

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for determination of need for  
Dania Beach Clean Energy Center Unit 7, by  
Florida Power & Light Company.

DOCKET NO. 20170225-EI  
ORDER NO. PSC-2018-0150-FOF-EI  
ISSUED: March 19, 2018

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman  
JULIE I. BROWN  
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ORDER GRANTING FLORIDA POWER & LIGHT COMPANY'S  
PETITION FOR A DETERMINATION OF NEED  
FOR THE DANIA BEACH CLEAN ENERGY CENTER UNIT 7

BY THE COMMISSION:

**CASE BACKGROUND**

On October 20, 2017, Florida Power & Light Company (FPL or Company) filed a petition and supporting testimony for the Florida Public Service Commission (Commission) to determine the need for the construction of a new combined cycle (CC) generating unit at FPL's existing Fort Lauderdale power plant in Broward County, Florida. This plant would utilize existing facilities, including transmission lines, substation facilities, and gas infrastructure. The petition was filed pursuant to Sections 366.04 and 403.519, Florida Statutes (F.S.), and Rules 25-22.080, 25-22.081, 25-22.082, and 28-106.201, Florida Administrative Code (F.A.C.).

According to FPL's petition, the proposed Dania Beach Clean Energy Center Unit 7 (DBEC Unit 7) would be a natural gas-fired, CC power plant, with an expected summer peak rating of about 1,163 megawatts (MW). The new DBEC Unit 7 will replace the older, less efficient existing Lauderdale Units 4 and 5 currently at the site.

On October 21, 2017, the Office of Public Counsel (OPC) filed its Notice of Intervention. The Order Establishing Procedure, Order No. PSC-2017-0426-PCO-EI, was issued on November 6, 2017. The issues for the docket were set forth in Order No. PSC-2017-0447-PCO-EI, issued on November 17, 2017. On that same day, by Order No. PSC-2017-0448-PCO-EI, the Sierra Club was granted intervention. On December 20, 2017, by Order No. PSC-2017-0476-PCO-EI, the hearing dates for this docket were changed from January 18-19, 2018, to January 17-18, 2018. On January 10, 2018, a prehearing conference was held. The hearing was held on January 17, 2018.

We have jurisdiction over the subject matter of this proceeding pursuant to Sections 366.041 and 403.519, F.S.

**ANALYSIS AND DECISION**

**I. Electric System Reliability and Integrity**

A. Positions of the Parties

*1. FPL*

FPL argues that there is a need for DBEC Unit 7, taking into account the need for electric system reliability and integrity. The Company contends that DBEC Unit 7 will enhance FPL's system reliability and integrity as measured by FPL's two reserve margin criteria. The Company

avers that the net additional 279 MW from DBEC Unit 7 will: increase FPL's system reserve margins; defer the need for future capacity additions; and, maintain and enhance reliability in the Southeastern Florida region. FPL argues that no party has contested the use of FPL's 20 percent reserve margin in this docket.

## *2. Sierra Club*

Sierra Club asserts that there is no reliability need for DBEC Unit 7 to come into service in June 2022 because, assuming that FPL retires the existing Lauderdale 4 and 5 units in 2018, FPL's projections indicate that 2022 is: (a) two years before any projected reserve margin shortfall; (b) three years before any projected system balance issue; and, (c) five years before the full 1,163 MW capacity of the project is forecast to be needed for reserve margin. Sierra Club argues that the addition of DBEC Unit 7 in 2022 will exceed FPL's 20 percent reserve margin. Sierra Club contends that the projected imbalance in the Southeastern Florida region does not support the need of DBEC Unit 7 in 2022.

## *3. OPC*

OPC argues that FPL does not have a projected need until 2024 and that FPL's own analysis, Ten-Year Site Plan (TYSP), and the construction of the Corbett-Sugar-Quarry (CSQ) line supports this assertion. OPC contends that the construction of DBEC Unit 7 prior to 2024 results in a reserve margin that exceeds 20 percent yet FPL is using the planning criteria to justify the construction of DBEC Unit 7. OPC argues that FPL's four-year limitation on the time for the Southeastern Florida generation component to be missing is an artificial constraint on resource plans and that FPL has not provided adequate justification of the four-year period or reliability needs with this area reliability margin.

## B. Analysis

The parties agree that FPL has demonstrated a need to retire the Lauderdale 4 and 5 Units early which results in the system reliability need to add capacity by at least 2024. However, as discussed below under the heading "V. Cost Effectiveness," the parties do not agree on the timing of DBEC Unit 7 and its impact on regional reliability and system economics.

### *1. Load Forecasting*

FPL's forecasts of growth in (a) net energy for load (NEL), (b) peak demand, and (c) customers are generated using econometric models. FPL's customer growth model is based on variables such as population projections, while its peak demand and NEL models are based on variables such as weather conditions, energy efficiency codes and standards, customer growth, and economic conditions. FPL's customer and NEL forecast methods have been reviewed and accepted by this Commission in past proceedings.

FPL forecasts its customer base to grow by 404,377 customers between 2016 and 2022, the year that DBEC Unit 7 is scheduled to go online, as shown in the table below. This represents an average annual growth rate (AAGR) from 2016 to 2022 of 1.35 percent, as compared to an

AAGR of 1.15 percent over the previous 6-year period (2010-2016). Growth in summer peak demand is forecasted by FPL to reach 24,967 MWs by 2022, representing an AAGR of 0.76 percent from 2016 through 2022, compared to 1.39 percent annually from 2010-2016. NEL growth is forecasted by FPL to reach 122,806 gigawatt- hours (GWh), representing an AAGR of 0.16 percent annually from 2016 through 2022, an increase of 1,187 GWhs over the period, compared to 1.00 percent from 2012 to 2017.

**FPL Historical and Future Growth in Customers and Load**

<b>Year</b>	<b>Customers</b>	<b>Summer Peak (MWs)</b>	<b>Net Energy for Load (GWhs)</b>
<b>2010 (actual)</b>	4,520,328	21,962	114,604
<b>2016 (actual)</b>	4,840,279	23,858	121,619
<b>2022 (projected)</b>	5,244,656	24,967	122,806
<b>Growth, 2010-2016</b>	319,951	1,896	7,015
<b>Growth, 2016-2022</b>	404,377	1,109	1,187
<b>AAGR, 2010-2016*</b>	1.15%	1.39%	1.00%
<b>AAGR, 2016-2022*</b>	1.35%	0.76%	0.16%
* $((\text{Final Year Units}/\text{Beginning Year Units})^{1/6}-1)*100$			

The Intervenors provided no testimony regarding FPL’s customer, peak demand, and load forecasts. Sierra Club questions the accuracy of FPL’s NEL forecasts, citing examples of consistent over forecasting of load in the recent past, especially for forecasts of load five years into the future. In particular, Sierra Club cited a recent Commission order indicating an average forecasting error of 3.52 percent for FPL forecasts produced 5 years out. Sierra Club maintains that FPL’s proposal in this case raises a substantial risk of over forecasting.

FPL acknowledges the forecast error calculation raised by Sierra Club, and asserts that forecast errors tend to increase with the time horizon. FPL discussed the effect of the “Great Recession” and that, during the 2006 and 2007 period, no utility was able to anticipate the impact, magnitude, or duration of the recession, which tended to magnify forecast errors throughout the utility industry. FPL asserts that this Commission should have confidence that FPL’s load forecast is reasonable and accurate based on an average summer-peak forecast error of 1 percent when projecting 5 to 6 years out, as reflected in FPL’s last four TYSPs. By Order No. PSC-16-0032-FOF-EI, we recognized that FPL’s “five year out” forecasts included three under forecasts out of ten “five year out” forecasts, and concluded that such forecasts are not consistently over forecasts. While recognizing that a five year out forecast is prone to a greater error rate than a shorter term forecast, we find that the record does not support Sierra Club’s claim that FPL’s forecast is biased towards an over forecast in this instance.

In summary, we have analyzed FPL’s load forecasting models, including the model specifications, assumptions, data inputs, and statistical output, and find that the customer, summer peak demand, and NEL models are reasonable. We also reviewed FPL’s forecast assumptions pertaining to economic, weather, and demographic conditions, as well as data

adjustments, used by FPL to construct its load forecasts. Based on our analysis and review, we find that FPL's load forecasts filed in this proceeding are reasonable.

### *2. Reserve Margin*

FPL's projected system need is based on its 20 percent reserve margin criterion; therefore, FPL has demonstrated a need for new generation in order to maintain electric system reliability and integrity with the retirement of Lauderdale Units 4 and 5. As shown in the table below, FPL has demonstrated a projected need in 2024 with no new capacity additions under this scenario. No party contested the values for system reliability purposes.

**Summer Reserve Margin Calculations**

<b>Year</b>	<b>Reserve Margin</b>	<b>MW Shortage</b>
<b>2017</b>	21.3%	(295)
<b>2018</b>	21.4%	(313)
<b>2019</b>	20.3%	(69)
<b>2020</b>	21.3%	(299)
<b>2021</b>	21.7%	(378)
<b>2022</b>	21.7%	(379)
<b>2023</b>	21.0%	(233)
<b>2024</b>	19.8%	<b>54</b>
<b>2025</b>	18.1%	<b>459</b>
<b>2026</b>	16.3%	<b>904</b>

The acceleration of the CSQ transmission line provides a unique economic opportunity to retire Lauderdale Units 4 and 5, which maximizes the cost savings of no longer operating those units. However, the decision to replace the older Lauderdale units exposes FPL's system and the Southeastern Florida region to reliability risks. We must balance these concerns when considering the overall need and cost-effectiveness of the proposed DBEC Unit 7.

### *3. Load/Generation Imbalance*

According to FPL, the Southeastern Florida region is expected to face a load imbalance at approximately the same time as the 2024 need. FPL argues that the Southeastern Florida region constitutes 44 percent of FPL's total load and is continually growing, faces a lack of suitable areas for electric generation facilities, and that geographical constraints prevent further transmission into the region. As FPL approaches further imbalance in the region, reliability of the transmission system in the Southeastern Florida region is placed at risk. FPL's 2017 analysis indicates that the CSQ line, to be installed by 2019, will increase transmission import capability by 1,200 MW, address a regional need until 2030, and allow a cost-effective retirement of Lauderdale Units 4 and 5 in 2018. Because of the cost-effective retirement of Lauderdale Units 4 and 5, the projected 2030 need is altered. With the retirement of Lauderdale Units 4 and 5 in 2018, the Southeastern Florida region is projected to become imbalanced by 2025, necessitating the replacement of the regional capacity prior to 2025.

The CSQ line will provide import capability in the Southeastern Florida region and the construction of DBEC Unit 7 enhances this capability. Specifically, without DBEC Unit 7, the facilities at the 500 kiloVolt substations in Broward County would be more prone to exceeding their capability. The placement of DBEC Unit 7 in Broward County unloads those facilities and results in an increased import capability of 400 MW for the area. This will be in addition to the 800 MW of import capability provided by the construction of the CSQ transmission line for a total of approximately 1,200 MW of increased import capability.

#### 4. Area Reliability Margin

FPL addresses load imbalance by calculating the area reliability margin. This calculation combines aspects of reserve margin and load flow analysis and is different than a planning reserve margin or load flow analysis. The projected area reliability margins of FPL's plans are shown in the table below.

<b>Area Reliability (MW)</b>			
<b>Year</b>	<b>Maintain Lauderdale 4 and 5</b>	<b>2018 Retire Lauderdale 4 and 5, DBEC Unit 7 In- Service 2022</b>	<b>2018 Retire Lauderdale 4 and 5, DBEC Unit 7 In-Service 2024</b>
<b>2018</b>	1,968	1,968	1,968
<b>2019</b>	3,157	1,873	1,873
<b>2020</b>	3,154	1,870	1,870
<b>2021</b>	3,055	1,771	1,771
<b>2022</b>	2,975	3,254	1,691
<b>2023</b>	2,847	3,126	1,563
<b>2024</b>	2,699	2,978	2,978
<b>2025</b>	2,566	2,845	2,845

As illustrated above, FPL's decision to retire the Lauderdale units results in a significant impact on the Southeastern Florida area reliability for the years 2019 through 2021. If DBEC Unit 7 is added by 2022, the Southeastern Florida region area reliability is enhanced. If DBEC Unit 7 is delayed until FPL's system need in 2024, the Southeastern Florida area reliability will continue to degrade. FPL asserts that maintaining the area reliability margin for the Southeastern Florida region is important as critical support for any combination of unexpected situations. The risk increases as the load continues to increase and the generation resources and import capability stay constant, and lessens the area reliability margin. Bringing DBEC Unit 7 into service as soon as possible after the retirement of the Lauderdale units lessens the risk to customers of firm load shedding. In contrast, this problem is exacerbated by delaying DBEC Unit 7 to 2024. Notwithstanding the foregoing, FPL has asserted that, if DBEC Unit 7 were to be delayed until 2024 due to events beyond FPL's control, FPL would continue to provide service to its customers in the most reliable and efficient manner that it can. Upon review, we find that

there is value in evaluating multiple reliability perspectives in order to maintain reliability and integrity of the grid and expect FPL to maintain reliability with the proposed DBEC Unit 7.

### C. Decision

FPL has demonstrated a need for DBEC Unit 7 in the 2024 to 2026 timeframe to maintain its system reliability and integrity. FPL's decision to retire the Lauderdale units in 2018 results in a significant impact on the Southeastern Florida region's reliability and FPL is responsible for ensuring that the reliability and integrity of Southeastern Florida is maintained. Once completed, the proposed DBEC Unit 7 will enhance FPL's system reliability. The timing of the DBEC Unit 7 and its impact on regional reliability and system economics is discussed below under the heading "V. Cost Effectiveness."

## **II. Renewable Energy Sources and Technologies or Conservation Measures to Mitigate Need**

### A. Positions of the Parties

#### *1. FPL*

FPL argues that it considered all cost-effective renewable energy and conservation measures reasonably available to FPL that might mitigate the need for DBEC Unit 7, including all cost-effective renewable energy generation and energy efficiency programs that might be implemented in the Southeastern Florida region. FPL asserts that nothing in the record supports any additional cost-effective renewable generation available to FPL to mitigate the need for DBEC Unit 7 in 2022. The Company contends that all Demand Side Management (DSM) conservation measures have been accounted for in its analysis and the cost-effective DSM program approved for FPL by this Commission. FPL argues that cost-effective energy efficiency programs are not a viable option because the cost-effectiveness of these programs has continued to decline.

#### *2. Sierra Club*

Sierra Club disputes that the DBEC Unit 7 is needed in 2022. Sierra Club argues that renewable energy sources, technologies, and conservation measures are reasonably available to FPL and could be deployed incrementally to delay, or potentially entirely forestall, any need for new gas generation. Sierra Club concludes that this would likely reduce financial burdens on FPL's customers. Sierra Club argues that FPL has not fairly evaluated these alternatives. Sierra Club argues that FPL's renewable resource plan is arbitrarily and unreasonably constrained by a megawatt to megawatt match of DBEC Unit 7. Sierra Club further argues that FPL unreasonably adds a large amount of solar and storage before a reliability need.

### 3. OPC

Generally, OPC argues that FPL did not pursue renewable energy sources and technologies or conservation measures that might have mitigated the need for DBEC Unit 7. OPC asserts that FPL did not adequately evaluate whether solar and battery storage might be used to meet its 20 percent margin reserve needs in 2024. OPC argues that FPL's renewable resource plan was flawed because the plan (a) did not consider deployment of clean energy sources when they are needed to meet reliability requirements and (b) was purposefully designed to not yield the lowest cost scenario for relying on clean energy resources.

#### B. Analysis

FPL asserts that its analysis of renewable generation options/sources included Photovoltaic (PV) facilities of both utility-scale and distributed generation and accounted for all achievable cost-effective DSM programs approved by this Commission. FPL's renewable evaluation assumes the retirement of Lauderdale Units 4 and 5 in late 2018 with a sufficient amount of PV and batteries to be added in the Southeastern Florida Region by 2022. The plan approximates the incremental 1,163 MW of firm capacity of DBEC Unit 7 and assumes that 1,033 MW of PV and 755 MW of battery storage would be in place by 2022 in the Southeastern Florida region. The 1,033 MW of PV would be comprised of both utility-scale and distributed generation. This plan has a Cumulative Present Value Revenue Requirement (CPVRR) cost of \$1,288 million more than the DBEC Unit 7 resource plan and thus, is uneconomic.

At the request of our staff, FPL provided a renewable plan that retired Lauderdale Units 4 and 5 in 2018 and would only meet FPL's system need in 2025 instead of matching the 1,163 MW of firm capacity provided by DBEC Unit 7. This evaluation included both PV and batteries and totaled 433 MW. Even with this conservative approach, the solar plan had a CPVRR cost \$370 million more than DBEC Unit 7. While Sierra Club and OPC argue that FPL did not adequately compare an efficient deployment of renewable resources to the system resource need, we find that even the staff-requested additional solar plan was less cost-effective than the DBEC Unit 7 as proposed by FPL.

#### C. Decision

No additional cost-effective renewable resource has been identified in this proceeding that can mitigate the need for new generation. Similarly, no additional cost-effective DSM has been identified in this proceeding that can mitigate the need for new generation.



### **III. Adequate Electricity at a Reasonable Cost**

#### A. Positions of the Parties

##### *1. FPL*

FPL argues that there is a need for DBEC Unit 7, taking into account the need for adequate electricity at a reasonable cost. FPL asserts that DBEC Unit 7 is projected to result in the lowest system CPVRR cost of all resource options and resource plans evaluated and thus, will provide the lowest rates for FPL's customers. FPL contends that DBEC Unit 7 is projected to be approximately \$337 million CPVRR less expensive than continuing to operate the existing Lauderdale units. FPL argues that the new unit will not require a new gas pipeline, transmission line, or water supply.

##### *2. Sierra Club*

Sierra Club argues that delaying DBEC Unit 7 until 2024 and retiring the Lauderdale units in 2018 is a more cost-effective alternative to FPL's proposed plan. Sierra Club asserts that FPL reviewed a limited scope of alternative plans that may have been cheaper and more cost-effective than the proposed plan. Sierra Club contends that customers will save money if FPL adds capacity as required by the timing and size of a projected reserve margin deficit or Southeastern regional imbalance. Sierra Club argues that locking DBEC Unit 7 in now, nearly a decade before a projected shortfall of so much additional capacity, will deprive customers of wide-ranging benefits of investing in alternatives. Sierra Club argues that by Section 403.502, F.S., the Florida Legislature has mandated that utilities pursue such alternatives "to the extent reasonably available."

##### *3. OPC*

OPC argues that FPL's own analysis demonstrates that there is no need for a new unit before 2024. OPC contends that FPL has not demonstrated a need for a new unit in 2022, and that a five or six year delay will produce savings versus FPL's four-year period between retirement and construction of a new unit.

#### B. Analysis

Our review of FPL's economic assumptions associated with the construction of DBEC Unit 7, and the reasonableness of these assumptions, is set forth below.

##### *1. Plant Description*

DBEC Unit 7 is proposed to be a 1,163 MW power plant located in Broward County, Florida. The proposed plant would consist of two advanced technology Combustion Turbines (CTs), two heat recovery steam generators, and one steam turbine at an existing power generation site. DBEC Unit 7 would be located on approximately 392 acres of FPL-owned land within the cities of Dania Beach and Hollywood. The site is currently supporting the Lauderdale

4 and 5 Units, and a significant amount of infrastructure used in support of Lauderdale Units 4 and 5 will be reused for DBEC Unit 7.

## *2. Financial Assumptions*

FPL's CPVRR analysis assumed an overall cost of capital of 7.57 percent on an after-tax basis. The overall cost of capital, or discount rate, is based on a capital structure of 59.6 percent equity at a cost rate of 10.55 percent and 40.4 percent debt at a cost rate of 5.17 percent.

In its analysis, FPL used 2.5 percent for the O&M and capital escalation rates, and 2.0 percent for the capital replacement escalation rate. The escalation rates were based on input from FPL's Engineering & Construction business unit. These values are consistent with escalation rates for O&M and capital that FPL used for other planning analysis conducted during 2017 and during the last few years. The escalation rate of 5.0 percent for the cost of short-term Purchased Power Agreement (PPAs) was based on input from FPL's Energy Management & Trading business unit. FPL noted that the PPA cost escalation rate was used for all PPAs in all of the resource plans analyzed for this docket in 2017. FPL asserts that there is little difference in the level and/or timing of PPAs between these resource plans, and therefore, there is little difference in the PPA costs between these resource plans. There was no evidence presented in the record to dispute the reasonableness of FPL's financial assumptions used in the Company's CPVRR analysis. Upon review, we find that the financial assumptions used for FPL's CPVRR evaluation are reasonable.

The installed cost of DBEC Unit 7 is projected to be approximately \$888 million. DBEC Unit 7 is projected to have an average heat rate of 6,119 Btu/kWh and is expected to have a capacity factor of 90.0 percent. Lauderdale Units 4 and 5 have an average heat rate of approximately 7,800 Btu/kWh showing that DBEC Unit 7 is 22 percent more fuel efficient in comparison to Lauderdale Units 4 and 5. The ramp rate of a generating unit is the amount of MW that can be ramped up or down over a given time and a major aspect of its flexibility. The ramp rate for Lauderdale Units 4 and 5 is 6 MW/minute which is the slowest on FPL's system. The proposed DBEC Unit 7 has a projected ramp rate of 60 MW/minute, which would make it the fastest ramp rate of FPL's current units. FPL has experience building and operating CC units and has confidence in the accuracy of its construction estimates and projected unit estimates. Comparing Lauderdale Units 4 and 5 to DBEC Unit 7 shows the significant upgrade to FPL's system that occurs with the cost-effective replacement of the older Lauderdale units. No evidence was presented that challenged FPL's generation construction cost or performance projections.

## *3. Fuel Costs*

FPL's November 2016 fuel price forecast was used for FPL's economic evaluations in this case. The Company employed its standard fuel forecasting methodology in preparing its forecast. No intervenor presented an alternative fuel price forecast for the purpose of valuing the Company's DBEC Unit 7 proposal or any other potential resource plan scenario. The Company performed sensitivities around its long-term fuel price forecast. The sensitivities were based on a statistical measurement of price volatility over the past eight years reflecting one standard

deviation from the mean, which equates to approximately 20 percent of the base/medium forecast, both high and low. However, given that the Company's as-filed cost analysis was formulated using its November 2016 fuel forecast, the Company was asked to perform the same economic evaluations using a more recent, or November 2017 (unofficial) fuel forecast. The more recent fuel price forecast places downward cost pressure, in CPVRR terms, on all evaluated potential resource plan options, with DBEC Unit 7 remaining the most cost-effective. Upon review, we find that the fuel price forecast used in the Company's economic evaluations of potential resource options is reasonable.

#### *4. Environmental Costs*

FPL asserts that the proposed DBEC Unit 7 would significantly improve the Company's air emission profile through the decrease in CO<sub>2</sub>, NO<sub>x</sub>, and total air emissions compared to the existing Lauderdale Units 4 and 5, and would promote a saving in water consumption as well. The NO<sub>x</sub> emission rate for DBEC Unit 7, when firing natural gas, is projected to be 95 percent lower than the existing Lauderdale units. The anticipated reduction in the CO<sub>2</sub> emission rate, for the new unit compared to the existing units, is approximately 22 percent. Water for power generation is projected to be reduced from 1.69 million gallons per day (MGD) to 1.0 MGD based on a 12-month rolling average.

In its 2017 economic analysis of DBEC Unit 7, FPL used the same updated forecast for environmental compliance costs that were used in the analysis for the Company's 2017 TYSP. No parties contested the forecast in this proceeding. The projection of CO<sub>2</sub> compliance costs, developed in/around January 2017, was provided by ICF, a consulting firm used by the U.S. Environmental Protection Agency to develop compliance cost projections for its Clean Power Plan, and by FPL for its resource planning work since 2007. Typically, FPL includes a projection of the CO<sub>2</sub> emission compliance costs in its resource planning analysis. In this proceeding, FPL performed scenario analysis in which the Company analyzed combinations of high, medium, and low cost forecasts for fuel and various projections of environmental compliance costs. Results show that DBEC Unit 7 is projected to yield significant savings for FPL's customers in comparison to the other resource plans evaluated, regardless of whether a high, medium, or low fuel cost forecast and environmental compliance cost forecasts are assumed.

#### C. Decision

Upon review, we find that FPL's financial, fuel, and environmental cost estimates are reasonable.

### **IV. Fuel Diversity and Supply Reliability**

#### A. Positions of the Parties

##### *1. FPL*

FPL asserts that there is a need for DBEC Unit 7, taking into account the need for fuel diversity and supply reliability. FPL argues that because DBEC Unit 7 will be a very fuel

efficient unit, with a projected heat rate of 6,119 BTU/kWh, the total usage of natural gas will decrease on a system-wide basis compared to running the Lauderdale units. Therefore, FPL asserts that DBEC Unit 7 will improve fuel diversity and supply reliability of the system. FPL asserts that even though DBEC Unit 7 will be fueled primarily by natural gas, it will have the capability to burn light fuel oil to ensure reliable service.

## *2. Sierra Club*

Sierra Club avers that DBEC will prolong potentially until 2061 FPL's over reliance on gas, which currently represents 71 percent of FPL's generation. Sierra Club asserts that fuel efficiency does not remedy adding gas burning generation to an already overburdened system, when, despite dual fuel capability, DBEC Unit 7 is designed primarily to burn gas. Conversely, investing in alternatives, especially solar and demand-side energy efficiency, would provide much needed fuel diversity, including protection from gas price and supply risks and pollution abatement costs. Sierra Club argues that FPL is currently overly reliant on gas-burning generation and that DBEC Unit 7 will negatively affect that reliance. Sierra Club asserts that FPL should diversify its generation portfolio with non-gas generation resources such as solar.

## *3. OPC*

In contrast to FPL's argument that DBEC Unit 7 will be more fuel efficient than Lauderdale Units 4 and 5 and lower system natural gas usage, OPC asserts that replacing one natural gas unit with another is not an effective way to enhance FPL's fuel diversity. OPC argues that fuel diversity would actually be enhanced if the Lauderdale units were retired and renewable resources, or DSM, were utilized to replace the retired capacity. OPC reiterates that there is no need for a new unit fueled by natural gas or otherwise before 2024.

## B. Analysis

Upon review, the record reflects that FPL's proposed DBEC Unit 7 will be fueled by natural gas, and to enhance fuel supply reliability, it will use ultra-low sulfur distillate light oil as a backup fuel. Because DBEC Unit 7 will be replacing the existing gas-fired Lauderdale Units 4 and 5, FPL will serve DBEC Unit 7 via the existing Florida Gas Transmission Company gas transportation infrastructure currently serving the site. Light fuel oil is currently located on site to serve the existing units and will continue to be stored in sufficient quantities to allow both the DBEC Unit 7 and existing units to operate at the full capacity for approximately 72 hours of continuous operation and can be resupplied with truck deliveries. DBEC Unit 7 will continue FPL's dependence on natural gas; however, the efficiency of DBEC Unit 7 will allow FPL to reduce the total usage of natural gas on a system-wide basis.

## C. Decision

While DBEC Unit 7 will not improve FPL's overall fuel diversity, the unit efficiency allows FPL to reduce the total amount of natural gas needed to serve the need of its customers. In addition, overall fuel supply reliability will be maintained because DBEC Unit 7 will use the existing infrastructure on the site.

## **V. Cost Effectiveness**

### A. Positions of the Parties

#### *1. FPL*

FPL asserts that after analysis of a variety of generation types, DBEC Unit 7 proved to be the most cost-effective alternative available to reliably serve FPL's customers. In comparison to continuing to run the Lauderdale units or supplying an equivalent amount of power via renewable resources, FPL argues that there is a CPVRR savings of \$337 million and \$1,288 million, respectively. Based on its 2016 analysis, FPL argues that the CSQ transmission line is sufficient in meeting the regional need but opened a window of opportunity to retire and replace the Lauderdale units. Based on its 2017 analysis, FPL argues that the retirement of the Lauderdale units in 2018 along with the construction of DBEC Unit 7 with an in-service date of 2022 is the most economic option for FPL's customers. FPL contends that delaying DBEC Unit 7 past the 2022 in-service date will increase costs to customers and, if not coupled with a delay of the Lauderdale unit's retirement, will compromise the reliability of the region.

#### *2. Sierra Club*

Sierra Club asserts that less costly alternatives include delaying DBEC Unit 7 until 2024—the earliest date when FPL projects a reliability issue. Sierra Club argues that FPL did not adequately consider other potential cost-saving alternatives, such as forestalling the need for DBEC Unit 7 by adding incremental, renewable, or demand-side alternatives. Sierra Club argues that FPL's renewables evaluation, Plan 3, is unreliable and obscures the cost-effectiveness of alternatives. Sierra Club argues that delaying DBEC Unit 7 until 2024 while retiring the Lauderdale units in 2018 is a more cost-effective alternative to FPL's proposed plan. Sierra Club asserts that FPL reviewed a limited scope of alternative plans and that FPL's renewable resource plan is (a) arbitrarily and unreasonably constrained by a megawatt to megawatt match of DBEC Unit 7 and (b) adds a large amount of solar and storage in 2018 through 2022 before there is a reliability need.

#### *3. OPC*

OPC argues that retiring the Lauderdale units in late 2018 and delaying replacement power until 2024 is more cost-effective than DBEC Unit 7 being placed into service in 2022. OPC further asserts that not forcing customers to pay for the resource two years before it is needed will produce savings for customers.

### B. Analysis

FPL engaged in a multi-step process to determine how to best meet its projected 2024 need and maintain load balance in the Southeastern Florida region. This resulted in FPL's proposal of DBEC Unit 7, a 1,163 MW CC power plant located on the existing Lauderdale Units 4 and 5 sites. FPL's first analysis was performed in mid-2016, when a 2024 system need for a resource addition was identified in FPL's 2016 TYSP. An examination of the load balance in the

Southeastern Florida region was performed and identified a projected imbalance in the region to occur at about the same time as the projected need. First, FPL considered various generation and transmission options, including resource plans that considered CCs and CTs outside of the Southeastern Florida region, CCs and CTs inside the Southeastern Florida region, PV and/or batteries inside the Southeastern Florida region, and a modernization of existing sites. FPL determined that a new transmission line into Southeastern Florida was needed in all resource plans. Thus, plans were made for the CSQ line. The addition of the CSQ line was projected to address the Southeastern Florida region need until 2027. FPL's analysis highlighted that not retiring Lauderdale Units 4 and 5 would cause FPL to incur significant expenses. However, with the retirement of Lauderdale Units 4 and 5 in 2018, the Southeastern Florida region is projected to become imbalanced by 2025 necessitating the replacement of the regional capacity prior to 2025. Because of the uncertainty involved in project planning, such as changes in FPL's generating units or higher than projected loads, FPL evaluated resource plans that would provide additional capacity at a date earlier than 2025 and explored options to replace the Lauderdale units.

FPL's 2017 analysis used updated load, fuel costs, and environmental compliance costs; the same updated forecasts that were used in FPL's 2017 TYSP and 2017 Solar Base Rate Adjustment filings. The new analysis included the additional utility-scale PV capacity that was scheduled to be implemented based upon the 2017 TYSP. FPL used the 2017 analysis to determine that the addition of the CSQ line by mid-2019 would address regional need until 2030. The results of the new analysis were used by FPL to devise three resource plans to evaluate including the updated forecasts. Plan 1 considered continued operation of Lauderdale Units 4 and 5. Plan 2 is a retirement of Lauderdale Units 4 and 5 in 2018, with DBEC Unit 7 added in 2022. Plan 3 is a retirement of Lauderdale Units 4 and 5 in 2018, with an addition of a combined 1,163 MW of PV and battery storage. These three initial plans formed the basis of FPL's petition in this docket.

As discussed above, under the heading "II. Renewable Energy Sources and Technologies or Conservation Measures to Mitigate Need," FPL considered a mix of PV facilities and battery storage as generation options in the 2017 analysis, but Plan 3 proved to be less cost-effective than DBEC Unit 7. Based on its analysis of the remaining resource plans, FPL determined that the continued operation of Lauderdale Units 4 and 5 has a CPVRR cost of \$337 million more than DBEC Unit 7. Based on this evaluation, FPL decided on a resource plan comprised of a 2018 retirement of the Lauderdale units with DBEC Unit 7 being constructed on the Lauderdale site in 2022, also known as FPL Plan 2. Based on the results of the analysis, FPL concluded that Plan 2 was the most cost-effective resource plan.

FPL provided sensitivities which showed the impact of delaying the construction of DBEC Unit 7 one and two years. The results showed an estimated CPVRR increase in cost of \$12 million for a one year delay and \$38 million for a two-year delay. These scenarios also delayed the retirement of the Lauderdale units an equivalent amount of time. FPL also provided a resource plan that would retire Lauderdale Units 4 and 5 in 2018 and delay the construction of DBEC Unit 7 to 2024. This evaluation showed that when compared to FPL's Plan 2, there was a savings of \$27.4 million. Although savings occur when delaying the unit to 2024, FPL argues

that there is an operations risk associated with taking a plant out-of-service with no replacement. Accordingly, delaying the construction to 2024 would negatively impact the Southeastern Florida regional reliability and reduce the import capability provided by the CSQ line. FPL asserts that the delay scenario would also increase both system natural gas usage and system emissions. FPL deemed the delay scenario unreasonable because delaying DBEC Unit 7 would result in increased operational challenges and risks to serving customers in the Southeastern Florida region. In evaluating FPL's proposed plan, we must balance the potential economic savings against an increased reliability.

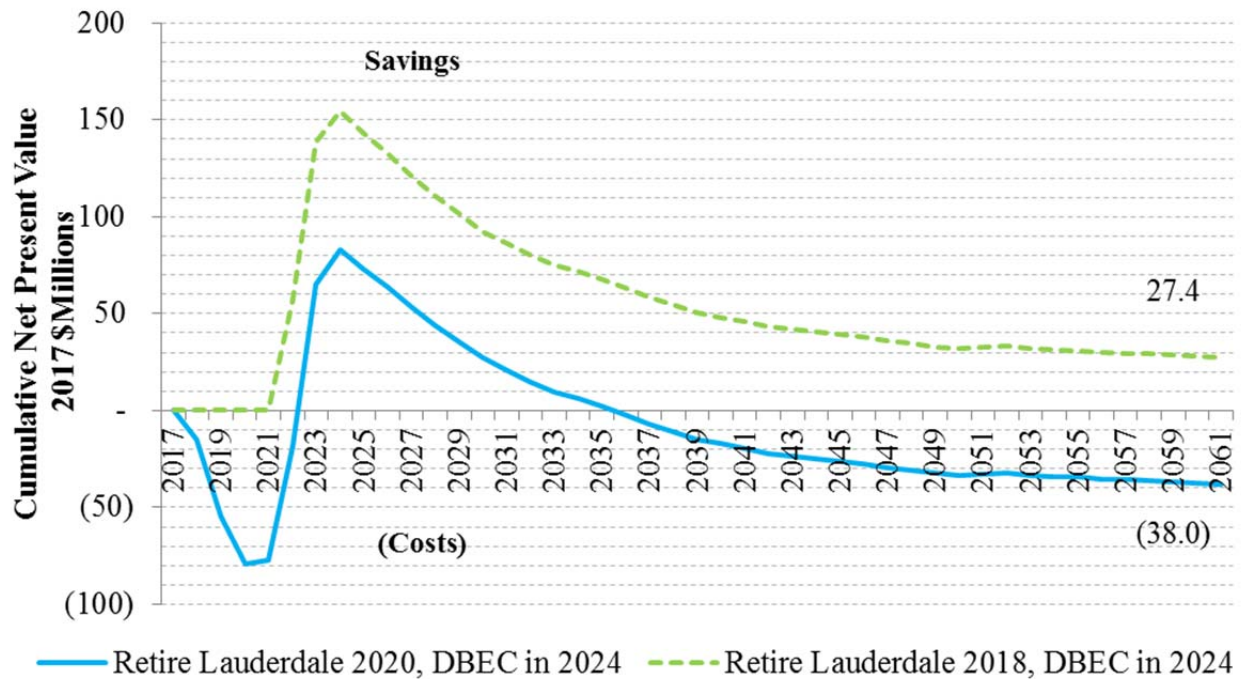
The table below represents a CPVRR analysis of all of the scenarios compared to FPL's proposed DBEC Unit 7 resource plan.

**Cumulative Net Present Value Comparison of Resource Plans to FPL Plan 2**

<b>Resource Plan</b>	<b>CPVRR 2017 \$Millions Savings/(Costs)</b>
Lauderdale 4 and 5, Continued Operation	<b>(337)</b>
FPL Renewable Evaluation (1,163 MW PV/Batteries)	<b>(1,288)</b>
Retire Lauderdale 2018, DBEC in-service 2024	<b>27*</b>
Retire Lauderdale 2020, DBEC in-service 2024	<b>(38)*</b>
Staff Renewable Evaluation (433 MW PV/Batteries)	<b>(370)</b>

When reviewing the resource plans only two, identified in the table above by asterisks, come close to the savings of DBEC Unit 7 while also meeting the 2024 system need. In the chart below the annual CPVRRs of these prevailing resource plans are compared to FPL's proposed Plan 2.

**Annual Comparison to FPL's Proposed Plan 2**



The table and chart above illustrate that the continued operation of Lauderdale Units 4 and 5 is uneconomic. The retirement of the Lauderdale units and replacement with DBEC Unit 7 will yield an estimated NPV savings of approximately \$299 million to \$364 million for FPL customers. Both Sierra Club and OPC assert that retiring the Lauderdale units in 2018 and delaying the in-service date of DBEC Unit 7 until 2024 is more economic than FPL’s proposed plan. We agree that such a resource plan would result in projected savings for the customers; however, this approach ignores the diminished Southeastern Florida area regional reliability. We find that the increased reliability risk is not worth the potential economic savings to FPL’s customers. Moreover, as discussed above, under the heading, “III. Adequate Electricity at a Reasonable Cost,” FPL’s DBEC Unit 7 would be one of the most efficient units on FPL’s system.

C. Decision

The retirement and replacement of the Lauderdale units with DBEC Unit 7 is estimated to result in a NPV savings of approximately \$299 million to \$364 million. Upon review, we find that the proposed DBEC Unit 7 is the most cost-effective alternative that maintains FPL’s system and the Southeastern Florida area reliability compared to other alternatives.



## **VI. Determination of Need for Proposed Dania Beach Clean Energy Center Unit 7**

### A. Positions of the Parties

#### *1. FPL*

FPL asserts that, taking into account all reasonably available renewable energy and conservation measures, DBEC Unit 7 is the best, most cost-effective choice for meeting the needs of the Company's customers beginning June 1, 2022 while maintaining and enhancing service reliability system-wide and in the Southeastern Florida region. FPL argues that DBEC Unit 7 will reduce system emissions and usage of natural gas as a fuel source for generation. The Company asserts that using the existing infrastructure of the retired Lauderdale units for DBEC Unit 7 is consistent with our policy that before a utility constructs a new generating unit at a greenfield site, it must consider the modernization of existing units.

#### *2. Sierra Club*

Sierra Club asserts that FPL has not met its burden to demonstrate that DBEC Unit 7 is needed. Sierra Club asserts that there is no reliability need for DBEC Unit 7, and the addition of the unit will exceed FPL's reserve margin. Sierra Club further argues that the projected imbalance for the Southeastern Florida region does not support a need for DBEC Unit 7. Sierra Club avers that FPL reviewed a limited scope of alternative plans that may have been cheaper than the proposed plan with greater fuel diversity.

#### *3. OPC*

OPC argues that delaying DBEC Unit 7 by a year or two and retiring the Fort Lauderdale Units 4&5 in late 2018 is the least costly option based on all the circumstances provided in this case. OPC asserts that DBEC Unit 7 is not needed until 2024 and FPL's 20 percent reserve margin criterion will remain sufficiently met with a 2024 in-service date. OPC agrees with Sierra Club that DBEC Unit 7 will provide excess capacity available for sale that will be under FPL's asset optimization.

### B. Analysis

Pursuant to Section 403.519, F.S., this Commission is the sole forum for the determination of need for major new power plants. In making this determination, we 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. We 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. Our 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.

Upon review, we find that the record in this case supports the need for DBEC Unit 7 in 2022. FPL has demonstrated that it has a system need for capacity additions in the 2024 through 2026 timeframe to meet its 20 percent reserve margin criterion. No cost-effective DSM or renewable resources have been identified that could mitigate the need for DBEC Unit 7. DBEC Unit 7 is expected to provide adequate electricity at a reasonable cost to FPL's customers. DBEC Unit 7 is projected to reduce overall natural gas consumption and reduce emissions compared to maintaining the existing Lauderdale units. DBEC Unit 7 is the most cost-effective alternative that maintains FPL's system and Southeastern Florida area reliability compared to other alternatives. The retirement and replacement of the Lauderdale units with DBEC Unit 7 is estimated to result in a NPV savings of approximately \$299 million to \$364 million.

### C. Decision

Based on the record in this case, we shall grant FPL's requested determination of need.

We find that there is value in evaluating multiple reliability perspectives in order to maintain reliability and integrity of the grid and we expect FPL to maintain reliability. It is prudent for a utility to continue to evaluate whether it is in the best interests of its ratepayers before, during, and after construction of a generating unit. If conditions change from those presented at the need determination proceeding, then a prudent utility is expected to respond appropriately. In addition, we have ongoing authority and an obligation to ensure fair, just, and reasonable rates for Florida's utilities and ratepayers. Pursuant to Rule 25-22.082(15), F.A.C., if the public utility selects a self-build option, costs in addition to those identified in the need determination proceeding shall not be recoverable unless the utility can demonstrate that such costs were prudently incurred and due to extraordinary circumstances.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that there is a need for the Dania Beach Clean Energy Center Unit 7 in the 2024 to 2026 timeframe to maintain Florida Power & Light Company's system reliability and integrity. It is further

ORDERED that no additional cost-effective renewable resource has been identified that can mitigate the need for new generation. It is further

ORDERED that no additional cost-effective demand-side management has been identified that can mitigate the need for new generation. It is further

ORDERED that Florida Power & Light Company's financial, fuel and environmental cost estimates are reasonable. It is further

ORDERED that while Dania Beach Clean Energy Center Unit 7 will not improve Florida Power & Electric Company's overall fuel diversity, DBEC Unit 7's efficiency allows the Company to reduce the total amount of natural gas needed to serve the need of its customers. It is further

ORDERED that overall fuel supply reliability will be maintained because Dania Beach Clean Energy Center Unit 7 will use the existing oil backup infrastructure on the site. It is further

ORDERED that the retirement and replacement of the Lauderdale units with Dania Beach Clean Energy Center Unit 7 is estimated to result in a net present value savings of approximately \$299 million to \$364 million. It is further

ORDERED that the Dania Beach Clean Energy Center Unit 7 is the most cost-effective alternative that maintains Florida Power & Light Company's system and Southeastern Florida area reliability compared to other alternatives. It is further

ORDERED that for the reasons set forth in the body of this Order, Florida Power & Light Company's Petition for a Determination for Need for the Dania Beach Clean Energy Center Unit 7 is hereby granted. It is further

ORDERED that this docket shall be closed after the time for filing an appeal has run.

By ORDER of the Florida Public Service Commission this 19th day of March, 2018.



HONG WANG  
Chief Deputy Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399  
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Copies furnished: A copy of this document is provided to the parties of record at the time of issuance and, if applicable, interested persons.

CWM

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Any party adversely affected by the Commission's final action in this matter may request:

- 1) reconsideration of the decision by filing a motion for reconsideration with the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, within fifteen (15) days of the issuance of this order in the form prescribed by Rule 25-22.060, Florida Administrative Code; or
- 2) judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or the First District Court of Appeal in the case of a water and/or wastewater utility by filing a notice of appeal with the Office of Commission Clerk, and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days after the issuance of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.