William P. Cox
Senior Attorney
Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408-0420
(561) 304-5662
(561) 691-7135 (Facsimile)
Will.Cox@fpl.com

January 29, 2018

-VIA ELECTRONIC FILING-

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket No. 20170225-EI
In re: Petition for Determination of Need for Dania Beach Clean Energy Center Unit 7, by Florida Power & Light Company

Dear Ms. Stauffer:

Enclosed for filing on behalf of Florida Power & Light Company ("FPL") is FPL's Post-Hearing Brief.

Please contact me should you or your Staff have any questions regarding this filing.

Sincerely,

s/ William P. Cox
William P. Cox
Senior Attorney

cc: Counsel for Parties of Record (w/encl.)

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 Date: January 29, 2018

POST-HEARING BRIEF OF
FLORIDA POWER & LIGHT COMPANY

Florida Power & Light Company ("FPL" or the "Company"), hereby files with the Florida Public Service Commission (the "FPSC" or "Commission") its Post-Hearing Brief in the above-referenced docket, pursuant to Order Nos. PSC-2017-0426-PCO-EI, PSC-2017-0447-PCO-EI, PSC-2017-0476-PCO-EI, and PSC 2018-0037-PHO-EI.

I. INTRODUCTION AND OVERVIEW

On May 22, 2017, FPL petitioned this Commission for an exemption from Rule 25-22.082, F.A.C., also commonly referred to as the "Bid Rule," for the construction of the Dania Beach Clean Energy Center ("DBEC Unit 7" or the "Project"), a combined cycle ("CC") generating unit at the site of FPL's existing Lauderdale power plant in Broward County, Florida, which will utilize existing facilities, including transmission line, substation facilities, and natural gas infrastructure to transmit and deliver energy to FPL's customers. The Project would provide customers with the certainty of higher system and regional reliability, lower costs, cleaner emissions, and reduced system natural gas usage. The Commission granted FPL's request for a Bid Rule exemption after finding that the Company had demonstrated that:

- DBEC Unit 7 will reuse the existing Lauderdale plant site and related facilities for a newer, larger, and more efficient unit;
- DBEC Unit 7 is likely to result in a lower cost supply of electricity to the Company's general body of ratepayers;

- DBEC Unit 7 is likely to increase the reliable supply of electricity to the Company's general body of ratepayers; and
- DBEC Unit 7 is likely to provide public welfare benefits to the public.

Order No. PSC-2017-0287-PAA-EI (issued July 24, 2017); Consummating Order No. PSC-2017-0431-CO-EI (issued on November 9, 2017).

On October 20, 2017, FPL petitioned the Commission for an affirmative determination of need for DBEC Unit 7 with an in-service date of June 2022, a modernization project that will provide higher reliability with significant cost savings for our customers -- a projected customer savings of $337 million in cumulative present value of revenue requirements ("CPVRR") as compared to keeping the existing Lauderdale Units 4 & 5 in operation. Tr. 64, 91-92, 154-55 (Sim); Ex. 5 (SRS-4). The construction of this new highly efficient CC power plant would provide an incremental 279 megawatts ("MW") of capacity, resulting in greater system and regional reliability for serving FPL's customers with its location in highly populated Miami-Dade and Broward Counties (FPL's "Southeastern Florida region"). Tr. 64-65 (Sim). DBEC Unit 7 is projected to maintain and enhance the balance between generation/transmission import capability and load in the Southeastern Florida region, which is an area where over 40% of FPL's 4.9 million customers are provided electric service. Tr. 65 (Sim); Tr. 402, 407 (Sanchez); Tr. 186 (Feldman). In summary, FPL has requested Commission approval of a project that adds significant incremental capacity in an extremely important area of its system and results in $337 million in customer savings.

In addition to incremental capacity and generating power at a lower cost to customers, DBEC Unit 7 will provide other benefits. DBEC Unit 7's primary fuel will be natural gas, and this new unit will have the dual fuel capability to burn light fuel oil as a back-up fuel to further ensure reliable operation of the unit. Tr. 236 (Kingston). Moreover, DBEC Unit 7 will

significantly improve FPL's air emission profile through the decrease in CO_2, NOx, and total air emissions compared to the existing Lauderdale units. Tr. 247-48 (Kingston). It is projected to provide public welfare benefits with an estimated $297 million in new tax revenue to local governments and school districts over the life of the project, as well as create an estimated 650 direct jobs at the peak of construction. Tr. 252 (Kingston). The addition of DBEC Unit 7 by 2022 is an integral part of FPL's resource plan to meet the growing resource needs of its customers and continue to deliver electricity with greater reliability at a reasonable and lower cost. Tr. 64-71 (Sim)

FPL's decision to move forward with DBEC Unit 7 began with an integrated resource planning process in mid-2016 that continued in to early 2017, which was designed to meet FPL's system and regional needs for reliable and cost-effective resources for serving our customers. FPL analyzed various generation, transmission, and Demand Side Management ("DSM") options to select the most cost-effective option(s) for FPL customers to meet its system need and regional reliability need in Southeastern Florida, including analyses of CC generation, combustion turbine ("CT") generation, solar generation, and energy storage options. Tr. 62-63, 69, 544-47 (Sim); Ex. 59. A part of FPL's analysis was the consideration and evaluation of a number of factors, including the importance of maintaining and/or enhancing a balance between generation and load in the Southeastern Florida region. Tr. 73, 105 (Sim). The significance of this regional balance for providing reliable service to FPL's customers has been highlighted in each of FPL's Ten Year Site Plans ("TYSP") since 2003. *Id.* The electrical load in this two county region (Southeastern Florida region) is very large, constituting 44% of FPL's load, which is roughly equivalent to the entire electrical load of the Duke Energy Florida system. Tr. 193-94 (Feldman).

These extensive analyses in 2016 and 2017 ultimately identified DBEC Unit 7 as the

most cost-effective alternative to address FPL system resource needs, including the need to address regional balance and thereby provide greater reliability for Southeastern Florida. Tr. 91-92 (Sim).

The Project takes advantage of a window of opportunity provided by the in-service date of the Corbett-Sugar-Quarry ("CSQ") 500 kV transmission line in mid-2019. This window of opportunity will enable FPL to retire the existing Lauderdale units and construct DBEC Unit 7 with an in-service date of 2022, while maintaining reliability for both FPL's system and the Southeastern Florida region. Tr. 82, 85-86, 91-92, 96, 111, 145-47 (Sim); Tr. 524, 533 (Sanchez). This is an opportunity that should not be missed. No better solution that preserves reliability was proposed by Sierra Club or any other party; however, their view inexplicably is that FPL and its customers should simply bear the risk and forego this opportunity to ensure reliability. Allowing this window to close without modernizing the Lauderdale units ignores our customers' best interests, and FPL's proposal best meets the goals of affordable, reliable, and clean energy. Sierra Club's interests are singularly focused on opposing any and all fossil fuel generation, and the Office of the Public Counsel ("OPC") seems to be solely focused on additional modest cost savings if the Project were to be deferred one or two years while disregarding operational reliability concerns for the region.

A. DBEC Unit 7 is the Right and Best Option for Customers

DBEC Unit 7 is the right and best option for FPL's customers because it will provide higher capacity and reliability for the Southeastern Florida region, while at the same time lowering costs and system emissions and even lowering the use of natural gas as a fuel source for generation. It provides higher reliability for lower costs with an incremental 279 MW to serve FPL's customers in the Southeastern Florida region. Tr. 67-70 (Sim). DBEC Unit 7 with 1,163 MW of summer nameplate capacity would replace the 884 MW of the Lauderdale units, which

are early 1990s-era natural gas-fueled 2x1 CC electric generating units that utilize 1950s-era steam turbine generators. Tr. 244-45 (Kingston). The Project is situated in the heart of the Southeastern Florida region where FPL's most concentrated and primary load center is located. Thus, it will add to and enhance generation in the area with incremental capacity to address concerns regarding the load-to-generation imbalance in the Southeastern Florida region and thereby increase reliability for serving FPL's customers in this highly populated part of Florida. Tr. 510 (Sanchez).

DBEC Unit 7 is projected to provide $337 million CPVRR in cost savings to FPL's customers compared to keeping the existing Lauderdale units operating with their higher operational and fuel costs. Tr. 91-92 (Sim). It is also $1,288 million CPVRR less expensive than a resource plan in which the Lauderdale units are retired, DBEC Unit 7 is not built, and an equivalent amount of firm capacity in Southeastern Florida to DBEC Unit 7 is supplied instead by solar and batteries sited in that region. *Id*.

DBEC Unit 7 will be one of the cleanest, most fuel efficient generating units in FPL's fossil fleet. Tr. 165 (Sim); Tr. 236 (Kingston). Moreover, DBEC Unit 7 can be expected to achieve an energy conversion rate ("heat rate") of significantly less than 7,000 British thermal units ("Btu") per kilowatt hour ("kWh"). Tr. 239 (Kingston). FPL anticipates that DBEC Unit 7 will have an average base heat rate as low as approximately 6,119 Btu/kWh, based on an average ambient air temperature of 75°F. The new unit's heat rate represents a 22% improvement over the approximate 7,800 Btu/kWh heat rate of the existing Lauderdale units and will result in fuel cost savings for FPL customers from day one once the new unit goes into operation. *Id.*

B. Sierra Club's and OPC's Interests Are Not Aligned with the Interests of Our Customers

Intervenor Sierra Club is not focused on providing the most reliable and lowest cost resource option for FPL's customers. Rather, their singular goal is to oppose the construction of

DBEC Unit 7. To this end, Sierra Club has not even offered an actual, alternative resource plan in this proceeding. Sierra Club's blanket opposition to fossil fuel base load resources became apparent when the Sierra Club witness begrudgingly conceded general support for any modeling outcome that showed a fossil fuel generation asset would be the best resource option for an electric utility, but remained steadfastly opposed to such an outcome in this proceeding. Tr. 382-83 (Hausman).

Fundamentally, Sierra Club becomes an advocate for uncertainty with its opposition to DBEC Unit 7. Tr. 316-18 (Hausman). Sierra Club's "plan" is really a non-plan fraught with risk and uncertainty, as Sierra Club through its witness shows no regard for the operational reliability risk for Southeastern Florida -- risks that are minimized by placing DBEC Unit 7 in service by June 2022. Tr. 552-54 (Sim); Tr. 401-02, 407 (Sanchez). While there is absolutely no consequence to Sierra Club for being wrong about the type and timing of resource options, FPL is obligated to plan for and provide safe and reliable service to its 4.9 million customers and, therefore, must move forward with a real, certain, and reliable resource plan. That plan calls for commercial operation of DBEC Unit 7 in 2022, and, as uncontested in the record, it is a plan that saves our customers $337 million.

OPC appears to be focused on the modest potential, short-term savings if the Project is deferred by one or two years. FPL is likewise very focused on costs to serve our customers. We are the lowest cost provider of electricity in the state of Florida. However, as an electric utility serving 4.9 million customers across the state, FPL also is appropriately focused on providing reliable service to all of our customers, including those in the Southeastern Florida region. OPC's position, respectfully, does not reflect the appropriate regard for these reliability concerns.

C. Sierra Club and OPC Provide No Credible Evidence that Alters the Conclusion that DBEC Unit 7 is the Most Economic Resource Choice for FPL's Customers

FPL's 2017 Analysis shows that DBEC Unit 7 is projected to save FPL's customers $337 million CPVRR in costs compared to the status quo Plan 1 of continuing to operate the existing Lauderdale units, and $1,288 million CPVRR in costs compared to the solar and storage alternative Plan 3. Tr. 64, 155, 547 (Sim); Ex. 5 (SRS-4). FPL considered delay scenarios of both one year and two years assuming that the in-service date of DBEC Unit 7 was delayed from mid-2022 to mid-2023 and mid-2024, respectively. Tr. 92-93, 114, 116-17, 165 (Sim). Based on the specific guidance received from FPL's Systems Operations focusing on minimizing the operational reliability risk in the high load area of Southeastern Florida, the retirement of Lauderdale Units 4 & 5 were necessarily assumed to have a commensurate delay by either one or two years, respectively. The results of the economic analyses of the delay scenarios were an increase in costs to FPL's customers of approximately $12 million for a one-year delay and $38 million for a two-year delay. *Id.*

In stark contrast, Sierra Club witness Hausman provided an unrealistic "illustrative alternative" plan which lacks credibility. Tr. 319 (Hausman). He admits that his alternative plan is not a real plan and has not been thoroughly analyzed as to its reliability or feasibility. Tr. 317 (Hausman). Additionally, Sierra Club fails to present any evidence on what this illustrative "non-plan" would cost FPL's customers. Tr. 320 (Hausman). This non-plan is offered without any analysis as to the capital costs, operational and maintenance costs, variable costs, or any other costs whatsoever associated with this illustrative plan. Tr. 351-52 (Hausman). Indeed, Dr. Hausman testified that it was not his "intention to have a plan in which [he] had analyzed any [cost] aspects," and he had "not done any technical or feasibility analysis" for his illustrative plan. Tr. 351, 355 (Hausman).

Not only was an actual resource plan not offered, it is clear that Dr. Hausman does not have the experience, tools, or resources to develop such a plan. Tr. 355-57 (Hausman). Dr. Hausman has never recommended a fuel source for generation or developed a resource plan or a transmission plan for a utility, and he did not review any information from the Siemens transmission model necessary to do so here. Tr. 355-56, 358, 381-82 (Hausman).[1] Instead of a competing plan, what Sierra Club has provided is a hypothetical scenario fraught with risk and uncertainty, and which was never intended by Sierra Club's witness to be relied upon as an actual alternative to FPL's proposal.

Because of Sierra Club's failure to put forth a credible plan for alternative resource options, there is simply no compelling evidence in the record of lower cost and available alternative resource options, including the solar Power Purchase Agreement ("PPA") pertaining to Jacksonville Electric Authority ("JEA") that witness Hausman references. Tr. 580-81 (Sim); Tr. 298-99 (Hausman). FPL is constantly working with vendors, other utilities, and providers of solar facilities in order to maintain a current up-to-date market view of costs and the direction of those costs, which it utilized in its analyses supporting its selection of DBEC Unit 7 as its proposed resource option. Tr. 130-31, 158-59 (Sim).

Dr. Hausman's reference to the JEA PPA is misplaced because he failed to compare JEA's solar PPA value to the fuel-based $/MWh cost of DBEC Unit 7. Tr. 580-81 (Sim); Tr. 298-99 (Hausman). Had Dr. Hausman done so, he would have found that this comparison shows that DBEC Unit 7, with an in-service date in 2022, is 30% lower cost than the solar PPA value in 2017. *Id.* It would take until 2036, almost 20 years later, for FPL's system average fuel cost to climb to the $/MWh level of JEA's solar PPA. *Id.* This is clearly not "illustrative" of how a

[1] Dr. Hausman was the only witness presented by Sierra Club on its behalf. Dr. Hausman is a serial expert for the Sierra Club nationwide, testifying for them on 13 occasions in the last 10 years. Tr. 345 (Hausman). Dr. Hausman, however, has never testified before the Florida Public Service Commission, never testified in a need determination proceeding, never testified regarding a Florida power plant and never testified in a matter involving a regulated Florida electric utility. Tr. 349-50 (Hausman).

solar PPA would be a lower cost alternative to DBEC Unit 7.

From a resource planning standpoint, $/MWh-based comparisons provided by Dr. Hausman do not provide a complete and accurate picture of the total system costs of resource options. Tr. 160 (Sim). A $/MWh evaluation does not account for a number of key impacts on the system, such as: the number of MW offered by the resource option, the projected capacity factor, the percentage of the option's MW that can be considered firm capacity, and the projected life of the option.[2] In other words, while FPL is strongly supportive of solar generation as evidenced by the hundreds of megawatts already constructed and planned for construction for FPL, the times of the day and the times of the season when solar can be dispatched are critical to the resource planning assessment of this generation resource. Therefore, $/MWh references, such as the ones made by both Dr. Hausman and the Solar Energy Industries Association representative, are not meaningful in determining the true cost of resource options on a utility system. Tr. 24; Tr. 160 (Sim).

Likewise, Dr. Hausman's support for an "incremental" approach to solar as an alternative to DBEC Unit 7 also lacks any meaningful record support as a resource option that could reliably and cost effectively serve FPL's customers. To that end, FPL responded to a Commission Staff discovery scenario regarding evaluation of an incremental resource addition approach whereby Lauderdale Units 4 & 5 were retired in 2018, and 433 MW of solar and 225 MW of battery capacity were added in 2025 to provide approximately 460 MW of firm capacity in that year, significantly less than the 1,163 MW of capacity that DBEC Unit 7 would provide with an in-service date of 2022. Ex. 52 (FPL's Response to Commission Staff's Interrogatory No. 58, Attachment No. 1); Tr. 134, 163 (Sim). Sierra Club witness Hausman argued that FPL should use such an incremental resource addition approach, but he offered no cost support or

[2] These are not factors that Dr. Hausman would have been competent to address in any event based on his answers to questions regarding his experience and capabilities. Tr. 355-57 (Hausman).

other necessary details for such a scenario. Tr. 300 (Hausman).

The results of the economic analysis for the Staff discovery scenario showed that this scenario was $370 million CPVRR *worse* for FPL's customers than placing DBEC Unit 7 in service in 2022. Ex. 52 (FPL's Response to Commission Staff's Interrogatory No. 58, Attachment No. 1); Tr. 134, 163 (Sim). The reason for this result was that there will be additional system costs due to the relatively small amount of firm solar capacity being brought onto the system; therefore, other resources would have to be brought in to make up the differential in firm capacity between DBEC Unit 7's 1,163 MW unit and approximately 460 MW of solar and storage being placed in service in 2025 to adequately address FPL's system and regional reliability needs. Tr. 163-64 (Sim).

D. Sierra Club and OPC Have Not Justified Denying or Delaying an Affirmative Determination of Need for DBEC Unit 7

Sierra Club and OPC have provided no reasoned and supported justification for denying or delaying the clear and undisputed cost savings and reliability benefits that DBEC Unit 7 would provide. The intervenors would have this Commission find that at no point in time should FPL or any other utility plan their system whereby the results would exceed the minimum 20% total reserve margin criterion to maintain system or regional reliability for the utility. This artificial resource planning constraint advocated by Sierra Club and OPC is neither practicable nor in the best interests for customers either from the standpoint of economics or reliability.

FPL utilizes a Commission approved minimum 20% total reserve margin criterion during its resource planning process as approved by this Commission. The Commission has previously recognized that this reserve margin criterion is a minimum, *i.e.*, a floor and not a cap or limit, and FPL on many occasions has projected comparable total reserve margins to what is being projected with the addition of DBEC Unit 7 in 2022. It is not surprising that FPL's TYSPs from 2013-2017 have previously shown summer reserve margins of 28%, 28%, 26.7%, 22%, and

21.3%, respectively, as resources are brought online to meet appropriate goals of cost-effectiveness and reliability. Tr. 123, 149-50, 179 (Sim), Ex. 62. In this case, Sierra Club's and OPC's argument fails to present any credible evidence that exceeding the 20% minimum total reserve margin with the DBEC Unit 7 is not in the best interest of FPL's customers based on system reliability and economic considerations.

Moreover, there is no evidence which indicates that having higher reserve margins provides diminishing returns to FPL and its customers, and, as FPL witness Sim stated, FPL is nowhere near such a point. Tr. 123-24 (Sim). Assuming that FPL has any excess generation capacity as a result of this Project, FPL would evaluate this capacity to ensure that it optimizes its generation assets for the benefit of its customers. Tr. 276-77 (Stubblefield). Any excess capacity determined to be available by FPL's System Operations would be evaluated for potential wholesale sales. Tr. 614-16 (Sim). Once a sale is made, the revenues from that sale flow to the benefit of FPL's customers under the Commission-approved Asset Optimization program. *Id.*

As noted above, an affirmative determination of need for DBEC Unit 7 beginning in 2022 is projected to provide several important benefits to FPL's customers and the State of Florida, which include not only system and regional reliability but also, most significantly in this case, cost savings for FPL's customers. Economic savings from DBEC Unit 7 in the amount of $337 million CPVRR will begin to accrue for the benefit of FPL's customers immediately following retirement of the Lauderdale units this year. Tr. 91-92, 162-63 (Sim).

The Commission has granted need determinations based on similar economic benefits for customers in prior need determinations, such as the approval of FPL's West County Energy Center ("WCEC") Unit 3 in Docket Nos. 080203-EI, 080245-EI, and 080246-EI. Tr. 555-56

(Sim).[3] In those dockets, FPL requested a determination of need for WCEC Unit 3 with an in-service date of 2011 although there was not a projected system reliability need until 2013 – two years later than the requested in-service date. *Id*. FPL projected that an earlier in-service date would reduce system fuel costs and emissions and also allow FPL the opportunity to modernize the Riviera Beach and Cape Canaveral plant sites without adversely impacting system reliability. *See* Order No. PSC-08-0591-FOF-EI (issued September 12, 2008). Notably, after the addition of WCEC Unit 3 in 2011, FPL projected that its reserve margin would be approximately 27.9%. *Id.* at 6.

E. Sierra Club's and OPC's Focus on Delaying an Affirmative Determination of Need for DBEC Unit 7 Promotes Unreasonable Operational Risks for FPL's Customers

The primary argument put forward by the intervenors in this docket is to delay the in-service date of DBEC Unit 7 from 2022 to sometime between 2023 and 2025, while disregarding the real economic and reliability impacts of such a delay. Tr. 554 (Sim); Tr. 302-04 (Hausman). The intervenors take this position with complete disregard for the operational risks associated with removing and not replacing a *significant* generation resource in the Southeastern Florida region. Tr. 401-03 (Sanchez). The operational risks for this region are compounded by the high load, approximately 44% of FPL's peak load, located with the Southeastern Florida region, and the amount of generation resources and finite transmission import capability into this region. Tr. 403 (Sanchez); Tr. 186 (Feldman).

The record on this critical point is unequivocal. These operational risks would arise

[3] The Commission has previously approved need determinations based on economic and socio-economic needs, *See In Re: Petition for Determination of Need for Expansion of Electrical Cogeneration Power Plant in Palm Beach County by FPL*, Order No. PSC-04-1105A-FOF-EI (November 18, 2004); *In Re: Application for Certification of Tampa Electric Company's proposed 417 MW net coal-fired Big Bend Unit No. 4*, Order No. 9749 (January 16, 1981); *In Re: Petition for Certification of Need for Orlando Utilities Commission, Curtis H. Stanton Energy Center Unit 1*, Order No. 10320 (October 2, 1981); *In Re: Joint Petition for Determination of Need for an Electrical Power Plant in Volusia County by the Utilities Commission, City of New Smyrna Beach, Florida and Duke Energy New Smyrna Beach Power Company*, Order No. PSC-99-0535-FOF-EM (March 2, 1999); *In Re: Petition to Determine Need for Proposed Electrical Power Plant in St. Marks, Wakulla County by City of Tallahassee*, Order No. PSC-97-0659-FOF-EM (June 9, 1997); *In Re: Joint Petition to Determine Need for Gainesville Renewable Energy Center in Alachua County by Gainesville by GRU and GREC*, Order No. PSC-10-0409-FOF-EM (June 28, 2010)

from the operation of the FPL system without sufficient load serving capability to absorb the contingencies of the loss or failure of large generating units and/or transmission facilities within the Southeastern Florida region. Tr. 405, 458-59, 530 (Sanchez).

FPL witness Hector Sanchez, a seasoned FPL system operations veteran with over 30 years of experience, is responsible for addressing these operational risks as Director of System Operations and leads a team that operates the entire FPL system, making sure "the lights go on" for FPL customers 24 hours a day, 365 days a year. Tr. 399-401, 513-17 (Sanchez). He refers to this operational consideration of regional balance of load to generation/transmission import capability as an "area reliability margin." Tr. 405, 453, 495-96 (Sanchez); Ex. 61. This operational concept of "margin," which is similar to the regional imbalance described by FPL witness Sim, is not new and has been used by FPL previously in testimony in prior need determination dockets, most recently for the Port Everglades Modernization. Tr. 495-96, 527-28 (Sanchez).

The regional imbalance or load-to-generation balance and associated operational reliability risk is a concern that FPL must continue to analyze, plan for, and address with resource options. Tr. 73-76 (Sim). FPL must be prepared to sustain the sudden loss of any generation source or transmission or substation facility at any time, while continuing to serve load reliably with all facilities within applicable ratings and voltage limits. Tr. 405, 458-59 (Sanchez). Being prepared for a sudden loss of any generation or transmission or substation facility is a part of the North American Reliability Corporation ("NERC") reliability standards. *Id.* Therefore, DBEC Unit 7 significantly helps in this preparation by providing 279 MW of incremental generation to address and enhance FPL's ability to mitigate such resource losses by providing additional margin in the region. Tr. 410-11 (Sanchez). Of the plans considered, DBEC Unit 7 will result in the least amount of risk for FPL and its customers. Tr. 409, 479-80,

506 (Sanchez).

This margin is used to address operational risks that affect the Southeastern Florida region, such as fires or hurricanes that potentially affect transmission corridors into the region. Tr. 409 (Sanchez). As to a fire scenario, FPL conducted its 2017 Annual Capacity Dry Run that simulated a fire in one of its transmission corridors that import power into the Southeastern Florida region during a high load period. Tr. 409, 512-13 (Sanchez). FPL's projected reliability margin during the Dry Run scenario, which even accounted for the 884 MW of capacity from the existing Lauderdale units, was insufficient. As a result, FPL would have needed to shed tens of thousands of firm load customers for many hours to avoid a cascading situation with outages or a blackout in the region. Bringing DBEC Unit 7 into service as soon as practicable (four years or less) would mitigate the potential need to perform firm load shedding, *i.e.*, turning customers' power off, in such a scenario. *Id.*

Having generation resources located within the region also serves to increase reliability when faced with a hurricane that could damage transmission lines that import power into the region. Tr. 408-10, 509-11 (Sanchez). This was the case in 2016 with Hurricane Matthew. FPL prepared for a scenario in which that storm would have impacted Palm Beach County and areas northward. Having additional generation resources in Southeastern Florida would serve to mitigate the potential operational reliability risk from such a storm event. *Id.*

Another example of such an operational reliability risk was during the cold weather condition in January 2010, during which FPL's peak load was more than 6,000 MW higher than forecasted, FPL experienced 1,980 MW of unplanned outages. Tr. 408, 410 (Sanchez). Such an event has occurred and could occur at any time. Therefore, having the DBEC Unit 7 as a generation resource in this region where transmission import capability is finite and heavily relied upon is critical to FPL's system operations. Tr. 408-410, 509-11 (Sanchez).

To ensure reliable service in the face of these operational reliability risks, FPL does not operate its bulk electric system based on probabilities, but instead, as do all electric utilities, FPL strictly adheres to deterministic reliability standards. In other words, FPL must operate its system in a way that ensures reliable service for its customers, not based on a probability of an outage or blackout. Tr. 481-82 (Sanchez). While Sierra Club and OPC attempt to disregard or marginalize these reliability considerations, FPL cannot afford to be so nonchalant about its responsibilities. The operational risk is very real, and for every 100 MW of load that FPL is unable to serve, 20,000 customers would be exposed to rolling blackouts every 20 minutes. Tr. 481 (Sanchez). FPL is required to operate its system with certainty and cannot afford to "roll the dice" based on some contrived notion of probability as the intervenors would suggest. Tr. 481-82 (Sanchez).

F. FPL's System Operations' Guidance Helps Mitigate the Reliability Risks Associated with any Delay to DBEC Unit 7 for Customers

FPL's analyses in this proceeding take into account the system and regional reliability associated with delays in bringing DBEC Unit 7 in-service. Consequently, the guidance provided by FPL witness Sanchez for these analyses, someone with 32 years of experience in this field and who is actually responsible for "keeping the lights on" for all of FPL's customers, was to minimize these types of risk by placing DBEC Unit 7 in-service as soon as practicable by utilizing the window of opportunity provided by the CSQ 500 kV transmission line., *i.e.*, by 2022. Tr. 483-84, 513-17, 522, 524-25 (Sanchez). In stark contrast, Dr. Hausman, who opposed the in-service date of 2022, has no systems operations experience or expertise and could provide no such informed guidance for reliable operation of an electric utility. Tr. 356 (Hausman).

In addition to the clear guidance from FPL's system operators to minimize the time period from retirement of the Lauderdale units to commercial operation date of DBEC Unit 7 to ensure reliable operations, Sierra Club and OPC fail to take into account the minimum

approximate four-year construction schedule needed to retire and demolish the existing Lauderdale units and construct DBEC Unit 7. Tr. 92-93, 172-73 (Sim); Tr. 250 (Kingston); Ex. 18 (JKK-10, DBEC Unit 7 Expected Construction Schedule). Sierra Club's witness Hausman off-handedly labeled this four-year period a "magic number" and arbitrary. Tr. 303-04, 367-68 (Hausman). Yet, Dr. Hausman readily admitted that he did not read any other testimony from FPL besides FPL's witnesses Steve Sim and Hector Sanchez. Had he taken the time to read the other pre-filed testimony filed on this issue, including testimony from FPL witness Jacquelyn Kingston, he would have seen where FPL discussed why it takes four years to retire and dismantle the Lauderdale units to construct DBEC Unit 7. *See* Tr. 368-69 (Hausman); Ex. 18 (JKK-10, DBEC Unit 7 Expected Construction Schedule).

Sierra Club's and OPC's pursuit of a delay of DBEC Unit 7 beyond 2022 also fails to recognize the operational reliability risk associated with retiring Lauderdale Units 4 & 5 in 2018 while taking advantage of the CSQ line coming into service in mid-2019. Tr. 145-47 (Sim); Tr. 524, 533 (Sanchez). This Lauderdale retirement removes 884 MW of generation and reduces 400 MW of transmission import capability from the Southeastern Florida region, an area almost equivalent to the load of New York City. Tr. 486, 519-21 (Sanchez). For example, with the retirement of the Lauderdale units in 2018 and DBEC Unit 7 not being placed in-service in 2022, FPL witness Sanchez would have to operate the system in the Southeastern Florida region with a margin of approximately 1,691 MW. Tr. 405-06 (Sanchez). This 1,691 MW margin is calculated by taking all generation and transmission import capability resources into the region minus the load for the region. *Id.* If FPL were to experience an unplanned outage of its largest generating unit in the region, Port Everglades Unit 5 (1,237 MW), during peak load summer conditions, the FPL system would be without sufficient load serving capability to absorb the loss of another unit and/or other specific generation and/or transmission

system equipment becoming unavailable. Tr. 406-07 (Sanchez).

Furthermore, by 2025, the area reliability margin in the region will decrease to 1,282 MW as load continues to increase, which is barely enough margin in megawatts to cover the unplanned outage of Port Everglades Unit 5, let alone, any multiple unit outages or the unavailability of transmission lines and/or substation facilities. Tr. 406-08, 500 (Sanchez). FPL witness Sanchez explained that multiple variations of these scenarios are indeed possible if not likely, which is why the margin in the region, *i.e.*, reliability, would be greatly enhanced by placing DBEC Unit 7 in service in 2022. *Id.* Clearly, it would be unrealistic and imprudent for this Commission to rely upon Sierra Club witness Hausman's delay recommendations when he has no experience as a systems operator, resource planner, or a transmission planner. Tr. 356-57 (Hausman).

Additionally, assuming the new unit comes online within four years of retirement of the older units to maintain system and regional reliability, FPL's analyses show that any delay of the planned 2022 in-service date by one year results in a projected $12 million CPVRR cost increase and a $38 million CPVRR cost increase for a two year delay. Tr. 92-93, 114 (Sim). Neither Sierra Club nor OPC have provided any record evidence to dispute those analyses.

For all these reasons and as more fully addressed below, the overwhelming evidence in this proceeding supports a determination that there be no delay in the commercial operation of DBEC Unit 7 beyond its 2022 in-service date. To do so would create and impose additional operational reliability risks and associated costs on FPL's system and its customers in the Southeastern Florida region. These are risks that are unnecessary for FPL customers to bear, particularly when the solution proposed by FPL would save customers $337 million.

II. SUMMARY OF ARGUMENT

The record demonstrates that FPL's Petition and testimony satisfy the criteria for an affirmative determination of need for the DBEC Unit 7 under Section 403.519, Florida Statutes. The limited arguments presented by the intervenors in opposition to DBEC Unit 7 are thoroughly rebutted by FPL, are inconsistent with established law, or are completely unsupported by the record. Accordingly, FPL's need determination request should be granted.

III. ISSUES AND POSITIONS

ISSUE 1: **Is there a need for the proposed Dania Beach Clean Energy Center Unit 7, taking into account the need for electric system reliability and integrity, as this criterion is used in Section 403.519(3), Florida Statutes?**

FPL: ***** Yes. There is a need for DBEC Unit 7, taking into account the need for electric system reliability and integrity. DBEC Unit 7 will enhance FPL's system reliability and integrity as measured by FPL's two reserve margin criteria. The net additional 279 MW from DBEC Unit 7 will increase FPL's system reserve margins and defer the need for future capacity additions. The new unit will also maintain and enhance reliability in the Southeastern Florida region. *

DBEC Unit 7 Will Meet and Enhance FPL's Need for System Reliability and Integrity

While FPL's need determination request for DBEC Unit 7 is driven primarily by significant cost savings and economic benefits for FPL's customers as discussed in Issue 3 below, there is a need for DBEC Unit 7 taking into account FPL's electric system reliability and integrity, as well as the need for reliability for the Southeastern Florida region as discussed further below. Tr. 67 (Sim). The Commission has previously evaluated the "Need for Power" in prior need determination proceedings taking into account both FPL's system and regional need for reliability and system integrity, specifically the load-to-generation imbalance or regional balance in the Miami-Dade and Broward County area, *i.e.*, the Southeastern Florida region. Tr. 171 (Sim); see, *e.g.*, *In re: Petition to determine need for modernization of Port Everglades Plant, by Florida Power & Light Company,* Docket No. 110309-EI, Order No. PSC-12-187-FOF-EI at 6 (F.P.S.C., April 9, 2012).

DBEC Unit 7 will enhance FPL's system reliability and integrity as measured by FPL's two reserve margin criteria: its Commission approved 20% minimum total reserve margin ("TRM") and 10% minimum generation only reserve margin ("GRM"). Tr. 67, 118-19 (Sim). The Commission has consistently approved FPL's use of the minimum 20% TRM reliability criterion in prior need determinations, TYSPs, and other proceedings before the Commission, and FPL has utilized the GRM in its need determination for the Okeechobee Clean Energy Centers (Docket No. 150196-EI) and its TYSPs in recent years, including the 2017 TYSP. See Ex. 45 (SRS-6) for a list of Commission proceedings approving or applying the minimum 20% total reserve margin. Tr. 585 (Sim).

Neither Sierra Club nor OPC has seriously contested FPL's use of the 20% minimum TRM in this docket, and FPL's system resource needs projected with using both the 20% minimum TRM and the 10% minimum GRM were very similar to the resource needs projected if only the 20% minimum TRM were used. Tr. 585 (Sim). Further, given the Commission's clear precedent of using the 20% minimum TRM for need determination proceedings and not changing a utility's reliability criteria in the context of a single need determination proceeding, Dr. Hausman's half-hearted attempt to change the reserve margin criteria for FPL in this docket to rely only on the Loss of Load Probability ("LOLP") criterion to the exclusion of the minimum 20% TRM is clearly misguided and inappropriate. Tr. 551-52 (Sim); see, *e.g., In re: Petition for determination of need for Okeechobee Clean Energy Center Unit 1, by Florida Power & Light Company*, Docket No. 150196-EI, Order No. PSC-16-0032-FOF-EI at 11-12 (F.P.S.C., January 19, 2016).

It is also undisputed that DBEC Unit 7 will increase FPL's available capacity to serve its customers with the additional 279 MW that will result from retiring the 884 MW from existing Lauderdale Units 4 & 5 and adding 1,163 MW from DBEC Unit 7, thereby increasing FPL's

system reserve margin values (TRM and GRM) and deferring the need for future capacity additions. Tr. 67 (Sim). The analytical support for DBEC Unit 7 began in 2016, when FPL projected a need to add new resources to its system by 2024 to meet FPL's system reliability criteria. Tr. 74, 145, 544 (Sim). Subsequently, based on the 2017 Analysis presented in this docket and discussed in more detail below, assuming Lauderdale Units 4 & 5 are retired as planned by FPL in 2018, it was determined that DBEC Unit 7 will meet this resource need in 2024 of 54 MW based on 20% minimum TRM and 91 MW minimum 10% GRM, with resource needs climbing steadily in succeeding to years to 2,059 MW (TRM) and 2,165 MW (GRM) by 2030. DBEC Unit 7 will serve to defer future capacity additions that would otherwise be required to meet those growing capacity needs. Tr. 106-07, 175 (Sim); Ex. 3 (SRS-2).

DBEC Unit 7 Will Also Maintain and Enhance FPL's Need for Reliability for the Southeastern Florida Region

The additional 279 MW of capacity that would be added in the Southeastern Florida region with DBEC Unit 7 will also enhance the reliability of electric service in the region. Tr. 67, 96 (Sim). DBEC Unit 7 will maintain and enhance the balance between generation and load in the Southeastern Florida region and thereby enhance reliability for the region because DBEC Unit 7 will be sited within the region at the site of the existing Lauderdale units. *Id.*

Each year as a part of its annual TYSP filings with the Commission, FPL conducts resource planning analyses designed to determine the timing and magnitude of its next resource needs and the best option or resource plan to reliably and cost-effectively meet those needs. Tr. 73 (Sim). In addition to maintaining a reliable electric system and in keeping electric rates low for FPL's customers, these analyses address maintaining a balance between generation and load in the Southeastern Florida region, which has been emphasized in each of FPL's TYSP filings since 2003, including FPL's 2017 TYSP. *Id.*

In 2016, FPL projected a need to address the load, generation, and transmission import capability for Southeastern Florida (regional balance) in 2024 due to an imbalance projected to occur at approximately the same time as the FPL system resource need. Tr. 74, 145, 544 (Sim). Evaluations of regional balance were performed using load flow analyses that address both FPL's transmission and generation systems, including not only the usual MW and MWh characteristics of an electrical system that are utilized in resource planning analyses, but also transmission system considerations to meet NERC reliability standards. Tr. 75-76, 109 (Sim). These complex analyses to address both FPL's system need and Southeastern Florida reliability concerns required use of a number of models, including the Siemens PTI Power Transmission System Planning software load flow analysis model, as well as a reserve margin calculation spreadsheet, the UPLAN production costing model, and FPL's fixed cost spreadsheet model. *Id.* In sum, FPL's 2016 Analysis, as discussed further below, was designed to determine the best approach to address both system and regional reliability needs of FPL and its customers.

Maintaining and enhancing balance between generation and load in the Southeastern region of Florida has been and remains a significant factor in FPL's resource planning effort due to the size of the region's electrical load, continuing growth in the region, and regional constraints. Tr. 75 (Sim). The electrical load in this two county region constitutes 44% of FPL's total electrical load, roughly equivalent to the entire electrical load of the Duke Energy Florida system, and the load continues to grow and expand on an annual basis. *Id.*; Tr. 193-194 (Feldman). This region is constrained by limited areas suitable for electric generation facilities and limited potential for new transmission lines to transport power into the region due to its location near the end of the Florida peninsula and the fact that it is surrounded by the Atlantic Ocean to the east, the Florida Keys to the south, the Everglades to the west, and highly developed areas in Palm Beach County to the north. Tr. 74-75 (Sim).

Moreover, electric load (MW) in Southeastern Florida is greater than the amount of generation (MW) sited in that region. Thus, when considering just load and generation sited in the region, there is an imbalance. As a result, a significant amount of energy required for this region is provided by importing energy through the transmission system from generating units located outside of the region, especially during peak demand periods. Tr. 75 (Sim). By accounting for this "import" capability, a balance of load, generation, and transmission import capability for the region can be reached. However, electric load in this region is steadily growing, making the ongoing and increasing imbalance a continuing resource planning challenge for FPL to ensure cost-effective and reliable service to customers in the region. *Id.*

Two negative consequences from the standpoint of reliability and economics result when FPL approaches or reaches an imbalance condition in Southeastern Florida. First, the reliability of the transmission system in Southeastern Florida is placed at risk. Tr. 76 (Sim). Second, generating units in the region are operated out of system economic dispatch order in an effort to maintain regional balance, increasing system energy costs to all of FPL's customers. *Id.* As a result, when an imbalance condition is projected, resources (generation, transmission, and/or DSM) need to be added either inside the region or, in the case of transmission, both inside and outside the region, to maintain and enhance regional balance. Tr. 75-76 (Sim).

The 2016 Analysis determined that a specific new 500 kV transmission line into Southeastern Florida was needed in virtually all resource plans analyzed to cost effectively ensure reliability for the region. This line, referred to as the CSQ line, will run from near FPL's West County CC units in Palm Beach County into the middle of Miami-Dade County. Tr. 82 (Sim). The CSQ line is projected to be able to address the regional reliability need once it goes in-service through approximately 2030 (assuming no changes in forecasted load and/or generation). Tr. 85 (Sim). Because this transmission line was an integral component of these

plans, additional study regarding the best in-service date for the CSQ line was an early and important part of the continuing analyses in 2017. Depending on the in-service date, the installation of this new transmission line would potentially open an early window of opportunity in which to consider retiring and replacing the capacity of FPL's existing Lauderdale units, which have significant costs to continue to maintain and operate. Tr. 82 (Sim).

The decision was made to install the CSQ line by mid-2019 based on considerations of system resiliency and security. There are two important reliability impacts from that decision that relate to these analyses. First, the addition of the CSQ line increases the transmission import capability into Southeastern Florida by approximately 1,200 MW, with either Lauderdale Units 4 & 5 or DBEC Unit 7 in-service, and can address the regional need from mid-2019 through the year 2030 (assuming no other changes in projected load and/or generation capability). Tr. 85, 111 (Sim). Second, the addition of the CSQ line in mid-2019 allows the retirement of the 884 MW from the Lauderdale units to occur in late 2018, thus maximizing the cost savings of no longer operating those units. In turn, the retirement of this 884 MW of capacity alters the projection of the regional need. Assuming the retirement of the existing Lauderdale units in late 2018, the Southeastern Florida region is projected to become imbalanced as early as 2025. *Id.*

As a result, FPL's window of opportunity to replace the regional capacity lost by retiring the Lauderdale units is projected to close as early as 2025. Tr. 85, 111 (Sim). This window potentially could close even earlier if either the summer peak load is higher than is currently projected and/or there are other changes in FPL's generating units that result in less available generation. As a result, FPL's 2017 Analysis (discussed in more detail below) looked at resource options and resource plans that could provide additional capacity at a date earlier than 2025, ultimately arriving at DBEC Unit 7, with an in-service date of June 2022, as the best and most cost-effective option to meet this capacity need. Tr. 85-86, 91-92 (Sim). Accordingly,

denying a need determination for DBEC Unit 7 will forego this opportunity to enhance regional reliability. Tr. 96 (Sim).

A Delay of DBEC Unit 7 Will Unreasonably Increase Reliability Risk for FPL's Customers

Sierra Club and OPC suggest it would be more cost effective to delay DBEC Unit 7 by one or two years beyond the planned 2022 commercial operation date, but choose to ignore the operational and reliability risk for FPL's customers that would come with such a delay. Witness Sim testified that with regard to the analyses presented by FPL in this docket, FPL's system operators provided guidance as to how resource plans should be designed if FPL wanted to evaluate a one- or two-year delay in the in-service date for DBEC Unit 7, assuming retirement of the existing Lauderdale units. Tr. 552-54 (Sim). FPL's system operators advised that the longer FPL waits to replace the capacity of the Lauderdale units once retired, the more risk for FPL's customers because the load in the region continues to grow. The loss of 884 MW that will result from the retirement of the existing Lauderdale units represents about 1/7 of the total generation in the vital Southeastern Florida region. *Id.* FPL witness Sanchez, the Director of System Operations and the Reliability Coordinator of the Florida Reliability Coordinating Council ("FRCC"), emphasized that this operational risk increases when replacement capacity is not brought in-service as soon as possible following retirement of the Lauderdale units. Tr. 400-03, 410-11 (Sanchez).

The specific guidance that FPL's system operations provided when FPL began to consider the one- or two-year delay scenarios was that FPL should delay the retirement of the Lauderdale units by the same amount of time of any delay in DBEC Unit 7's in-service date in order to minimize operational reliability risk. Tr. 553 (Sim). Witness Sanchez further advised that any delay of DBEC Unit 7 beyond 2022 will increase risk for FPL's customers in

Southeastern Florida, and that such delays present unreasonable risk for reliability for FPL's system and its customers in the region that must be avoided. Tr. 410-11 (Sanchez).

ISSUE 2: Are there any renewable energy sources and technologies or conservation measures taken by or reasonably available to Florida Power & Light, which might mitigate the need for the proposed Dania Beach Clean Energy Center Unit 7?

FPL: * No. FPL took account of 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. There is no record evidence supporting additional cost-effective renewable energy generation or DSM that could diminish the unquestionable benefits projected to be provided by DBEC Unit 7 beginning in 2022. *

Renewable Energy Sources and Technologies

Nothing in the record supports any additional cost-effective renewable generation resources being available to FPL to mitigate its need for DBEC Unit 7 in 2022. FPL is pursuing all reasonably available cost-effective renewable energy sources, notably over 2,000 MW of universal solar photovoltaic ("PV") generation (utility-scale) planned on its system by 2023 as detailed in FPL's 2017 TYSP. Tr. 546, 568 (Sim). Approximately 225 MW of universal solar PV facilities went into operation at the end of 2016. Additionally, as approved by the Commission in FPL's 2017 Solar Base Rate Adjustment ("SoBRA") filing, FPL will place in service an additional 596 MW of cost-effective PV facilities by the end of the first quarter of 2018. Tr. 68, 79 (Sim).

In addition to this extensive and on-going implementation of cost-effective PV as described above, FPL's analyses of generation options in both its 2016 and 2017 analyses (discussed further below) addressed solar generation facilities, including both universal solar PV and distributed generation (commercial rooftop) PV, sited in the Southeastern Florida region. Tr. 69-70 (Sim). This included siting of solar PV and energy storage options within the Southeastern Florida region to address both system and regional reliability needs, with an

assumption of approximately 1,700 MW (2016 Analysis) and approximately 2,100 MW (2017 Analysis) of additional universal solar sited outside the Southeastern Florida region. Tr. 545-46 (Sim). Then, as a part of the 2017 Analysis leading to this filing for a need determination for DBEC Unit 7, FPL included a resource plan ("Plan 3") with a combination of universal solar PV and rooftop generation and energy storage sited in the Southeastern Florida region that would provide the equivalent amount of firm capacity as DBEC Unit 7 in conjunction with retirement of the Lauderdale units. Tr. 130-32, 546 (Sim). Pricing information for solar and storage generation resources in these analyses reflected the most current and accurate market cost information. Tr. 130-31, 158-59 (Sim).

Without any real analysis or reasonable support, Sierra Club witness Hausman suggests that FPL did not properly or appropriately analyze solar generation alternatives as a part of the 2016 and 2017 analyses leading to FPL's decision to move forward on the DBEC Unit 7 project. Dr. Hausman's theories are no substitute for FPL's hard analysis. First, Dr. Hausman's "illustrative alternative" delays solar and storage implementation beyond that proposed by FPL in its solar and storage plan (Plan 3 discussed below), resulting in lower system and regional reliability for FPL's customers. Tr. 558 (Sim). Second, his comparisons to pricing in recent solar PPAs involving JEA in Florida and Tucson Electric Power in Arizona are misguided based on geographical and land cost differences, as well as his improper attempt to use levelized cost of energy information that does not properly capture all applicable system costs. Tr. 580-83 (Sim).

Further, at the evidentiary hearing in this docket, Sierra Club questioned Witness Sim about renewable energy resource PPAs that were available to FPL at any point in time since 2012, but Sierra Club failed to note that those referenced biomass generation PPAs with U.S. EcoGen are no longer available to FPL as shown in the filing of FPL's 2017 TYSP in April

2017. Tr. 600-08; Ex. 62 (Table ES-1, Excerpt from FPL's 2017 TYSP). Again, Sierra Club tells half the story -- with no regard for credibility. In any case, neither Sierra Club nor any party to this docket has presented any credible evidence of renewable resources reasonably available to FPL that could supplant or defer the need for DBEC Unit 7.

Conservation Measures

Likewise for conservation measures, FPL's 2016 and 2017 analyses (discussed further below) accounted for all reasonably available and achievable, cost-effective DSM approved by the Commission in the 2014 DSM Goals set for FPL through the year 2024 by the Commission, plus an assumed continuation of that same level of annual DSM implementation through the year 2030. Tr. 69-70, 545 (Sim).

In the course of its analyses, FPL examined whether incremental cost-effective energy efficiency ("EE") programs might be implemented in the Southeastern Florida region. FPL already implements approximately a third of its total EE program annual sign ups within this region. Thus, the opportunity to shift EE program implementation from other areas of its system into the Southeastern Florida region is limited, particularly if FPL is going to continue to offer its EE programs on a cost-effective basis to FPL's customers in the rest of its service territory at annual levels prescribed in FPL's DSM Goals. Tr. 70 (Sim).

Furthermore, additional EE above FPL's DSM Goals is not considered to be a viable option because the cost-effectiveness of DSM has continued to decline for years since FPL's DSM Goals were set in late 2014. Tr. 571-72 (Sim); Ex. 47 (SRS-8). This decline in DSM cost-effectiveness is due to several factors that affect DSM's benefits (*i.e.*, costs that are potentially avoidable through DSM) including: lower forecasted fuel costs, enhanced generation efficiency of FPL's system (including cost-effective solar additions), lower costs for new generation options, lower projected environmental compliance costs, and a larger projected impact of

energy efficiency codes and standards. Therefore, levels of EE which are higher than those set in FPL's DSM Goals are not cost-effective and not a viable alternative to DBEC Unit 7. Tr. 70-71, 571-72 (Sim).

ISSUE 3: **Is there a need for the proposed Dania Beach Clean Energy Center Unit 7, taking into account the need for adequate electricity at a reasonable cost, as this criterion is used in Section 403.519(3) Florida Statutes?**

FPL: * Yes. There is a need for DBEC Unit 7, taking into account the need for adequate electricity at a reasonable cost. DBEC Unit 7 is projected to be approximately $337 million CPVRR less expensive than continuing to operate the existing Lauderdale units and to result in the lowest system cost of all of the numerous resource options and plans evaluated. The new unit will not require any new gas pipeline, transmission line, or water supply. *

Yes, there is a need for DBEC Unit 7 taking into account the need for adequate electricity at a reasonable cost for FPL's customers. DBEC Unit 7 is projected to result in the lowest system CPVRR cost of all of the numerous resource options and resource plans evaluated by FPL, as discussed further below in Issue 5. As such, the unit is also projected to result in the lowest electric rates for FPL's customers when compared to these alternatives. Tr. 67-69 (Sim).

This result is driven in part by DBEC Unit 7's projected installed cost for this 1,163 MW (summer capacity) CC unit, including Allowance for Funds used During Construction ("AFUDC"), of $888 million or $764 per kW, which is projected to be significantly lower than the installed cost/kW of FPL's most recent modernizations (Cape Canaveral: $921/kW; Riviera Beach: $1,053/kW; and Port Everglades: $928/kW; based on in-service year dollars).[4] Tr. 67-68 (Sim); Tr. 251 (Kingston). The fact that the new unit will not require any new gas pipeline, transmission line, or water supply contributes to the low cost of this modernization project. Tr. 568-69 (Sim). The current cost estimates for the principal components of DBEC Unit 7 include

[4] Sierra Club witness Hausman stated that DBEC Unit 7 is a "reasonable option" and, as presented in Plan 2, "… a resource option based on available technology – I presume, based on reasonable cost assumptions; although I have not independently reviewed the cost assumptions." Tr. 384-85 (Hausman).

the power block at $764 million, transmission interconnection and integration at $21 million, and AFUDC at $103 million. Tr. 251 (Kingston); Ex. 19 (JKK-11).

DBEC Unit 7 is projected to save FPL's customers hundreds millions of dollars as compared to alternatives considered. Specifically, the results of the FPL's 2017 Analysis (discussed below) were that: (i) Plan 2 featuring DBEC Unit 7 is projected to be $337 million CPVRR lower cost to FPL's customers than the status quo Plan 1 of continuing to operate the existing Lauderdale units, and (ii) Plan 2 featuring DBEC Unit 7 is projected to be $1,288 million CPVRR lower cost to FPL's customers than the solar and storage alternative Plan 3. Tr. 64, 547 (Sim); Ex. 5 (SRS-4).

DBEC Unit 7 has outstanding projected operational parameters to ensure reliable and cost-effective service: an equivalent availability factor of 95.5%; a planned outage factor of 3.5%, and a forced outage factor of 1.0% with a heat rate of 6,119 Btu/kWh. Tr. 246 (Kingston); Ex. 16 (JKK-8). This low projected heat rate will make DBEC Unit 7 one of the most fuel-efficient CC units of its kind in the state of Florida. *Id.* Having this highly efficient generating unit available to serve FPL's customers over 95% of the time will generate significant fuel cost savings for FPL's customers.

FPL has extensive experience building CC units on time and on budget, which will ensure the benefits of DBEC Unit 7 are timely and cost-effectively brought to FPL's customers. Tr. 243-44 (Kingston). FPL will competitively bid and negotiate all of the principal components of DBEC Unit 7. Tr. 246 (Kingston). FPL agrees to report annually to the Commission the budgeted and annual costs compared to the estimated total in-service costs of the proposed DBEC Unit 7 relied upon in this proceeding. Tr. 251 (Kingston). FPL requests, as part of the Commission's order granting an affirmative determination of need for DBEC Unit 7, that the Commission grant FPL the flexibility through its negotiations and analyses to select the

technology that best meets FPL customers' needs in terms of reliability and cost-effectiveness. Tr. 94 (Sim), Tr. 246-47 (Kingston).

FPL would select an enhanced design or model only if the enhanced design or model results in lower projected system CPVRR cost to FPL's customers. In the event FPL selects an enhanced design or model other than the analyzed technology subsequent to the Commission granting a determination of need for DBEC Unit 7, FPL proposes to make an informational filing with the Commission that documents the projected comparative CPVRR cost advantage of the alternate technology chosen. *Id.*

ISSUE 4: **Is there a need for the proposed Dania Beach Clean Energy Center Unit 7, taking into account the need for fuel diversity and supply reliability, as this criterion is used in Section 403.519(3) Florida Statutes?**

FPL: ***** Yes. There is a need for DBEC Unit 7, taking into account the need for fuel diversity and supply reliability. Because of DBEC Unit 7's high level of fuel efficiency, the unit is projected to lower the total amount of natural gas used by FPL's generating fleet compared to continuing to operate the existing Lauderdale Units 4 & 5 in a status quo scenario. *

Yes, there is a need for DBEC Unit 7, taking into account fuel diversity and supply reliability. Because DBEC Unit 7 will be a very fuel efficient generating unit with a projected heat rate of approximately 6,119 BTU/kWh, FPL's total usage of natural gas will decrease on a system-wide basis compared to the status quo scenario of continuing to operate Lauderdale Units 4 & 5. Tr. 96, 142-43, 161 (Sim). Therefore, DBEC Unit 7, in essence, improves the fuel diversity and supply reliability of FPL's system.

One of the adverse consequences that will occur should the need determination be denied is that FPL's customers will incur a fuel penalty because FPL would have to continue to operate the less efficient and existing Lauderdale units, thus burning more natural gas than FPL would otherwise have to burn on a system-wide basis. Tr. 96, 164-65 (Sim). Sierra Club's witness admits as much when he literally changed his testimony at the hearing to recognize that a fuel

penalty would be incurred without DBEC Unit 7, thus creating additional costs to FPL's customers due to the burning of more natural gas. Tr. 375 (Hausman).

While DBEC Unit 7 will be fueled primarily by natural gas, it will have the capability to burn light oil as a backup fuel source to ensure reliable service. Tr. 236 (Kingston). DBEC Unit 7 will have the ability to burn light fuel oil necessary to operate the plant for at least 72 hours at full capacity in the event of a disruption to the natural gas supply for the plant. Tr. 266 (Stubblefield). The Project will also utilize a significant amount of infrastructure, such as the existing natural gas pipeline, gas yard, and backup fuel oil tanks. No new gas pipeline or pipeline expansion is needed for DBEC Unit 7 keeping costs down for the Project. Tr. 265 (Stubblefield). Furthermore, the existing gas transportation capacity will be sufficient to meet the expected DBEC Unit 7 requirements. Tr. 266 (Stubblefield).

At the same time that FPL is proposing DBEC Unit 7, FPL is also pursuing other approaches that would improve its fuel diversity in terms of gas supply and the use of other energy sources. In terms of utilizing other energy sources for its generation portfolio, FPL is additionally implementing cost-effective universal (utility-scale) solar energy as a means to enhance fuel diversity on its system. Tr. 68, 141 (Sim). FPL brought into operation approximately 225 MW universal PV at the end of 2016 and will have an additional 596 MW of cost-effective universal PV in operation by early 2018. Moreover, by 2023, FPL plans to have approximately 2,345 MW of universal PV in service, along with smaller scale battery storage under its 50 MW Storage Pilot Program. Tr. 79, 141 (Sim)

ISSUE 5: **Will the proposed Dania Beach Clean Energy Center Unit 7 provide the most cost-effective alternative available, as this criterion is used in Section 403.519(3) Florida Statutes?**

FPL: * Yes. DBEC Unit 7 is the most cost-effective alternative to meet the needs of FPL's customers for both FPL's system and the Southeastern Florida region beginning in 2022. It is projected to save FPL's customers hundreds of millions

> of dollars CPVRR over status quo and solar and storage resource plan alternatives analyzed. A one year or two year a delay of DBEC Unit 7 would be millions of dollars CPVRR more expensive for FPL's customers. *

Yes, DBEC Unit 7 with an in-service date of 2022 is the most cost-effective alternative available to reliably serve FPL's customers. As previously mentioned, FPL analyzed a variety of types of generation (including CCs, CTs, and PV), multiple potential generation sites, batteries, and DSM, as well as various transmission and gas pipeline options. Tr. 63, 69, 544-47 (Sim); Ex. 59. The Lauderdale modernization project, which results in DBEC Unit 7, is projected to be approximately $337 million CPVRR less expensive than continuing to operate the existing Lauderdale Units 4 & 5 in a status quo scenario, and $1,288 million CPVRR less expensive than a resource plan in which DBEC Unit 7 is not built and an equivalent amount of firm capacity (approximately 1,163 MW) in Southeastern Florida is assumed to be supplied by solar and batteries sited in that region. *Id.*; Ex. 5 (SRS-4).

FPL's 2016 Analysis

FPL's request for an affirmative determination of need for this Project is based on an extensive evaluation designed to identify the timing, magnitude, and best, most cost-effective generation alternative available to meet FPL's projected resource need in 2024. Tr. 72-73, 145 (Sim). This economic analysis focuses on the best option for FPL's customers. Tr. 62 (Sim). In mid-2016, FPL performed an extensive set of analyses that examined FPL's projected resource needs for the entire FPL system and, importantly, the need to maintain a state of balance between generation and load in the Southeastern Florida region, which is needed to maintain system reliability in a very high load area of FPL's system, as discussed above. Tr. 62-63, 72-73 (Sim).

The 2016 Analysis examined: (i) new generation potentially located inside the Southeastern Florida region, (ii) new generation potentially located outside of this region, and (iii) transmission options for increasing electricity import capability into the Southeastern Florida

region from generation located outside this region. Tr. 62-63 (Sim). The range of options that FPL considered includes CC units, CT units, solar PV options, energy storage, DSM, new natural gas pipelines, and transmission facilities needed to interconnect new generation options. Tr. 63, 69, 544-47 (Sim); Ex. 59. This analysis also assumed 1,700 MW of PV sited outside of the Southeastern Florida region due to concerns about land availability and cost in the region, which had the effect of moving both the projected system and regional needs back a year from 2024 to 2025. Tr. 77 (Sim).

Based on a review of thirty-three separate resource plans, FPL's 2016 Analysis led to the identification of four specific resource plans which showed the most promise in terms of resource need and cost projections designed to ensure reliable service for FPL's customers. Tr. 77 (Sim); Ex. 38 (EDH-18). These four plans were summarized as CCs and CTs sited both inside and outside of the Southeastern Florida region, PV and/or batteries sited inside the Southeastern Florida region, and a potential modernization of the existing Lauderdale and Martin sites. Tr. 78 (Sim).

Moreover, as noted above, a new CSQ transmission line into Southeastern Florida was needed in virtually all of the top 2016 Analysis analyzed resource plans. Tr. 82, 85 (Sim). The CSQ line was projected to be able to address the regional needs once it goes into service until 2030 (assuming no changes in projected load and/or available generation) but also presented FPL with a window of opportunity in which to consider retiring and replacing the capacity at FPL's existing Lauderdale site. *Id.* FPL carried forward portions of these four identified leading 2016 resource options into its updated 2017 economic analysis. Tr. 83 (Sim).

2017 Analysis

FPL's 2016 Analysis was updated in early 2017 to account for the more recent forecasts for load, fuel costs, and environmental compliance costs that were used in FPL's TYSP and

SoBRA filings in 2017. Tr. 83 (Sim). FPL utilized its most current load forecast for the 2017 Analysis. The Commission should have confidence that this load forecast is reasonable and accurate; FPL's load forecast average summer-peak forecast error rate is 1% projecting five to six years out. Tr. 189, 193, 197, 227-29 (Feldman).

With these updated forecasts, as well as the decision to place the CSQ line in-service in 2019 to address and maintain regional and system reliability, the 2017 Analysis yielded three resource options which were identified as: Plan 1 – Keep the existing Lauderdale Units 4 & 5 in operation, *i.e.*, status quo; Plan 2 – the DBEC Unit 7 modernization project at the existing Lauderdale site; and Plan 3 – an equivalent amount of PV and storage (1,163 MW) sited in the Southeastern Florida region. Tr. 87-88 (Sim).

The final result of the 2017 Analysis was that the DBEC Unit 7 modernization project with an in-service date of 2022, following retirement of the Lauderdale units in late 2018, was projected to be the most economic option for FPL's customers and would serve to provide greater reliability for the FPL system and the Southeastern Florida region. Tr. 64, 91-92 (Sim). DBEC Unit 7 is projected to be $337 million CPVRR less expensive than keeping the existing Lauderdale units operating. In addition, this resource plan is projected to be $1,288 million CPVRR less expensive than a resource plan in which DBEC Unit 7 is not built and an equivalent amount of firm capacity (approximately 1,163 MW) in Southeastern Florida is assumed to be supplied by solar and storage batteries sited in that region. *Id.*; Ex. 5 (SRS-4). Based on the results of these analyses, FPL concluded that the most cost-effective choice for its customers is to proceed with the scheduled retirement of the existing Lauderdale units in late 2018, then add DBEC Unit 7 at the existing Lauderdale site in mid-2022. Tr. 92 (Sim).

Delay of DBEC Unit 7 by One or Two Years Beyond 2022 is Less Cost Effective

In contrast, a delay of DBEC Unit 7 by one or two years from the planned 2022 commercial operation date is less cost effective and will be *more* expensive for FPL's customers and should be rejected by the Commission. FPL analyzed one-year delay and two-year delay scenarios for DBEC Unit 7, assuming that the in-service date of DBEC Unit 7 was delayed from mid-2022 to mid-2023 for the one-year delay scenario and delayed to mid-2024 for the two-year delay scenario and that the retirement of Lauderdale Units 4 & 5 was also assumed to be delayed by either one year or two years, respectively. This would serve to maintain the same roughly four-year period in which the firm capacity from the Lauderdale units would be missing. Tr. 92-93 (Sim). Maintaining this four-year period is consistent with the DBEC Unit 7 Plan 2 assumptions to minimize operational risk, as recommended by FPL's system operators. Projections for operational costs for Lauderdale Units 4 & 5, and construction costs for DBEC Unit 7, commensurate with the one-year and two-year delay scenarios were developed and used in the analyses of the delay scenarios. *Id.*

The results of the economic analyses for these delay scenarios were that the delays would increase costs to FPL's customers by approximately $12 million CPVRR for a one-year delay and by approximately $38 million CPVRR for a two-year delay. Thus, one and two year delays of the mid-2022 in-service date of DBEC Unit 7 are projected to be more costly for FPL's customers than DBEC Unit 7 as proposed by FPL commencing operations in 2022 and should be rejected by the Commission. Tr. 92-93 (Sim).

ISSUE 6: **Based on the resolution of the foregoing issues and other matters within its jurisdiction which it deems relevant, should the Commission grant Florida Power & Light's petition to determine the need for the proposed Dania Beach Clean Energy Center Unit 7?**

FPL: * Yes. DBEC Unit 7 is the best, most cost-effective choice for meeting the needs of FPL's customers beginning June 1, 2022. It is the most cost-effective choice

based on extensive analyses, taking into account all reasonably available renewable energy and conservation measures. For the benefit of FPL's customers, it will deliver significant cost savings, enhance system and regional reliability, and reduce system emissions and usage of natural gas a as a fuel source for generation. *

Yes. As demonstrated in Issues 1-5 above, the DBEC Unit 7 is the best, most cost-effective alternative with which to maintain and enhance reliable electric service system-wide as well as within the Southeastern Florida region beginning in 2022, taking 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, cost-effectiveness, and the availability of renewable or conservation alternatives. Tr. 66-71 (Sim); Ex. 5 (SRS-4).

Additionally, DBEC Unit 7 will optimize the use of an existing power plant site, including natural gas pipeline and infrastructure, transmission/substation facilities, and water resources in the heart of FPL's primary load center, which is consistent with the Commission's belief that before a utility constructs a new generating unit at a greenfield site, it must consider the feasibility of modernization of existing units. Tr. 68, 568-69 (Sim); Tr. 235-36, 244-45 (Kingston); Tr. 265-66 (Stubblefield).

Therefore, the Commission should grant an affirmative determination of need for the DBEC Unit 7 with an in-service date of June 1, 2022, based on a finding that this project is the best, most cost-effective choice to meet the needs of FPL's customers.

ISSUE 7: **Should this docket be closed?**

FPL: * Yes. Upon issuance of an order granting FPL's petition to determine the need for DBEC Unit 7, this docket should be closed. *

Yes. Upon issuance of an order granting FPL's petition to determine the need for DBEC Unit 7, this docket should be closed. FPL will honor its commitments to report annually on construction costs and to make the informational filing for any cost-effective Power Train design

improvements. Tr. 94 (Sim); Tr. 246-47, 251 (Kingston). Specifically, those commitments are as follows:

> FPL will annually report to the Commission's Director of Economic Regulation updates to the budgeted and actual cost of DBEC Unit 7 compared to the total in-service cost presented in the Petition.
>
> ***
>
> FPL also requests that, as part of the Commission's order granting an affirmative determination of need for DBEC Unit 7, the Commission provide that its determination is not predicated on FPL's selection of a particular design or model of CT, HRSG, STG (the "Power Train Components") or other related equipment necessary for operation of the unit, the providing FPL the flexibility through its negotiations and analyses to select the technology that best meets FPL customers' needs in terms of reliability and cost-effectiveness.
>
> FPL would select an enhanced design or model only if the enhanced design or model results in lower projected system CPVRR cost to FPL's customers. In the event that FPL selects an enhanced design or model other than the analyzed technology subsequent to the Commission having granted a determination of need for DBEC Unit 7, FPL proposes to make an informational filing to the Commission that documents the projected comparative CPVRR cost advantage of the alternate technology chosen.

Tr. 94 (Sim); Tr. 246-47, 251 (Kingston).

IV. CONCLUSION

For all of the foregoing reasons, based upon Florida law, the evidentiary record in this proceeding, and Commission precedent, FPL requests that the Commission grant FPL an affirmative determination of need for the Dania Beach Clean Energy Center Unit 7 with a June 2022 in-service date to meet future resource needs, provide significant economic savings to FPL's customers, enhance area reliability in the Southeastern Florida region, reduce system emissions, and reduce system use of natural gas.

Respectfully submitted this 29th day of January 2018.

William P. Cox, Esq.
Senior Attorney
Kevin I.C. Donaldson, Esq.
Senior Attorney
Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408
Telephone: (561) 304-5662
Facsimile: (561) 691-7135

By: *s/ William P. Cox*
William P. Cox
Fla. Bar No. 0093531

CERTIFICATE OF SERVICE
Docket No. 20170225-EI

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by electronic service on this 29th of January, 2018 to the following:

Charles W. Murphy, Esq.
Stephanie Cuello, Esq.
Division of Legal Services
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0850
cmurphy@psc.state.fl.us
scuello@psc.state.fl.us

Julie Kaplan, Esq.
Diana Csank, Esq.
Sierra Club
50 F Street NW, 8th Floor
Washington, DC 20001
Julie.kaplan@sierraclub.org
Diana.csank@sierraclub.org

Patricia A. Christensen
Office of Public Counsel
The Florida Legislature
111 West Madison Street, Room 812
Tallahassee, Florida 32399
Christensen.patty@leg.state.fl.us

Michael Marcil, Esq.
Gunster
450 E. Las Olas Blvd.
Fort Lauderdale, FL 33301
MMarcil@gunster.com

By: *s/ William P. Cox*
William P. Cox
Fla. Bar No. 0093531

6391554