by the Seminole Facility and the Shady Hills Facility will uneconomically duplicate capacity. (Intervenors BR 33-34) The Intervenors further argue that the CPP/CC Portfolio will increase Seminole's dependence on natural gas. (Intervenors BR 34) The Intervenors suggest that the Commission deny the petitions for need determination for both the Seminole Facility and the Shady Hills Facility. (Intervenors BR 34)

Staff Analysis: Pursuant to Section 403.519, F.S., the Commission is the sole forum for the determination of need for major new power plants. In making its determination, the Commission must take into account the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, and whether the proposed plant is the most cost-effective alternative available. The Commission must also expressly consider whether renewable generation or conservation measures taken by or reasonably available to the utility might mitigate the need for the proposed plant. The Commission's decision on a need determination petition must be based on the facts as they exist at the time of the filing with the underlying assumptions tested for reasonableness.

As shown in Issues 1A through 5D, the record supports an overall need for the Shady Hills Facility in 2021 and the Seminole Facility in 2022. The following summarizes the previous issues:

1. The Petitioners have demonstrated that Seminole has a system need for capacity additions beginning in 2021 to meet its 15 percent reserve margin criterion.

2. No cost-effective DSM or renewable resources have been identified that could mitigate the need for the Seminole Facility or the Shady Hills Facility.
3. The Seminole Facility and the Shady Hills Facility are expected to provide adequate electricity at a reasonable cost to Seminole's members and member-consumers.
4. The Seminole Facility, the Shady Hills Facility, and the retirement of one of the SGS coal units will increase Seminole's reliance on natural gas.
5. The CPP/CC Portfolio containing the Seminole Facility and the Shady Hills Facility is expected to result in NPV savings of approximately \$363 million in comparison to the next least cost portfolio and, therefore, is the most cost-effective alternative.

Conclusion

Based on the foregoing, staff recommends that the Commission grant the Petitioners' requested determination of need. It is prudent for a utility to continue to evaluate whether it is in the best interests of its ratepayers for a utility to participate in a proposed power plant before, during, and after construction of a generating unit. If conditions change from those presented at the need determination proceeding, then a prudent utility would be expected to respond appropriately.

Issue 7A: Should Docket No. 20170266-EC be closed?

Issue 7B: Should Docket No. 20170267-EC be closed?

Recommendation: Yes. Upon issuance of an order on Seminole's petition to determine the need for the proposed Seminole Combined Cycle Facility and the Petitioners' petition to determine the need for the proposed Shady Hills Combined Cycle Facility, these dockets should be closed after the time for filing an appeal has run. (Dziechciarz, Murphy)

Position of the Parties

Seminole Issue 7A: Yes. Upon issuance of a final order granting Seminole's petition for need determination for the SCCF, Docket No. 20170266-EC should be closed.

Petitioners Issue 7B: Yes. Upon issuance of a final order granting the joint petition of Seminole and SHEC for need determination for the SHCCF, Docket No. 20170267-EC should be closed.

Intervenors Issue 7A: Yes. Docket No. 20170266-EC should be closed when the Commission's order denying Seminole's petition for determination of need for the SCCF becomes final and no longer subject to appeal.

Intervenors Issue 7B: Yes. Docket No. 20170267-EC should be closed when the Commission's order denying Seminole's and Shady Hills' joint petition for determination of need for the SHCCF becomes final and no longer subject to appeal.

Staff Analysis: Upon issuance of an order on Seminole's petition to determine the need for the proposed Seminole Combined Cycle Facility and the Petitioners' petition to determine the need for the proposed Shady Hills Combined Cycle Facility, these dockets should be closed after the time for filing an appeal has run.