BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 20170225-EI

PETITION FOR DETERMINATION
OF NEED FOR DANIA BEACH
CLEAN ENERGY CENTER UNIT
7, BY FLORIDA POWER &
LIGHT COMPANY.

VOLUME 2
PAGES 223 through 423

PROCEEDINGS: HEARING

COMMISSIONERS PARTICIPATING: CHAIRMAN ART GRAHAM
COMMISSIONER JULIE I. BROWN
COMMISSIONER GARY F. CLARK

DATE: Wednesday, January 17, 2018

TIME: Commenced: 2:05 p.m.
Concluded: 7:33 p.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: ANDREA KOMARIDIS
Court Reporter

APPEARANCES: (As heretofore noted.)

PREMIER REPORTING
114 W. 5TH AVENUE
TALLAHASSEE, FLORIDA
(850) 894-0828

Reported by: Andrea Komaridis
premier-reporting.com
1 | INDEX
2 | WITNESSES
3 | NAME:                                          PAGE NO.
4 | RICHARD FELDMAN
5 | Examination by Mr. Cox                         226
6 | JACQUELYN KINGSTON
7 | Examination by Mr. Donaldson                   230
8 | Prefiled direct testimony inserted              232
9 | Examination by Ms. Christensen                  258
10 | HEATHER STUBBLEFIELD
11 | Examination by Mr. Donaldson                   259
12 | Prefiled direct testimony inserted              261
13 | Examination by Mr. Lenoff                      268
14 | Examination by Ms. Christensen                  272
15 | EZRA HAUSMAN
16 | Examination by Ms. Kaplan                       278
17 | Prefiled direct testimony inserted              281
18 | Examination by Mr. Marcil                       331
19 | Examination by Mr. Murphy                      370
20 | Examination by Ms. Kaplan                       378
21 | HECTOR SANCHEZ
22 | Examination by Mr. Donaldson                   397
23 | Prefiled rebuttal testimony inserted            399
24 | Examination by Mr. Lenoff                      418
25 |
## EXHIBITS

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>ID</th>
<th>ADMITED</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 - (as identified in a previous volume)</td>
<td>229</td>
<td></td>
</tr>
<tr>
<td>66 - Sierra Club task order</td>
<td>330</td>
<td></td>
</tr>
<tr>
<td>67 - Sierra Club website</td>
<td>330</td>
<td></td>
</tr>
<tr>
<td>68 - Attachment 1 of FPL's response to Sierra Club's Interrogatory No. 60</td>
<td>422</td>
<td></td>
</tr>
</tbody>
</table>
(Transcript follows in sequence from Volume 1.)

CHAIRMAN GRAHAM: Okay. I have five after 12:00. So, we will reconvene -- sorry -- five after 2:00. So, we will reconvene.

And I believe OPC has got the floor.

MS. CHRISTENSEN: Yes. And Commissioner, we have no questions for this witness.

CHAIRMAN GRAHAM: Okay. Fantastic.

Staff.

MR. MURPHY: Staff has no questions.

CHAIRMAN GRAHAM: Okay. Commissioners -- no questions?

Redirect.

MR. COX: Just a few redirect questions.

EXAMINATION

BY MR. COX:

Q  Mr. Feldman, on Exhibit 64 -- what was marked as Exhibit 64 -- in your discussion with counsel for Sierra Club, Mr. Lenoff, there was Staff Interrogatory No. 45. And the response to that was discussed -- actually, strike that question. Take that one out. We don't need that one.

Earlier in the -- actually, in a discussion
with Mr. Lenoff, you were asked about the -- the
information for the load forecast that was used in this
case for the 2017 analysis.

A    That's correct.

Q    And you said that it was analysis that had
been put together towards the end of 2016; is that
right?

A    Yes. It included a population forecast of
August 2014.

Q    And he asked you also about, isn't there more-
current information that you could use. And I believe
you answered that, no, that was -- that was the most-
current load forecast for the company?

A    At the time a forecast was done, correct.

Q    So, can you explain why the forecast is -- is
updated once a year, typically, for FPL?

A    Sure. The forecast is -- is updated once a
year, and it goes into the IRP process, the planning
process. If you were to update the forecast more
frequently, it would be -- it wouldn't be optimal for
developing an IRP -- IRP plan. You would be changing it
every month or every six months, whenever the forecasts
were updated.

So, our planning process calls for doing a
forecast, a new load forecast, once a year.
Q   And then my -- my last question -- I would
like to turn to Exhibit No. 65. This was an excerpt
from the Okeechobee need-determination order from this
Commission. And there was a discussion of a table,
Table 1 on Page 8.

   Do you see that?
A   Yes, I do.
Q   Okay. You were asked some questions about
forecast error rates in this document, and you mentioned
the impact of the Great Recession.

   When was the Great Recession?
A   The recession started in December of 2007. I
believe it went through the middle of 2009, June or so.
Q   And what was the impact of the recession on
these forecast-accuracy percentages?
A   Well, FPL, like most utilities, did not
anticipate the recession, nor incorporate it into the
forecasts. So, as the recession hit, our forecasts were
typically -- we were typically over-forecasting, as were
most utilities.

   Beginning in 2009, we saw what the impact was
going to be of the Great Recession and, with the 2009
site plan, we began lowering forecasts to account for
the Great Recession.

   So, during the Great Recession, you saw
fairly-large, positive forecast errors. Following the Great Recession, those forecast errors have since been reduced. And in fact, if you look at our last four ten-year site plans, the average summer-peak forecast error is 1 percent, five or six years out.

MR. COX: Thank you. No further questions.

CHAIRMAN GRAHAM: Okay. Exhibits.

Sierra Club.

MR. LENOFF: Yes, Mr. Chairman, Sierra Club would like to move for -- Exhibit 64 and 65 be moved into the record.

CHAIRMAN GRAHAM: 64 -- any objections to 64?

MR. COX: No objections.

(Whereupon, Exhibit No. 64 was received into evidence.)

CHAIRMAN GRAHAM: 65 -- I don't think it's necessary because it's one of our orders, even though it's just an excerpt.

That's it.

Sir, thank you very much for your testimony.

MR. COX: The witness may be excused, yes?

CHAIRMAN GRAHAM: Yes.

MR. COX: Thank you.

CHAIRMAN GRAHAM: Okay. Florida Power & Light, your next witness, please.
MR. DONALDSON: Good afternoon, Chairman Graham. At this time, FPL calls Jacquelyn Kingston.

EXAMINATION

BY MR. DONALDSON:

Q    Good afternoon, Ms. Kingston.
A    Good afternoon.

Q    You've been previously sworn; is that correct?
A    Yes.

Q    Please state your name and business address for the record.
A    Jacquelyn Kingston, 700 Universe Boulevard, Juno Beach, Florida 33408.

Q    And by whom are you employed and in what capacity?
A    I'm employed by Florida Power & Light. And I am a manager of project development for fossil generation.

Q    Have you prepared and caused to be filed 23 pages of direct prefiled testimony in this proceeding on October 20th of 2017?
A    Yes, I have.

Q    And did you also file an errata to your direct prefiled testimony on January 9th of 2018?
A    Yes.
Q    Do you have any further changes or revisions to your direct prefiled testimony?
A    No, I do not.
Q    If I were to ask you the questions contained in your direct prefiled testimony, including your errata, would your answers be the same?
A    Yes, they would be.

MR. DONALDSON: Chairman Graham, I would ask that Ms. Kingston's direct prefiled testimony and errata be inserted into the record as though read.

CHAIRMAN GRAHAM: We will insert Ms. Kingston's direct prefiled testimony with the errata sheet into the record as though read.

MR. DONALDSON: Thank you.
(Prefiled direct testimony inserted into the record as though read.)
ERRATA SHEET OF JACQUELYN K. KINGSTON

October 20, 2017 Direct Testimony

<table>
<thead>
<tr>
<th>PAGE #</th>
<th>LINE #</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>13</td>
<td>Add “one of” before “the fastest ramp”</td>
</tr>
<tr>
<td>10</td>
<td>13</td>
<td>Change “rate” to “rates”</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Jacquelyn K. Kingston. My business address is Florida Power & Light Company, 700 Universe Boulevard, Juno Beach, Florida, 33408.

Q. By whom are you employed and what is your position?

A. I am employed by Florida Power & Light Company (FPL or the Company) as a Manager of Project Development for gas-fired generation, including the proposed Dania Beach Clean Energy Center Unit 7 (DBEC Unit 7 or the Project).

Q. Please describe your duties and responsibilities in that position.

A. I manage the development of new gas-fired generation projects. I am responsible for overseeing the activities of the project team that collectively make the project successful, including early stage due diligence, permitting, and engineering. Ultimately, my goal is to ensure that the development project is transitioned to construction on schedule to support the required commercial operation date. I have overall responsibility for the development of DBEC Unit 7.

Q. Please describe your education and professional experience.

A. I received a Bachelor of Science in Biological Sciences from Florida Institute of Technology in 2004 and a Master of Science from Florida Atlantic University in 2006. Additionally, I am a certified Project Management Institute (PMI) Project Management Professional (PMP). PMI’s PMP
credential is the most important industry-recognized certification for project managers. Globally recognized and demanded, the PMP demonstrates that one has the experience, education, and competency to lead and direct projects.

Throughout my eleven year career with FPL, I have been involved in the development, permitting, and construction of multiple gas-fired power plants. In addition to the development of DBEC Unit 7, I have been responsible for the permitting of three (3) combined cycle (CC) projects, construction compliance (ensuring projects were constructed in accordance with environmental permits and applicable regulations) for two (2) CC projects, development of two (2) gas turbine peaker replacement projects (replacement of gas turbines with combustion turbines (CTs) for peaking capacity), and development of a combined cycle power plant project totaling over 6,800 megawatts (MW) of electrical generating capacity. These projects include FPL’s Cape Canaveral Next Generation Clean Energy Center, Riviera Beach Next Generation Clean Energy Center, West County Energy Center Unit 3, Lauderdale Gas Turbine Power Park Unit 6, Ft. Myers Gas Turbine Power Park, and the Okeechobee Clean Energy Center Unit 1.

I have also held responsibilities with Power Delivery, specifically environmental permitting, construction compliance, and environmental operations support for the FPL transmission system. This included overseeing completion of over 840 environmental assessments, obtaining over 130
environmental permits for transmission projects, and providing daily environmental support to transmission operations, construction, and engineering.

I have also held responsibilities with FPL’s parent company, NextEra Energy Inc. (NextEra Energy), providing oversight in obtaining environmental permits to construct two new natural gas pipelines in the United States under joint ventures with other companies. These two projects totaled over 800 miles in length.

Q. Have you previously testified on project development issues before the FPSC?
A. Yes. I testified in a 2015 need determination proceeding before the FPSC for another gas-fired generation project.

Q. What is the purpose of your testimony?
A. The purpose of my Direct Testimony is two-fold. First, I discuss FPL’s experience building and operating CC generating units. Second, I describe the proposed Project in detail, including a description of the site, the technology, engineering design parameters, operating characteristics, and overall project cost and schedule. I will demonstrate that the performance standards assumed for the DBEC Unit 7 are both reasonable and achievable.

Q. Please summarize your testimony.
A. FPL plans to construct and operate DBEC Unit 7, a 2-on-1 (2x1) advanced CC unit at an existing power generation site in Broward County. The Project will
consist of two advanced technology CTs, two heat recovery steam generators (HRSGs), and one steam turbine/electric generator. A significant amount of infrastructure that was used to support the operation of Lauderdale Units 4 & 5 will be reused for Unit 7 including the existing natural gas pipeline and gas yard, the existing fuel oil tanks, existing intake and discharge structures for the once-through cooling water system, the existing site entrances, the existing cooling pond, the existing switchyard, existing offsite transmission lines, the existing Broward County water supply line, the existing City of Hollywood potable water line, and the existing City of Hollywood sanitary sewer connection.

Natural gas will be the primary fuel for DBEC Unit 7 and will be delivered to the site by an existing pipeline. Ultra low-sulfur distillate (light fuel oil) will be used as a back-up fuel for the CTs. The cooling water source for the Project will continue to be the Dania Cutoff Canal with an auxiliary cooling system to help limit the temperature rise of the water. Process and potable water will continue to be obtained from existing county and city suppliers. By using natural gas as the primary fuel for DBEC Unit 7 and technology that is recognized by the Florida Department of Environmental Protection (FDEP) as the Best Available Control Technology (BACT) for minimizing air emissions, DBEC Unit 7 is projected to be one of the most fuel-efficient CC units of its kind in the state of Florida and among the cleanest and most efficient gas-fired, electric-power generating units of its kind in the world.
DBEC Unit 7 is expected to have an in-service date of June 1, 2022. The projected total cost of the DBEC Unit 7 is approximately $888 million ($764 per kW installed cost).

The Project is estimated to generate approximately $297 million in tax revenue over the life of the project, and it is expected to provide a number of significant public welfare benefits, including the creation of an estimated 650 direct jobs at its peak during construction.

FPL has significant experience building and operating CC plants to achieve the best possible efficiencies. Accordingly, FPL is confident of the accuracy of its construction cost estimates and projected unit capabilities.

Q. **Are you sponsoring any exhibits in this case?**

A. Yes. I am sponsoring Exhibits JKK-1 through JKK-11. The titles to each exhibit are shown below, and they are all attached to my direct testimony.

<table>
<thead>
<tr>
<th>Exhibit JKK-1</th>
<th>Typical 2x1 Combined Cycle Unit Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit JKK-2</td>
<td>FPL Combined Cycle Power Plants</td>
</tr>
<tr>
<td>Exhibit JKK-3</td>
<td>History of FPL Combined Cycle Capital Construction Costs</td>
</tr>
<tr>
<td>Exhibit JKK-4</td>
<td>DBEC Unit 7 Site Regional Map</td>
</tr>
<tr>
<td>Exhibit JKK-5</td>
<td>DBEC Unit 7 Site Property Delineation</td>
</tr>
<tr>
<td>Exhibit JKK-6</td>
<td>Rendering of Existing FPL Power Plant Site</td>
</tr>
</tbody>
</table>
II. OVERVIEW OF COMBINED CYCLE TECHNOLOGY

A. Description of Technology

Q. Please describe the combined cycle technology that will be used for the DBEC Unit 7 Project.

A. The CC technology generates electric power in two cycles. As shown on Exhibit JKK-1, a CC unit is comprised of electric generators, CTs, HRSGs, and a steam turbine generator (STG). During the first cycle of energy production, each of the CTs compresses outside air into a combustion area where fuel, typically natural gas or light fuel oil (back-up), is burned. The hot gases from the burning fuel-air mixture cause the turbine to rotate, which, in turn, directly rotates a generator to produce electricity. The exhaust gas produced by each turbine is passed through a HRSG where heat is extracted before exiting the stack. During the second cycle of energy production, the energy extracted by the HRSG converts water into steam, which then drives
an STG. The residual steam is then cooled into water in a condenser and returned to the HRSG, beginning its cycle all over again.

The recovery of exhaust heat from the CTs for utilization in an STG improves the overall plant efficiency beyond that of just CTs or conventional steam electric generating units, because additional power is produced without burning additional fuel.

Each CT/HRSG combination is called a “train.” The size and number of CT/HRSG trains used establishes the general size of the STG. For the proposed DBEC Unit 7 Project, two CT/HRSG trains will be connected to one STG, giving rise to the characterization of the Project as a 2x1 CC unit.

B. Operating Advantages

Q. What level of operating efficiency is anticipated for the DBEC Unit 7 Project?

A. In general, modern CC plants can be expected to achieve a fuel-to-electrical energy conversion rate (heat rate) of less than 7,000 British thermal units (Btu) per kilowatt hour (kWh). The existing Lauderdale Units 4 & 5 have a heat rate of approximately 7,800 Btu/kWh. FPL anticipates that DBEC Unit 7 will have an average base load heat rate as low as 6,119 Btu/kWh (based on an average ambient air temperature of 75°F) over the life of this Project, which is a 22% improvement compared to the existing Units 4 & 5. The
addition of this highly efficient unit to the FPL system is projected to improve the overall system heat rate. The lower the heat rate, the more efficient the generating fleet is and the greater the fuel savings are to the benefit of FPL’s customers. In addition, a CC plant can operate in variable weather conditions on an around-the-clock basis.

Q. What is the difference in ramp rates between the existing Units 4 & 5 and the proposed Unit 7?

A. One of the major measures of a generating unit’s flexibility is the ramp rate of generators: how many MW can be ramped up or down over a given time period. The existing Lauderdale Units 4 & 5 have ramp rates of approximately 6 MW/minute which are the slowest ramp rates of any generator in FPL’s system. In comparison, DBEC Unit 7’s ramp rate is projected to be as high as 60 MW/minute which would be the fastest ramp rate of any generating unit on FPL’s system.

Q. Are there other operational advantages to combined cycle technology?

A. Yes. An advantage of the multi-train CC arrangement is that it allows for greater flexibility in matching unit output to generation requirements over time. This is possible because each of the CTs can be cycled independent of the steam turbine, allowing the unit greater flexibility in matching the load requirements at any given point in time.
C. FPL’s History of Building and Operating Combined Cycle Plants

Q. Does FPL have experience in building combined cycle plants?

A. Yes. FPL has extensive experience in building CC plants on time and within budget. FPL’s first CC plant (Putnam Units 1 & 2) went into service in 1976. More recently, FPL successfully constructed three new CC “greenfield” units at its West County Energy Center and three new CC modernizations at its Cape Canaveral, Riviera Beach, and Port Everglades sites. Currently, FPL is constructing a new greenfield CC unit at its Okeechobee site.

Q. Please describe FPL’s history of operating combined cycle plants.

A. Currently, there are 16 CC units in operation in FPL’s service territory as shown in Exhibit JKK-2. These 16 existing CC units comprise 16,054 MW (net summer) of capacity in service, with an additional 1,748 MW currently under construction, for a total of over 17,800 MW.

Q. Please describe FPL’s track record in building and operating combined cycle units.

A. FPL has consistently demonstrated its ability to cost-effectively construct reliable and efficient plants that save money for customers over the project lives. In December 2014, Power Engineering and Renewable Energy World magazines honored FPL’s Riviera Beach Clean Energy Center with its "Project of the Year" award in the "Best Gas-Fired Project" category. The “Project of the Year” award recognizes the world’s best power projects, honoring excellence in design, construction, and operation of power generation facilities. Most recently, in 2016, Engineering News and Record
honored FPL’s Port Everglades Energy Center with its “Best Project” award.  

The “Best Project” award recognizes the best construction projects and the companies that design and build them in the U.S. and Puerto Rico. Examples of other FPL CC plants that have received similar recognitions include Martin Units 3 and 4, Sanford Units 4 and 5, Fort Myers Unit 2, Turkey Point Unit 5, West County Energy Center Units 1, 2, & 3, and Cape Canaveral Clean Energy Center.

FPL’s generation fleet performance has consistently exceeded industry performance averages and is frequently ranked “Top Decile” or “Best in Class” among FPL’s large electric utility peers. Since 1990, as FPL transformed its generating fleet, FPL has substantially improved its operating performance across key factors integral to generating electricity for the benefit of its customers. These performance factor improvements include the reduction of system heat rate, forced outage rate, total non-fuel O&M costs, and air emissions.

With world-class operational skills, FPL maximizes the value of its existing and new assets to the benefit of its customers. FPL’s employment of operational best practices has resulted in its industry leading positions. FPL’s gas-fired fleet has achieved an Equivalent Availability Factor (EAF) of 91.7% averaged over the past 10 years. This compares very favorably to the latest available U.S. gas-fired industry average EAF of 86.4%. EAF represents
plant availability and is a measure of the percentage of time within a given period that a generating unit is available to provide electricity, regardless of whether the generating unit is actually called upon to operate.

Q. Please describe how FPL monitors the operational performance and reliability of its power plants.

A. FPL uses technology to optimize plant operations, gain process efficiencies, and leverage the deployment of technical skills as demand for services increases. For example, the Company’s Fleet Performance and Diagnostics Center (FPDC) in Juno Beach, Florida, provides FPL with the capability to monitor every plant in its system. The FPDC uses advanced monitoring technology and predictive analytics to identify potential issues and take action before they occur. FPL can compare the performance of like components on similar generating units, determine how it can make improvements, and often avoid problems, ultimately saving customers money. Live video links can be established between the FPDC and plant control rooms to immediately discuss challenges that may arise, thus enabling FPL to prevent, mitigate, and/or solve problems.

Q. Please address FPL’s record in constructing CC units at or below estimated budgets.

A. FPL has a proven track record of constructing CC power plants within budget. Since 2005, FPL has placed nine CC units in service and all were completed on or below budget. Exhibit JKK-3 lists the CC projects constructed by FPL and the approved/projected and actual construction costs. On average, the
actual construction costs for the combined cycle projects placed in service since 2005 have been approximately 5.4% lower than the projected costs. This includes power plants built at new sites as well as modernizations of power plants at existing sites. Based on this track record, the construction costs for DBEC can be projected with a very high level of certainty.

III. DBEC UNIT 7 COMBINED CYCLE PROJECT

A. Site Description

Q. Please describe the DBEC Plant site.

A. DBEC Unit 7 will be located on approximately 392 acres of FPL-owned land within the Cities of Dania Beach and Hollywood in Broward County, Florida (Exhibits JKK-4 and JKK-5). The existing Lauderdale Site has been used for power generation since 1927 and currently includes two nominal 440 MW combined cycle units (Units 4 & 5), five nominal 200 MW combustion turbines (Units 6A through 6E) and two 1970’s vintage nominal 35 MW gas turbines. Units 6A through 6E began commercial operation in 2016 and these units replaced 22 gas turbines at the Lauderdale Site and 12 gas turbines at the nearby Port Everglades Plant. Units 4 & 5 began operation in May 1993 and June 1993, respectively. Lauderdale Units 4 & 5 were repowered using the existing steam turbines and condensers from the original units built in the 1950’s. The Lauderdale Site also includes 138 kV and 230 kV transmission
facilities (system substation) as well as an existing natural gas pipeline and fuel oil storage facilities. Exhibit JKK-6 includes a rendering of the Site.

B. Project Description

Q. Please describe the proposed DBEC Unit 7 project in more detail.

A. A rendering of DBEC Unit 7 is shown on Exhibit JKK-7. Unit 7 will be a 2x1 CC unit consisting of two nominal 400-MW advanced CTs, with dry low-NOx combustors, inlet evaporative cooling, wet compression, and two HRSGs, which will use the exhaust heat from the CTs to produce steam to be utilized in a new steam turbine generator.

Each CT is projected to utilize inlet air evaporative cooling. Evaporative coolers achieve cooling using water evaporation to remove heat from the inlet air. This increases the density of air flowing through the turbine, allowing additional power to be produced during periods of high ambient air temperature. The evaporative coolers normally would be utilized when the ambient air temperature is greater than 60°F. The base unit capacity at 95°F is 1,117 MW with the evaporative coolers in service. For additional power production at peak periods, wet compression, which sprays additional water in a fine mist into the gas turbine inlet air, can be turned on. Wet compression can be utilized during peak demand periods to add about 46 MW of capacity to the unit, totaling 1,163 MW summer capacity. The projected winter capacity is approximately 1,173 MW.
With its anticipated average heat rate of 6,119 Btu/kWh during baseload operation (based on an average ambient air temperature of 75°F), DBEC Unit 7 is projected to be one of the most fuel-efficient CC units of its kind in the state of Florida. The unit will have an estimated EAF of approximately 95.5%, based on an estimated average forced outage factor of approximately 1.0%, and a planned outage factor of 3.5%. Plant specifications are shown in Exhibit JKK-8.

The performance level of CC plants continues to evolve and advance in the marketplace. As a result, FPL will competitively procure the DBEC Unit 7’s CTs, HRSGs, and steam turbine (collectively, the “Power Train Components”) and other related equipment necessary for operation of the unit, and optimize the design as a part of FPL’s continuing efforts to determine which technology will provide the greatest benefits to FPL’s customers.

For example, FPL is continuing to evaluate the optimal steam cycle equipment configuration, which may potentially increase capital costs but provide an overall system cumulative present value of revenue requirements (CPVRR) cost savings benefit to FPL’s customers, based on increased output and a lower heat rate resulting from the optimization. Similarly, if an enhanced design or model emerges as a result of continued evaluation, FPL will optimize the condenser and auxiliary cooling system needed for DBEC Unit 7.
as a part of FPL’s continuing efforts to provide the greatest benefits to its customers.

In the event that FPL selects an enhanced design or model for the Power Train Components and other related equipment other than the analyzed technology subsequent to the Florida Public Service Commission (FPSC or the Commission) having granted a determination of need for DBEC Unit 7, FPL would make an informational filing to the Commission, as also discussed in the Direct Testimony of FPL witness Sim.

Q. Please describe the potential air emissions of the DBEC Unit 7 project.

A. The use of natural gas as a primary fuel source, with light fuel oil as a back-up fuel, combined with combustion control technologies, will minimize emissions from the unit and ensure compliance with applicable emission limiting standards. Maximum total air quality impacts for DBEC Unit 7 are predicted to be below and in compliance with the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments. The NAAQS are standards required by the Clean Air Act and established by the Environmental Protection Agency (EPA) that protect the public health of the most sensitive populations as well as public welfare. The PSD increments are levels of air pollutants established by the Clean Air Act and EPA that make sure “clean air remains clean.” The low impacts to air quality, well below these standards, are achieved by meeting best available control technology (BACT) for regulated air pollutants that include particulate...
matter (PM), sulfur oxides (SOₓ), nitrogen oxides (NOₓ), carbon monoxide (CO), volatile organic compounds (VOCs), and sulfuric acid mist. The use of natural gas and light fuel oil (with maximum sulfur content of 0.0015%) minimizes emissions of SOₓ, PM, and other fuel-bound contaminants. Combustion design and emission controls similarly minimize the formation of NOₓ, CO, and VOCs. When firing natural gas, NOₓ emissions will be controlled using dry-low NOₓ combustion technology and Selective Catalytic Reduction (SCR). Water injection and SCR will be used to reduce NOₓ emissions during operations when using light fuel oil as back-up fuel. This emission control design is accepted by the FDEP and EPA as BACT for air emissions.

The NOₓ emission rate for the new unit (2 parts per million (ppm) when firing natural gas) will be 95% lower than the existing units (42 ppm), with significant reductions in the Carbon Dioxide (CO₂) emission rate as well as total air emissions. Exhibit JKK-9 includes the NOₓ and Total Emissions (tons/year and lb/MWh) and CO₂ Emissions (lb/MWh) comparisons between the existing Lauderdale Units 4 & 5 and DBEC Unit 7.

Q. What types of fuel will DBEC Unit 7 be capable of burning?
A. The Project will use the same fuel sources as Lauderdale Units 4 & 5. Natural gas will be used as the primary fuel source. The existing natural gas pipeline will be used with no new pipeline or offsite modifications needed to serve
Unit 7. DBEC Unit 7 also will be capable of using light fuel oil, more specifically a distillate fuel oil with a maximum sulfur content of 0.0015%, as a back-up fuel. The site design allows for operation at full capacity for seventy-two (72) hours of continuous operation using back-up fuel which will be delivered to the site by truck and stored in two existing light distillate fuel oil storage tanks.

C. Water Supply - Access and Availability

Q. What are the water requirements for the DBEC Unit 7 project, and how will they be met?

A. There will be no additional water sources required as a result of this Project. The primary water source for cooling will continue to be the Dania Cutoff Canal, with process and potable water coming from Broward County and City of Hollywood, respectively. The modernization will result in an improvement in technology allowing the reduction of the allocation of process water for power generation from 1.69 million gallons per day (MGD) for the existing Units 4 and 5 to 1.0 MGD for Unit 7 (based on a 12-month rolling average). Primary water uses will be for condenser cooling, combustion turbine evaporative coolers, steam cycle makeup, and service water. Water will also be used on a limited basis for NOx control when using light fuel oil. Condenser cooling for the steam cycle portion will be accomplished using an auxiliary cooling system.
D. Electric Transmission Interconnection Facilities

Q. How will the DBEC Unit 7 project be interconnected to FPL’s transmission network?

A. DBEC Unit 7 will connect into the existing onsite Lauderdale Plant 230kV/138kV transmission switchyard. No new offsite transmission lines or network upgrades are required as a result of the Project.

FPL has completed its System Impact Study and found no reliability concerns. The Florida Reliability Coordinating Council (FRCC) is currently reviewing the interconnection and integration plan for the Project to confirm that it will be reliable and adequate and will not adversely impact the reliability of the FRCC transmission system.

E. Proposed Construction Schedule

Q. What is the proposed construction schedule for the DBEC Unit 7?

A. A summary of estimated construction milestone dates is shown on Exhibit JKK-10. FPL will commence construction upon receipt of the necessary regulatory approvals, which FPL anticipates will occur by late 2018. Following the retirement and subsequent dismantlement of Units 4 and 5, construction of Unit 7 will require approximately 27 months, and the Project is expected to start commercial operations on June 1, 2022.
Q. What is the current status of the certifications and permits required to begin construction of DBEC Unit 7?

A. Several local, state, and federal approvals are required prior to start of construction for DBEC Unit 7. FPL filed for FDEP site certification under the Florida Electrical Power Plant Siting Act in July 2017. Concurrently, FPL filed for a Prevention of Significant Deterioration air construction permit, Industrial Wastewater Facility permit, and a U.S. Army Corps of Engineers (USACE) Section 404, Clean Water Act, Dredge & Fill Permit application for impacts to onsite wetlands. Local approval processes are in progress.

F. Estimated Construction Costs

Q. What does FPL estimate that the DBEC Unit 7 will cost?

A. A summary of estimated costs is shown on Exhibit JKK-11. FPL estimates that the total cost will be approximately $888 million. Principal components include the power block and generator transformers at $764 million, transmission interconnection and integration at $21 million, and Allowance for Funds Used During Construction (AFUDC) at $103 million. FPL will annually report to the FPSC Director of Economic Regulation updates to the budgeted and actual cost of DBEC Unit 7, compared to the estimated total in-service cost.
G. Other Benefits

Q. What other benefits are associated with DBEC Unit 7?

A. Several additional benefits come to mind. First, the Lauderdale Site provides the infrastructure and land for a new combined cycle unit that includes an existing developed site dedicated to generation of electricity, existing cooling water intake and discharge structures, cooling pond, existing gas delivery infrastructure, and access to the FPL transmission system. Second, the Project will result in additional property tax revenues to governmental agencies of some $297 million over the projected life of the unit, assuming current millage rates continue into the future. This will be a significant benefit to the local economy. Third, during construction of the unit there will be, at the peak of construction, some 650 additional jobs brought into the local economy. Fourth, beyond the significant payroll and tax impacts on the local economy, there will be indirect economic effects on the local economy through additional demands for goods and services. These are significant economic benefits of the Project beyond system fuel savings and system reliability improvements for the FPL system and southeastern Florida region as discussed in FPL witness Sim’s Direct Testimony.
IV. CONCLUSION

Q. What level of confidence does FPL have in the cost, projection and construction schedule for the unit discussed herein?

A. As previously discussed, FPL has a proven track record of constructing combined cycle power plants within budget and on schedule. Based on this experience, I am confident that the project will be completed on time and within the projected budget.

Q. Does this conclude your testimony?

A. Yes.
BY MR. DONALDSON:

Q   Ms. Kingston, do you have exhibits that were identified as JKK-1 through JKK-11 attached to your prefilled direct testimony?

A   Yes, I do.

Q   All right. And were these prepared under your direction and supervision?

A   Yes, they were.

MR. DONALDSON: All right. Chairman Graham, I would note that these exhibits have already been entered into the record in staff's comprehensive list as Exhibits 9 through 19.

CHAIRMAN GRAHAM: Okay.

BY MR. DONALDSON:

Q   Would you please provide the summary of your direct prefilled testimony to the Commission.

A   Yes. Chairman Graham, Commissioners, let me tell you the basic facts about the Dania Beach Energy Center Unit 7, which I will refer to as the Dania unit. This unit is a two-on-one, approximately 1200-megawatt gas-fired combined cycle unit with an in-service date of June 2022, and a projected cost of $888 million.

The proposed unit will be replacing Lauderdale Units 4 and 5, which went into service in the nineties, but contain major equipment from the 1950s. The new
unit will use the same existing power-generation site, which is located in the heart of Broward County.

FPL is proposing this project because it is the right thing to do for our customers at the right time. And I will focus three main reasons why in my testimony: Cost, reliability, and clean energy.

Starting with cost, with a total estimated capital cost of $888 million, which equates to $764 per kilowatt, Unit 7 will have a cost-per-kilowatt value that is 20-percent lower than any of FPL's three most-recent power-plant modernizations.

The proposed construction schedule lasts approximately four years, beginning with the retirement of Units 4 and 5, demolition, then construction, and operation of Unit 7 by June 2022.

FPL has a proven track record of constructing combined cycle power plants on budget. In fact, since 2005, we've completed construction of nine combined cycle power plants, and all were completed on or below budget.

The Dania unit is also projected to have an average base heat rate over the life of the project that is 22-percent lower than the existing Units 4 and 5. This will result in significant fuel savings to FPL's customers and lower gas usage on a system-wide basis.
The Dania unit will also be reusing a significant amount of infrastructure on site that was used to support the operation of Units 4 and 5. This includes an existing natural-gas pipeline, existing off-site transmission lines, and existing city and county water lines.

Let's look at reliability. Unit 7 is projected to provide power around the clock. Its estimated equivalent availability factor is 95.5 percent. This is significantly better than the U.S. industry average of 86.4 percent.

The Dania unit's ramp rate is projected to be as high as 60 megawatts a minute, compared to Units 4 and 5, which have the lowest ramp rate of any generator on our entire system. Having a highly-reliable unit, though, is not enough. The reliability of the interconnection of the Dania unit to our transmission system is critical.

In December of 2017, the Florida Reliability Coordinating Council concluded, and I quote, "The proposed interconnection and integration plan for Dania Beach Energy Center will be reliable and adequate, and will not adversely impact the reliability of the transmission system within the FRCC region."

Let's look at clean energy. As an energy
company, we are committed to constructing and operating power plants consistent with our clean-energy portfolio. The Dania unit is projected to be one of the cleanest and most-efficient fossil-fuel-fired generating units of its type in the state of Florida.

Being one of the cleanest means it will be using the cleanest of the fossil fuels, natural gas, as its primary fuel source. The NOx emission rate for the Dania Unit will be 95-percent lower than the existing units. The CO2 emission rate will be 22-percent lower.

In addition, no additional water sources are required as a result of this project. And in fact, there will be a 41-percent reduction in the amount of processed water needed on a daily basis to operate the plant.

Finally, the Dania unit will provide other real benefits to Florida. It will provide approximately $297 -- million dollars in tax revenues to local governmental agencies and the school district. It will also provide, at peak, approximately 650 construction jobs in the City of Dania Beach.

Given the cost, reliability, and clean energy associated with Unit 7, now is the right time for FPL to pursue this project.

This concludes my summary.
MR. DONALDSON: Thank you, Ms. Kingston.
I tender the witness for cross.

CHAIRMAN GRAHAM: Thank you.

Sierra Club.

MS. CSANK: No questions, Mr. Chairman.

CHAIRMAN GRAHAM: Thank you.

OPC?

MS. CHRISTENSEN: Just a brief couple of questions.

EXAMINATION

BY MS. CHRISTENSEN:

Q You talk about the Dania unit project in and Fort Lauderdale Units 4 and 5. Is there any issues with maintaining Units 4 and 5 in inactive reserve on the Dania site, if you were to delay the project one or two years?

A Can you clarify what you mean by "issues"?

Are you talking about retiring the units now and --

Q Would there be any issues with -- as far as additional costs, if the units were placed on inactive reserve for a period of two years? Would there be any additional cost for having those units on inactive reserve?

A I actually would not be the appropriate witness to answer that question since I wasn't
responsible for any of those projections, for that resource-planning scenario.

That should be directed to Dr. Sim.

MS. CHRISTENSEN: Okay. All right. Well, then, I have no further questions.

CHAIRMAN GRAHAM: Thank you.

MR. MURPHY: Staff has no questions.

CHAIRMAN GRAHAM: Commissioners?

Redirect?

MR. DONALDSON: No redirect. Thank you.

CHAIRMAN GRAHAM: Okay.

MR. DONALDSON: May she be excused?

CHAIRMAN GRAHAM: She may be excused.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Have a safe trip.

Florida Power & Light.

MR. DONALDSON: Yes, at this time, FPL calls Ms. Heather Stubblefield.

EXAMINATION

BY MR. DONALDSON:

Q Good afternoon, Ms. Stubblefield.

A Good afternoon.

Q You've been sworn previously; is that correct?

A Yes, that's correct.

Q All right. Please state your name and
business address for the record.

A    Heather Stubblefield, 700 Universe Boulevard, Juno Beach, Florida.

Q    By whom are you employed and in what capacity?
A    Florida Power & Light as a senior manager, project development.

Q    Have you prepared and caused to be filed eight pages of direct prefiled testimony in this proceeding on October 20th of 2017?
A    Yes, I have.

Q    Do you have any further changes or revisions on your direct prefiled testimony?
A    No, I do not.

Q    If I were to ask you the questions contained in your direct prefiled testimony today, would your answers be the same?
A    Yes, they would.

MR. DONALDSON: Chairman Graham, I would ask that Ms. Stubblefield's direct prefiled testimony be inserted into the record as though read.

CHAIRMAN GRAHAM: We will insert Ms. Stubblefield's prefiled direct testimony into the record as though read.

(Prefiled direct testimony inserted into the record as though read.)
I. INTRODUCTION AND CREDENTIALS

Q. Please state your name and business address.
A. My name is Heather C. Stubblefield. My business address is 700 Universe Boulevard, Juno Beach, Florida 33408.

Q. By whom are you employed and what is your position?
A. I am employed by Florida Power & Light Company (FPL) as Senior Manager of Project Development in the Energy Marketing and Trading (EMT) Business Unit.

Q. Please describe your duties and responsibilities in that position.
A. I am responsible for managing existing gas transportation contracts and evaluating gas transportation alternatives for FPL’s gas-fired generation units. This includes evaluating proposals from pipeline companies, negotiating terms and conditions, and executing transportation agreements which are in the best interest of FPL’s customers.

Q. Please describe your educational background and professional experience.
A. I graduated from Auburn University with a Bachelor of Arts degree in Business Administration in 1986. I joined Sonat, Inc. (NKA Kinder Morgan, Inc.) in 1988, where I held various positions in Human Resources, Internal Auditing, and the Sonat Marketing Company. In 2003, I joined FPL Group Resources (now called NextEra Energy Resources) as the Director of Marketing for liquefied natural gas initiatives. In 2005, I transferred to the
EMT Business Unit of FPL, where my duties include evaluating gas transportation alternatives for FPL’s gas-fired generation units. This includes evaluating proposals from pipeline companies, negotiating terms and conditions, and executing gas transportation agreements that are in the best interest of FPL’s customers.

Q. Have you previously served as a witness for FPL?
A. Yes. I have sponsored testimony in numerous dockets before the Florida Public Service Commission, including many Need Determination cases.

Q. Are you sponsoring any exhibits in this case?
A. Yes. I am sponsoring Exhibit HCS-1, FPL’s November 7, 2016 Fuel Price Forecast, which is attached to my Direct Testimony.

Q. What is the purpose of your testimony in this proceeding?
A. The purpose of my testimony is to present and explain (1) the fossil fuel price forecast used in the evaluation of FPL’s Dania Beach Clean Energy Center Unit 7 (DBEC Unit 7); and (2) the proposed fuel and fuel transportation plan for DBEC Unit 7.

Q. Please summarize your testimony.
A. FPL’s fuel price forecast reflects the projected commodity and transportation costs for fuel oil, natural gas, and coal. The November 2016 Fuel Price Forecast is the same fuel price forecast that was used in FPL’s 2017 Ten Year Site Plan (TYSP) and which is used in the analyses of DBEC Unit 7 and alternatives to that project. In addition, the fuel price forecast was developed using the same methodology that was presented in my testimony for the
Determination of Need filings for the Okeechobee Clean Energy Center, West County Energy Center Unit 3, and the modernizations of the Cape Canaveral, Riviera, and Port Everglades Plants. Therefore, the November 2016 forecast methodology is consistent with the methodology previously used for approved projects and is reasonable for the evaluation of DBEC Unit 7.

DBEC Unit 7 will burn natural gas as its primary fuel. Because DBEC Unit 7 is replacing an existing gas-fired unit, FPL will serve DBEC Unit 7 using the existing Florida Gas Transmission Company (FGT) gas transportation infrastructure currently serving the site.

Finally, DBEC Unit 7 will utilize a form of light fuel oil known as ultra-low sulfur distillate as a backup fuel source in the event of a natural gas supply disruption. Light fuel oil storage is currently located onsite to serve the existing units. Light fuel oil will be stored in sufficient quantities to allow both DBEC Unit 7 and the existing simple-cycle combustion turbines to operate at full capacity for approximately seventy-two (72) hours of continuous operation and can be resupplied with truck deliveries.
II. FUEL FORECAST

Q. What was FPL’s methodology for developing the November 2016 forecast for fuel oil, natural gas, and coal presented in Exhibit HCS-1?

A. For natural gas and fuel oil commodity prices, FPL’s forecast applied the following methodology: (1) for 2016 through 2018, the methodology uses the November 2016 forward curve for Henry Hub natural gas, New York Harbor 0.7% sulfur heavy oil, and ultra-low sulfur distillate fuel oil commodity prices; (2) for the next two years (2019 and 2020), FPL uses a 50/50 blend of the November 2016 forward curve and the most current projections from The PIRA Energy Group; (3) for years 2021 through 2035, FPL uses the annual projections from The PIRA Energy Group; and (4) for the period beginning in 2036, FPL used the real rate of escalation from the Energy Information Administration.

In addition to the development of oil and natural gas commodity prices, price forecasts were also prepared for fuel oil transportation and natural gas transportation costs. These transportation costs, when added to the projected commodity prices, resulted in the delivered price forecasts used to evaluate the economics of DBEC Unit 7. Coal prices were based on mine-mouth, and transportation costs were provided by JD Energy, Inc. This methodology is consistent with the approach to fuel forecasting used in previous filings, including FPL’s 2017 TYSP.
Q. Please identify the key drivers that affect the future prices of fossil fuels.

A. These drivers include worldwide demand, production capacity, economic growth, environmental legislation, and politics.

Q. Is FPL’s long-term fossil fuel price forecast reasonable for the evaluation of capacity options such as DBEC Unit 7?

A. Yes. The FPL long-term fossil fuel price forecast is reasonable for the evaluation of DBEC Unit 7 and is consistent with the methodology used in evaluating previous Determination of Need filings. FPL’s fuel price forecast reflects the projected supply, demand, and price for fuel oil, natural gas, and coal, as well as the transportation of these fuels to the FPL’s existing sites and DBEC Unit 7.

III. FUEL TYPE AND FUEL TRANSPORTATION

Q. What is the primary fuel type that will be utilized in DBEC Unit 7?

A. DBEC Unit 7 will burn natural gas as the primary fuel source.

Q. Does FPL currently have natural gas delivery to the DBEC Unit 7 site?

A. Yes. No new gas pipeline or pipeline expansion is needed for DBEC Unit 7.

Q. Does FPL have sufficient gas transportation capacity to serve DBEC Unit 7?

A. Yes. Because DBEC Unit 7 is replacing two existing gas-fired units, FPL will use the existing FGT gas transportation infrastructure to serve DBEC Unit 7.
The existing gas transportation capacity is sufficient to meet the expected DBEC Unit 7 requirements.

Q. Will DBEC Unit 7 have a backup fuel source in the event of a natural gas supply disruption?

A. Yes. As is the case with the existing generating units that will be replaced by DBEC Unit 7, the new unit will be capable of burning light fuel oil in the event of a natural gas supply disruption. Light fuel oil will be trucked to the existing fuel oil facilities located at the site and stored on-site in sufficient quantities to allow the site to operate at full capacity for approximately seventy-two (72) hours of continuous operation.

Q. Does this conclude your direct testimony?

A. Yes.
BY MR. DONALDSON:

Q    Ms. Stubblefield, do you also have an exhibit that's been identified as HCS-1 attached to your prefilled direct testimony?

A    Yes, I do.

Q    All right. And was that prepared under your direction or supervision?

A    Yes.

MR. DONALDSON: Chairman Graham, I will note that this is one of the stipulated exhibits that has been pre-identified Exhibit No. 20 and has been entered into the record as Exhibit No. 20.

CHAIRMAN GRAHAM: Duly noted.

BY MR. DONALDSON:

Q    Would you please provide your summary of your direct prefilled testimony to the Commission.

A    Yes.

Good afternoon, Chairman Graham and Commissioners. The purpose of my testimony is to explain the fuel-transportation plan for Dania Beach Clean Energy Center Unit 7, and present the fossil-fuel price forecast used by FPL in its economic evaluation of the project.

The proposed plant will burn natural gas as the primary fuel source and will utilize light fuel oil
as a back-up fuel source. If the Dania Bee- -- Dania
Beach unit is approved, natural gas will be supplied via
the existing Florida Gas Transmission pipeline that
currently supplies Lauderdale Units 4 and 5. FPL has
sufficient natural-gas-transportation rights on the
Florida Gas Transmission to meet the requirements of the
Dania Beach unit.

FPL's fossil-fuel price forecast reflects the
projected supply, demand, and price for fuel oil,
natural gas, and coal, as well as the transportation of
these fuels to existing plant sites and the proposed
Dania Beach plant site.

FPL relies on leading industry fuel
forecasting providers for the fossil-fuel price
forecast; therefore, FPL's fossil-fuel price forecast is
reasonable for the evaluation of the Dania Beach unit.

This concludes my summary.

MR. DONALDSON: Thank you, Ms. Stubblefield.

I tender the witness for cross.

CHAIRMAN GRAHAM: Thank you.

Sierra Club.

MR. LENOFF: Thank you, Mr. Chairman.

EXAMINATION

BY MR. LENOFF:

Q Ms. Stubblefield, have you been in the hearing
room all -- since the hearing began this morning?
A    I have been in the hearing room for most of the hearing.

Q    Okay. Did you hear the question from Commissioner Clark directed towards Dr. Sim asking whether FPL can sell capacity from generation owned by FPL to other parties?
A    Yes, I did.

Q    And you heard Dr. Sim state that you would be the best person to answer that question?
A    Yes.

Q    If FPL were to sell capacity from its generators to another party, would that capac- -- would FPL, then, be able to use that capacity towards meeting its reserve margin?
A    As far as questions about the reserve margin, you would have to ask Dr. Sim.

Q    Dr. Sim directed this question towards you as the best person to answer.
A    I don't think that's -- question, when it was asked, was referring to the reserve margin. It was asking, if we were not using all the capacity at a plant because we were using more -- burning more gas at Dania Beach or generating more electricity at Dania Beach --

Q    Right. The --
A    -- and using another plant less, could we sell
that firm.

Q    Right. So, what's your answer to that
question?

A    That is something -- yes, that is something
that we could evaluate, but it would depend on a lot of
factors, including --

Q    Okay. Have you -- have you been --

MR. DONALDSON: Can -- I'm sorry. Can she at
least finish her answer, please?

CHAIRMAN GRAHAM: Yes. When you ask a
question, you allow her to answer yes or no and
then give a brief explanation. So, give her that
sentence or two. I mean, you don't have to let her
go on and explain dark matter, but you've got to
allow her to -- give her -- give her a little time.

MR. LENOFF: Thank you, Mr. Chairman.

THE WITNESS: So, I think it -- we would have
to evaluate every specific case to see if, you
know, it would be a benefit to FPL's customers --
or at least would not harm FPL's customers.

BY MR. LENOFF:

Q    Have you been involved in similar transactions
in the past?

A    No. I believe, as Dr. Sim stated, I am not an
expert on the power side. I work in the natural-gas side. That is done in my department. So, he referred to it to me because I have a general knowledge, but I could not answer any specific questions on power sales.

MR. LENOFF: Okay. Thank you. No further questions.

CHAIRMAN GRAHAM: I'm a little lost because I think Dr. Sim says that you would be the person to answer those questions.

THE WITNESS: I believe he said that I could be -- I would be the best person to answer those questions, but that I was not an expert. And again, that's done within my group, Energy Marketing and Trading, but I do not work on the power side. So, I would hesitate to go too deep beyond what I know.

CHAIRMAN GRAHAM: Well, we're not encouraging go any deeper than you know, but I just -- I guess I'm a little perplexed, from the question, because I thought that it was deferred to you.

THE WITNESS: Yeah, it's -- it was, but I do think he qualified that with that I was not the expert, but again, that I was the -- the best person, since it's done within my department.

And I don't think he was aware of the extent
of my knowledge or lack of knowledge on that area.

CHAIRMAN GRAHAM: Well, I'm not going to make
a big deal about this because it was Commissioner
Clark that asked that question. So, I'll let --
I'll let him beat that dead horse.

OPC.

EXAMINATION

BY MS. CHRISTENSEN:

Q    Yes, I had just a few questions, assuming you
can answer them.

You were the one that did the fuel forecast on
FPL's system; is that correct?

A    I -- my group provides the fuel forecast. FPL
does not forecast fuel prices. We rely on outside
sources for that, but yes, our group provides the fuel
forecast.

Q    Okay. And I believe you said you've been here
for at least Dr. Sim's testimony today; is that correct?

A    Yes.

Q    Okay. And you heard Dr. Sim speak about a
fuel penalty. Do you recall that testimony?

A    I don't recall testimony on a fuel penalty.

Q    Okay. Well, my question goes to this -- have
you done any analysis to determine what type of fuel
penalty, if any, would occur if the Dania Unit 7 was
delayed by a year or two?

A   Again, I'm not sure what you mean by "fuel penalty." So, I'm not sure --

Q   Have you made any determination about the differential in the cost of running the Units 4 and 5 versus running Dania Unit 7?

A   Now, all the analysis is done by Dr. Sim's group. So, all we do is provide the input -- the fuel-price forecast that's used in the analysis, but his group runs all the analysis.

So, if you have questions about what-if scenarios, those all need to be directed to Dr. Sim.

MS. CHRISTENSEN: Okay. Thank you.

MR. MURPHY: Staff has no questions.

CHAIRMAN GRAHAM: Okay. I have my adviser/counselor, who wants to read something into the record.

MS. HELTON: Thank you, Mr. Chairman.

Back, I guess, several months ago, we added some language to the order establishing procedure to address the problem that we saw in certain hearings where a witness would be asked a question -- the witness would say, oh, I'm not the correct witness to answer that question; the correct witness is so-and-so.
And our attempt at the language was to ensure that everyone is on common ground that they know that the witness to whom the question has been referred is the correct witness.

And the language contemplates that, if the counsel to the party whose witness has referred the question will ensure that the correct witness is -- let -- let everyone know that there is no witness available to answer the question or ensure that the question has been referred to the correct witness.

So, on Page 9 of the order establishing procedure, it says that: During cross-examination, if a witness or their counsel responds or objects to a relevant question by referring the question to another party witness, the counsel who is sponsoring the current witness shall confirm the identity of the appropriate party witness who can more-fully address the question.

So, as I heard the question that was referred, I thought that Witness Sim had referred it to this particular witness.

CHAIRMAN GRAHAM: That's the way I heard it, but as you just said, that it's -- the counsel for that witness should have designated and said, yes or no, that person could be the person to answer
that question.

And it was just Dr. Sim's deflection that it went to this current witness; is that correct?

MR. COX: And if I could clarify just for a moment, for FPL, what I heard Dr. Sim say is consistent with what I heard our witness here say, which is basically, of any of our witnesses, she was the most-likely to be able to answer the question. He wasn't sure if she could answer the question. And I thought that was an accurate response. So, I didn't have any reason to dispute that.

CHAIRMAN GRAHAM: Well, and that's fine. I mean, I think we all live and learn here. I think the next time something like that happens, I -- be duty upon me, or whoever is Chair, to bring it to the counsel; make sure that everybody is nodding their head that that witness would be the person to answer that question. So, I take fault for that.

MR. COX: Thank you.

CHAIRMAN GRAHAM: Okay. Staff, you said no questions?

MR. MURPHY: (Nodding head affirmatively.)

CHAIRMAN GRAHAM: Commissioners, no questions?

COMMISSIONER CLARK: I'm not sure if I have a
question or not, now. I'm going to -- I'll try to
go back to this and see if you can answer any part
of it in terms of trying to understand what happens
to excess capacity and -- and maybe not so specific
to this unit, but in general.

If you have an abundance of excess capacity --
which, apparently, there would be in 2022, for at
least a period of time -- could you sell that under
a purchase power agreement to another utility in
Florida for a two-year period of time to fill a
block that they need for two or three years?

THE WITNESS: And I think I can answer that
question.

COMMISSIONER CLARK: Okay.

THE WITNESS: I -- I think, again, it would
require an evaluation to determine, again, the size
of the sale, the term of the sale. We would have
to make sure that we can secure a gas supply or
whatever would be needed because, as we reallocate
our gas supply to -- to different, more-efficient
units -- now, I don't have -- I may have excess
generation capacity, but I don't have excess gas-
transportation capacity.

So, it would require an evaluation to look at
that, at that specific time.
I will tell you, though, that FPL, on a daily and hourly basis, optimizes those assets, both electric and gas, for the benefit of the customers. So, we are always looking at any excess capacity that we have, again, both on the gas and electric side, to ensure that we're getting, you know, as much, you know, payback for the customer as possible on those assets, which are the assets of the customer.

COMMISSIONER CLARK: So, if you were to determine that that was possible and you were able to sell that power, what would happen to the dollars that were earned off of that? Would they go into earnings? And would that ultimately lower customer rates?

THE WITNESS: Now you're starting to get a little bit off my knowledge. So, I -- I would hesitate to respond to that because I don't want to give you incorrect information.

COMMISSIONER CLARK: Okay. Thanks.

CHAIRMAN GRAHAM: Okay. No other Commissioners?

Redirect.

MR. DONALDSON: No redirect.

CHAIRMAN GRAHAM: Okay.
MR. DONALDSON: And her exhibit has already been entered into the record.

So, can she be released, please?

CHAIRMAN GRAHAM: Yes, she can.

MR. DONALDSON: Thank you.

CHAIRMAN GRAHAM: Thank you. And travel safe.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Okay. Sierra Club, your witness.

MS. KAPLAN: Sierra Club cites its witness, Dr. Hausman -- calls its witness.

EXAMINATION

BY MS. KAPLAN:

Q Good afternoon, Dr. Hausman.

A Good afternoon.

Q Have you been sworn in?

A Yes, I have.

Q Please state your name and business address for the record.

A My name is Ezra D. Hausman. I work at 77 Kaposia Street in Auburndale, Massachusetts.

Q Did you cause to be prefiled in this case your testimony consisting of 44 pages?

A Yes, I did.

Q Did you also cause to be prefiled with your
testimony -- testimony Exhibits EDH-1 to EDH-23?

A Yes.

MS. KAPLAN: Mr. Chairman, Dr. Hausman's exhibits, attached to his prefilled testimony, have been identified as hearing Exhibits 21 through 43.

CHAIRMAN GRAHAM: Duly noted.

BY MS. KAPLAN:

Q Dr. Hausman, did Sierra Club file an errata to your prefilled testimony dated January 9th, 2018?

A Yes.

Q And do you have any additional errata to identify at this point?

A I have a -- a change -- a small change to my testimony. I wouldn't --

Q And can you identify that?

A Yes. It's pursuant to some of the late-filed discovery responses from the company.

On Page 22 of my testimony, at the top of the page, I refer to, "All of the additional costs found in Plans 4 and 5 relative to Plan 2 stem from FPL's choice to delay the retirement," et cetera.

The word "all" should be "most." So, my testimony is no longer that it's all of the costs, but it is most of the costs.

Q If I were to ask you today the questions in
your prefilled testimony, as corrected, would your
answers, with the filed errata and what you just stated,
be the same?

A    Yes.

Q    Dr. Hausman, is the information contained in
your prefilled exhibits, as corrected by the errata
sheet, true and correct to the best of your knowledge
and belief?

A    Yes.

MS. KAPLAN:  Mr. Chairman, we ask that
Dr. Sim's [sic] testimony and errata be inserted in
the record --

THE WITNESS:  I --

MS. KAPLAN:  -- as though read.

CHAIRMAN GRAHAM:  You mean Dr. Hausman's
direct testimony and errata sheet into the record
as though read?

MS. KAPLAN:  Yes. Yes. I -- I apologize.

CHAIRMAN GRAHAM:  Sure.

MS. KAPLAN:  Mr. Chairman, we ask that
Dr. Hausman's testimony and errata be inserted --

CHAIRMAN GRAHAM:  I gotcha.

MS. KAPLAN:  Okay.

(Prefiled direct testimony inserted into the
record as though read.)
# ERRATA SHEET

Witness: Dr. Ezra D. Hausman – Direct

<table>
<thead>
<tr>
<th>Section of Testimony</th>
<th>Change to be made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page 14, Line 19</td>
<td><strong>Insert:</strong> quotation mark at the end of “just combined cycles and combustion turbines.”</td>
</tr>
</tbody>
</table>
| Page 19, Line 8      | **Replace:** “0.01”  
**with:** “0.1” |
| Page 28, Line 14     | **Replace:** “before any reliability arises”  
**with:** “before any reliability need arises” |
| Page 35, Table 1     | **Remove:** heading “Unit” from the top row, first column of Table 1 |
| Page 37, Lines 3-4   | **Replace:** “demand response (DR) in 2025”  
**with:** “demand response (DR) through 2025” |
| Exhibit Headers      | **Replace:** “EDH - # Page #”  
**with:** “Docket No. 0225-EI Petition for determination of need for Dania Beach Clean Energy Center Unit 7, by Florida Power & Light Company Exhibit EDH - #, Page # of n” |

Under penalties of perjury, I declare that I have read the foregoing document and that the facts stated in it are true.

Ezra D. Hausman, Sierra Club Expert Witness

1/9/2018

Date
I. Professional Qualifications

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

A. My name is Ezra D. Hausman, Ph.D. I am an independent consultant doing business as Ezra Hausman Consulting, operating from offices at 77 Kaposia Street, Auburndale, Massachusetts 02466.

Q. Are you providing any exhibits with your testimony?

A. Yes. I am sponsoring the following exhibits.

<table>
<thead>
<tr>
<th>Exh. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDH-1</td>
<td>Resume of Ezra D. Hausman, Ph.D.</td>
</tr>
<tr>
<td>EDH-3</td>
<td>JEA, Agenda Item Summary: Universal Solar Expansion and Land Acquisition (Oct. 2017)</td>
</tr>
<tr>
<td>EDH-6</td>
<td>Moody’s, <em>Global Renewables Focus</em> (Sep. 2017)</td>
</tr>
</tbody>
</table>

1 As I cite to certain discovery responses and deposition testimony, the relevant pages are being provided as exhibits as well.

1

2 **Q. What is your educational and professional background?**

3 **A.** I hold a BA in Psychology from Wesleyan University, an MS in Environmental Engineering from Tufts University, an SM in Applied Physics from Harvard University, and a PhD in Atmospheric Chemistry from Harvard University. I have been involved in analysis of both regulated and restructured electricity markets for approximately 20 years.

6 I have worked as an independent consultant and expert based on my expertise and experience in energy economics and environmental science since 2014. From 2005 until early 2014, I was employed at Synapse Energy Economics,
Inc., a research and consulting company located in Cambridge, Massachusetts, where I served most recently as Vice President and Chief Operating Officer. From 1998 through 2004 I served as a Senior Associate at Tabors Caramanis and Associates (TCA) of Cambridge, Massachusetts. In 2004, TCA was acquired by Charles River Associates (CRA), where I remained until 2005.

I provide expert consulting services in several areas relating to energy markets and energy market regulation on the state, regional, and federal levels; energy dispatch and planning modeling, quantification of the economic and environmental benefits of displaced emissions; and treatment of energy efficiency and renewable energy in electricity and capacity markets. I have provided testimony and/or appeared before public utility commissions or legislative committees in Arizona, Idaho, Illinois, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, Nevada, South Dakota, Vermont, and Washington State, as well as at the federal level. I have also provided expert representation for stakeholders at the PJM ISO, the California ISO, the Midwest ISO, and at the FERC. While most of my testimony and analytical work has centered on issues concerning electricity market economics, I have also brought my expertise as a scientist to bear on cases involving energy efficiency programs and greenhouse gas regulation and mitigation in the electric sector.

I have provided a detailed resume including a detailed list of my testimony, publications, presentations, and reports, as Hausman Exhibit 1.
Q. Have you previously testified before the Florida Public Service Commission?

A. No.

II. Purpose of Testimony, Summary of Findings, and Recommendations

Q. What is the purpose of your testimony?

A. I address Florida Power & Light Company’s (hereafter, “FPL” or “Company”) request that the Florida Public Service Commission (hereafter, “Commission”) grant an affirmative determination of need for a 1,163 megawatt (hereafter MW) gas combined cycle (hereafter, “CC”) unit in June 2022. FPL plans to build what it calls the Dania Beach Clean Energy Center Unit 7 (hereafter, DBEC) at FPL’s Lauderdale plant site in Broward County, Florida, four years after retiring two existing Lauderdale units (hereafter, Units 4 and 5) at that site in 2018.

My testimony assesses FPL’s stated reasons for its request under the factors this Commission uses to assess the need for new power plants.

Q. Please summarize your findings.

A. I find that FPL failed to perform a comprehensive and rigorous analysis of alternatives for meeting its reliability requirements. Had it done so, it would have found lower-cost, lower-risk, and lower-emissions options, relative to DBEC, that meet reliability requirements and promote fuel diversity. FPL did not identify these options because its analyses of alternatives were inadequate, based on flawed assumptions, and inconsistent with industry best practices, and were thus too flawed to serve as justification for the proposed investment of $888 million of customer funds on DBEC.

I further find that the Company’s request is premature, given its own
projection of sufficient resources at least through 2024, and the availability of
abundant lower cost and lower risk resources for meeting the Company’s needs in
the ensuing years. Although FPL contends that building DBEC several years in
advance of any reliability need will save customers money, I find that this
conclusion is based on a flawed and misleading analysis, and that in fact it costs
less to delay DBEC.

Q. What are your recommendations for the Commission in this proceeding?
A. I recommend that the Commission deny FPL’s petition for an affirmative
determination of need for DBEC in June 2022. Based on my review of the
information provided to date and relevant industry information, it is clear that
DBEC is not needed at that time, and may never be needed under the factors this
Commission uses to determine need in this context.

First, 2024, not 2022, is the first year in which FPL has identified a
projected, unmet system reliability need—and that need is for 54 MW, as
opposed to the 1,163 MW proposed by FPL. Second, given the unmet system
need identified by FPL, FPL has not shown that DBEC is the most cost-effective
alternative available to meet that need, because FPL did not credibly perform the
routine review of all available alternatives, including low-cost, straightforward
alternatives such as incremental additions of solar and demand-side resources.
As I will explain, FPL’s exceedingly narrow review of just two delay scenarios

---

2 Under FPL’s 20% reserve margin requirement. See Exhibit SRS-2 to the direct testimony of Dr. Steven Sim. FPL’s reserve margin criteria are discussed in detail in my testimony.
3 I will use the term “demand-side resources” to refer to the measures that are currently included in FPL’s demand-side management programs (DSM) as well as other distributed, customer-sited resources such as energy efficiency, demand response, conservation, and customer-owned rooftop solar photovoltaics (PV).
reveals that FPL’s plan to build DBEC in 2022 would cost more than simply delaying DBEC by one or two years. Nor has FPL shown that DBEC promotes fuel diversity in Florida or in FPL’s generation fleet, whereas alternatives could substantially reduce customers’ exposure to the wide-ranging costs and risks of FPL’s heavy reliance on gas. Finally, FPL has not shown that it has adequately explored or developed either renewable generation options or conservation measures as alternatives to DBEC.

III. Structure of My Testimony

Q. How is your testimony organized?

A. My testimony is organized around the factors that this Commission uses to review the need for new power plants, which are set out in Section 403.519, Florida, Statutes. Specifically, I address these factors:

- Whether FPL has established a need for DBEC in 2022 for system reliability purposes;
- Whether FPL has established that DBEC is the most cost-effective alternative available;
- Whether FPL has established a need for DBEC for fuel diversity purposes; and
- Whether FPL has established that renewables and conservation measures are utilized to the extent reasonably available under its plan to build DBEC in 2022.

Finally, I offer my recommendations for Commission action on this matter.

IV. Need for System Reliability

Q. What reliability need(s) has FPL identified?

A. FPL identified two future reliability needs. One is a projected regional
imbalance in Southeast Florida (Broward and Miami-Dade counties) after 2030; or as early 2025, if Units 4 and 5 retire in 2018. The other is a projected shortfall in system-wide reserves as early as 2024, again if Units 4 and 5 retire in 2018.

Q. **Please elaborate on the regional imbalance in Southeast Florida.**

A. FPL identified a balance between the need for capacity to serve peak load in the Southeast Florida region of its service area (in Broward and Miami-Dade counties) net of capacity located in this region, versus available firm transmission capacity to deliver out-of-region energy to customers. Put simply, this is a balance between the import *requirement* under peak load conditions, and the import *capability* of the system under the same conditions. If the projected import requirement exceeds the import capability, there is an imbalance, which can be resolved one of three ways: (1) reducing load in the Southeast Florida area; (2) increasing generation that can serve the area; or (3) relieving a transmission constraint through transmission enhancements or other technical or operational means.

Q. **You said FPL projected an imbalance in Southeast Florida in 2030 or as early as 2025. Briefly elaborate on these two timeframes.**

A. Any imbalance in Southeast Florida has been significantly forestalled by the construction of the Corbett-Sugar-Quarry (CSQ) line, which FPL anticipates to be in service by mid-2019. According to FPL’s witness Dr. Sim, the CSQ line “can address the regional need from mid-2019 through the year 2030 (assuming

---

4 Direct Testimony of Dr. Steven R. Sim, page 18 at lines 5-7.
5 Ibid. at lines 1-2.
6 Ibid., page 29 at line 5.
Alternatively, if Units 4 & 5 retire in 2018, FPL projects imbalance conditions may arise in Southeast Florida as early as 2025.

Q. Please briefly elaborate on the other reliability need identified by FPL.

A. FPL projects this need based on two system-wide reliability criteria. The first criterion is that the combined accredited capacity of all resources on FPL’s system, including its demand-side management programs (hereafter, DSM), must equal or exceed 120% of projected peak load (hereafter, 20% reserve margin).

The second criterion is that the accredited capacity of generation resources alone, excluding DSM, must equal or exceed 110% of forecasted peak load. FPL refers to this second criterion as its “generation-only reserve margin” (hereafter, GRM).

Q. Has FPL explained its use of GRM as an additional reliability criterion?

A. No, FPL has not. But FPL’s move to adopt GRM only a few years ago\(^9\) is unprecedented in Florida, unprecedented in other jurisdictions where I have worked, and inconsistent with the record of demand-side resources providing excellent reliability services.\(^{10}\) By nonetheless using GRM, FPL arbitrarily discounts the reliability attributes of demand-side resources, thereby skewing FPL’s analysis toward additional supply-side resources even when those resources may provide little to no incremental reliability benefit.

---

\(^7\) Ibid., at lines 9-11.
\(^8\) Ibid., at lines 16-17.
\(^9\) Deposition of Dr. Steven R. Sim on November 29, 2017, page 154 at lines 9-11 (“[The GRM] is one that FPL uses and that the Commission is aware of, and we’ve been using it now for, ballpark, three, four years.”).
Q. You said FPL projects a shortfall in its reserves as early as 2024. Please elaborate on the timing and magnitude of this shortfall.

A. Under a 20% reserve margin criterion and FPL’s load forecast, FPL anticipates a shortfall of 20MW in 2026, if Units 4 and 5 are operating, and 54 MW in 2024, if Units 4 and 5 retire in 2018. FPL projects that the shortfall will grow in subsequent years, as shown in Exhibit SRS-2 sponsored by FPL witness Dr. Sim.

Q. What is your opinion of FPL’s reliability criteria?

A. FPL uses extremely conservative reliability criteria. The industry standard for reliability is to have sufficient reserves to achieve a loss of load probability (hereafter, LOLP) of one day in ten years. Beyond this level the marginal increased reliability benefit diminishes rapidly, as the risk of capacity-related failure becomes vanishingly small. While FPL also considers the one-day-in-ten-years LOLP standard, the Company’s two reserve margin criteria discussed above are more stringent – they mislead FPL to over-procure capacity that is not

---

11 For example, see Navigant Consulting, Inc., for Eastern Interconnection States’ Planning Council and National Association of Regulatory Utility Commissioners, Transmission Planning White Paper 24 (2014), available at https://pubs.naruc.org/pub.cfm?id=53A151F2-2354-D714-519F-53E0785A966A (“The utility industry, for decades, has used a LOLE of one day in ten years as the primary means for setting target reserve margins and capacity requirements in resource adequacy analyses.”).

12 This may be seen, at least conceptually, in the “Variable Resource Requirement” (VRR) curves used by some capacity market operators to represent the decreasing marginal value of increased reserve margins over the standard requirement. See PJM Interconnection, LLC, RPM 101: Overview of Reliability Pricing Model 25-30 (Apr. 2017), available at http://pjm.com/~/media/training/nerc-certifications/markets-exam-materials/rpm/rpm-101-overview-of-reliability-pricing-model.ashx; see also Deposition of Steven R. Sim on November 29, 2017, page 156 at lines 12-13 (stating that, at least in theory, there are diminishing returns on reliability improvements from increases to generation reserves).
needed to meet the industry LOLP standard.\footnote{Florida Public Service Commission, \textit{Review of the 2017 Ten-Year Site Plans of Florida’s Electric Utilities} 51 (Nov. 2017), available at http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/TenYearSitePlans/2017/Review.pdf (“Between the two reliability indices, LOLP and reserve margin, the reserve margin requirement is typically the controlling factor for the addition of capacity.”); \textit{see also} Deposition of Dr. Steven R. Sim on November 29, 2017, page 155 at line 25 through page 156 at line 1 (“Loss of load probability is not driving our resource needs, it is the other two.”).}

\subsection{There Is No System Reliability Need for the Project}

\begin{enumerate}
\item \textbf{Q.} Do you agree that DBEC is needed in 2022 to meet a regional imbalance in Southeast Florida and FPL’s reserve shortfalls?
\item \textbf{A.} No. DBEC is not needed in 2022 for regional balance or system reliability because FPL expects its existing resources to be more than adequate to meet both of these needs at least until 2024.\footnote{Deposition of Steven R. Sim on November 29, 2017, page 161 at lines 11-24.}
\end{enumerate}

\begin{enumerate}
\item \textbf{Q.} Is the potential for either a shortfall in reserves before 2024 or a regional imbalance in Southeast Florida earlier than 2025, due to unexpected circumstances, a sufficient justification for placing DBEC in service in 2022?
\item \textbf{A.} No. As FPL has acknowledged,\footnote{Florida Power & Light Company, \textit{Response to Sierra Club Interrogatory Number 16 in Docket No. 20170225-EJ} (Nov. 2017) (“The window of opportunity could potentially extend past 2025, \textit{e.g.}, due to either Summer peak load being lower than forecasted and/or to greater than forecasted available capacity in the region.”); \textit{see also} Deposition of Steven R. Sim on November 29, 2017, page 78 at lines 9-10 (“I don’t need to do analysis to postulate that the load forecast could change.”).} load forecasts and other expectations about the future are inherently uncertain, and the date at which a shortfall in reserves or a regional imbalance could arise could be earlier or later than the Company anticipates. However, this uncertainty does not justify placing DBEC in service in 2022, two to three years earlier than any anticipated need. FPL has not
even analyzed or assigned a probability for those occurrences. In fact, in its review of 2017 Ten Year Site Plans (hereafter “TYSP”), the Commission found that Florida utilities have consistently and often dramatically over predicted load with a five- to six-year lead time. The inevitable uncertainty around load forecasts is one of the primary reasons that resource planning is performed using a reserve margin – as a contingency against load forecast errors. FPL’s 20% planning reserve margin more than adequately accommodates this type of uncertainty. Further, there are a number of less costly and readily available alternatives to meet FPL’s system reliability needs on a short-term basis should those needs arise earlier than currently projected, as discussed in the next section of my testimony.

2. There Are Lower Cost Alternatives that Meet Future System Reliability Needs as They Arise

Q. What can FPL do to resolve or forestall its projected system reserve shortfall and projected imbalance in Southeast Florida?

A. FPL has many options, such as incremental additions of large-scale solar and demand-side resources, as well as short-term power purchase agreements. Various energy storage technologies, including batteries, can also help meet reserve margins because they can be used to store energy during off-peak periods and make it available to the system during peak times. All of these resources can help resolve regional imbalance, too, if they are sited in, or electrically connected.

---

16 Deposition of Steven R. Sim on November 29, 2017, page 162, lines 6-10.
to, the Southeast Florida region. FPL can even meet its reliability needs via additional transmission, as it has with the CSQ line now under construction, or possibly through operational changes that enhance import capability under peak load conditions. As I will explain further below, these alternatives to DBEC likely could meet FPL’s reliability needs at a lower cost than placing DBEC in service in 2022.

Q. What are the benefits of meeting reliability needs incrementally as they arise?

A. There are many benefits to taking an incremental approach. This would allow FPL and the Commission additional time to use updated load projections, rather than committing to large expenditures on supply side generation years before it is needed to meet uncertain long-term forecasts of growth.\(^\text{18}\) This approach would benefit customers by deferring, reducing, or even avoiding expensive supply-side generation additions, protecting them from overpaying now for excess capacity with little to no marginal reliability benefit that is not needed until a later date. Delaying or avoiding DBEC also benefits customers by allowing FPL and its customers to benefit from improvements in performance and costs for solar, storage, and even CC units in the future.

V. Most Cost-Effective Alternative

Q. Why does FPL claim the proposed DBEC project is cost-effective?

A. FPL claims that, over the life of the project, building and operating DBEC

\(^{18}\)This is an issue often referred to as “lumpy” generation additions – the fact that economies of scale for large fossil generators force utilities to over-procure capacity and customers to bear unnecessary costs until load growth restores appropriate reserve margins. Lumpiness is not a significant factor for clean energy and DSM resources that are typically procured in smaller increments.
is cheaper than continuing to operate Units 4 and 5. FPL also claims that, relative to DBEC, it would cost more to place solar (PV) and storage in service on the same time frame, with the same firm capacity, and in similar locations. Finally, FPL claims that placing DBEC in service in 2022 is cheaper than doing so one or two years later.

Q. Do you agree that placing DBEC in service in 2022 is the most cost-effective way to meet FPL’s reliability requirements?

A. No. For reasons that I will explain, I conclude that FPL’s own analyses show that placing DBEC in service in 2022 is not the most cost-effective alternative available. I further identify additional alternatives to DBEC that FPL failed to consider, but that could serve customers with less cost, less risk, and lower emissions of pollutants to the environment.

1. FPL Has Failed to Show that the Project is the Most Cost-Effective Alternative

Q. What flaws have you identified in FPL’s analyses of alternatives to its proposed project?

A. Based on my review of FPL’s filings, discovery responses, and deposition testimony to date, I find that FPL’s analyses are fundamentally flawed in the following ways: (i) FPL did not use a resource planning model in any meaningful way to evaluate the economics of alternate resource plans; (ii) FPL did not issue a request for proposals or conduct any other comparable, rigorous investigation of alternatives on the market that could meet its reliability needs; (iii) FPL

---

19 Direct Testimony of Dr. Steven R. Sim, page 35 at lines 22-23 through page 36 at lines 1-11.
20 Direct Testimony of Dr. Steven R. Sim, page 36 at lines 19-23 through page 37 at lines 1-12.
considered overly and unnecessarily constrained options; (iv) FPL imposed irrational and costly assumptions on its two “delay” scenarios; and (v) FPL failed to meaningfully consider demand-side resources.

Q. Please describe the purpose of a resource planning model.

A. Very briefly, a resource planning model is a computer simulation used to find the least-cost mix of resources that will meet the user’s needs for energy and capacity over the duration of a predefined study period. The model and its use should be flexible enough to test a wide range of resource combinations. Users routinely run the model under a range of possible future conditions, such as higher or lower load growth, higher or lower fuel prices, and so forth. In this way a least-cost plan can be found that meets the utility’s needs under a range of possible future conditions.

Q. Did FPL engage in the type of modeling analysis you describe? Why or why not?

A. No. While FPL has routinely used the EGEAS model to develop its ten-year site plans, it did not use this model in its 2017 analysis. Moreover, in its 2016 analysis, FPL only applied the EGEAS model in the first of four iterations. Yet even in that first iteration, FPL restricted the resource options in the model to “just combined cycles and combustion turbines.” FPL explains its abandonment of the model by claiming that “[t]he need to simultaneously solve for both FPL

---

21 Florida Power & Light Company, Ten Year Power Plant Site Plan 2017-2026 at 57 (Apr. 2017) (“FPL utilized the UPLAN production cost model and a Fixed Cost Spreadsheet, and/or the EGEAS optimization model, to perform the system economic analyses of the resource plans.”).
22 Deposition of Dr. Steven R. Sim on November 29, 2017, page 86 at lines 4-25 through page 89 at lines 1-17.
23 Ibid., page 88 at lines 4-5.
system and SE Florida region requires a new analysis approach.”24 However, it is
best practice to use a modeling study as a component of any analyses aimed at
least-cost resource planning.25

Here, for example, FPL could fix imports into Southeast Florida as a
boundary condition, and use EGEAS or a similar model, but allow the model to
select from a wide range of resources, to find candidate plans within the region.
This would be a standard use of the model. Had FPL used this approach, it could
have identified lower-cost resource plans, likely including demand-side resources,
large- and small-scale solar, and storage, to meet its regional and system-wide
needs.

Q. You said use of a resource planning model is one component of least-cost
planning. What are other strategies that help utilities ensure they are
procuring least-cost resources for their customers?

A. Another important strategy for least-cost procurement is the investigation
of market conditions. This is particularly critical today because conditions are
changing so rapidly and dramatically throughout the industry. One of the best
ways to investigate current market conditions is to issue resource-neutral requests
for proposals (RFPs), and to allow independent market participants the
opportunity to propose solutions to reliability needs at lower cost than utility-

24 Florida Power & Light Company, 2016 Southeastern Florida Study: Results To-Date 6 (Dec.
2016); see also Deposition of Dr. Steven R. Sim on November 29, 2017, page 86 at lines 10-21.
Integrated Resource Planning: Examples of State Regulations and Recent Utility Plans (June
identified and implemented solutions.26

A classic example of this, derived from a situation that is similar in many respects to FPL’s situation, was the 2004 Southwest Connecticut “Gap RFP” to find solutions to an import constraint into a congested and high-cost region of Connecticut. The solution ultimately accepted by both the market operator and the Federal Energy Regulatory Commission (FERC) was a third-party contract to provide demand response services, which delayed the need for any transmission or generation solution for several years.27

Q. **Do you have reason to believe that an RFP process might have yielded lower-cost options than FPL considered in its 2017 analyses?**

A. Yes. As FPL must be aware, its unregulated affiliate, NextEra Energy Resources (NEER), is an industry leader in providing low-cost solar solutions in the form of power purchase agreements (hereafter, “PPA”) to utilities. For example, NEER recently announced a PPA with Tucson Electric Power delivering a combined solar and storage solution for under $0.045 per kWh, with solar portions priced at under $0.03 per kWh.28 This would be cost competitive with or superior to new gas-fired resources on a levelized cost basis, and provides

---


far greater fuel diversity benefits. These low costs are consistent with the findings of a 2017 nationwide survey of solar PPA process published by the US Department of Energy (DOE).  

Q. Have you found evidence of solar PPAs with similar pricing available in Florida?  

A. Yes. For example, JEA recently completed three rounds of solar RFPs. JEA’s Managing Director and CEO, Mr. Paul E. McElroy, found that “the price of utility-scale solar PPAs has declined from $75/MWh on average in 2016 to near JEA’s current fuel charge of $32.50/MWh today.” In other words, below the cost of fuel for gas-fired generation, indicating that solar PPAs are already competitive with new and even existing gas-fired generation. Mr. McElroy subsequently recommended to his Board of Directors that “JEA pursue new universal solar PPAs at or below JEA’s current fuel rate to take advantage of lower universal solar prices. Universal solar allows JEA to lock in current, competitive low energy prices for a portion of our generation requirements, reducing JEA’s reliance on fossil fuels and providing some protection to JEA customers against future changes in volatile fuel and purchase power.”

Based on JEA’s successful experience with solar PPAs, it seems likely that FPL would have similarly found low-cost solar PPA opportunities had it.

---


31 Ibid.
issued a solicitation to the market. However, the Company does not appear to have even considered this alternative.

Q. Can market solicitations be used to acquire DSM resources, such as demand response, to meet reliability needs?

A. Yes. Several examples of this are discussed in a recent paper by the Northeast Energy Efficiency Partnership. The flourishing of demand-side resources is also one of the great success stories of the organized capacity markets, where demand resource participation by independent, third-party aggregators far exceeded initial expectations - reducing fuel use, saving consumers billions of dollars, and averting the need for many power plants. FPL itself has a history of using DSM to meet reliability needs, having reduced cumulative summer peak by approximately 4,843 MW and eliminated the need to construct the equivalent of approximately 15 new 400 MW generating units between 1978 and 2016. Until FPL conducts such a market solicitation itself, or

---

32 Further evidence of this is found in Pierce Schuessler, Solar Energy Industries Association, Comment on Proposed 2017 Second Revised and Restated Stipulation and Settlement Agreement in Docket No. 20170183 (Oct. 2017). The comment asserts that, as compared to the cost cap on solar applicable to the solar to which DEF commits -- on a weighted average cost of all project basis, no greater than $1,650 per kilowatt alternating current (“kWac”), “ratepayers would be better served if, instead of building its own solar facilities, Duke were to procure this additional generation through third party power purchase agreements, or by the purchase of completed projects developed by third parties. We believe that either option would allow for the addition of solar capacity at a lower cost than generation developed and constructed by Duke.” Ibid.


performs a comparably rigorous investigation of the market for demand-side
resources, there is no reason to believe the Company’s assertions that incremental
cost-effective demand-side resources are unavailable.

Q. In summary, what is your recommendation for how FPL should devise,
analyze, and implement the most cost-effective alternative available?

A. I recommend that FPL take the following steps:

● Determine appropriate reserve margin criterion and regional resource needs
  using a loss-of-load probability of 0.01.

● Use market solicitations to ascertain availability and cost of additional
  resource options.

● Use a resource planning model to devise and test cost-effective plans for
  meeting both its system-level reliability constraint and resource needs in sub-
  regions, allowing the model to select the optimal resources from a full range
  of options, and using multiple runs of the model to test alternative resource
  plans under a range of future conditions.

● Schedule resource development, including demand-side resources, to address
  resource needs at the time they are projected to materialize, and do not subject
  customers to unnecessary costs for resources long before they are needed for
  reliability purposes. One crucial means of achieving this is to rely on smaller,
  incremental resources to meet incremental needs. This approach helps match
  resource procurement to the actual timing and magnitude of resource needs,
  thereby avoiding the costs of over-supply and capturing the savings associated
  with the continuous cost and performance improvements across resource
  options.

● Use RFPs in the final procurement process to try to reduce the cost of
  resources when they are ultimately procured.
2. To Identify the Most Cost-Effective Alternative, FPL Should Have, But Did Not, Evaluate Numerous Alternatives Available to FPL

Q. What alternatives to DBEC did FPL consider in its 2017 analyses?

A. FPL considered just one realistic alternative to its plan to build DBEC by 2022. Under the alternative that FPL calls “Plan 1,” Units 4 and 5 would operate until at least 2061 and FPL would enter into a new PPA in 2026, add a new combined cycle unit outside of Southeast Florida in 2027, and add other resources in later years. Plan 1 may be seen as a “base case” scenario under which existing units are supplemented by new resources as the need for them arises.

In addition to Plan 1, FPL presented its proposed plan (Plan 2); a plan that purported to test the option of relying on clean energy resources (Plan 3); and two plans that purported to test the option of delaying DBEC by one or two years (Plan 4 and Plan 5, respectively.)

Q. Do you have concerns with how FPL designed its proposed Plan 2?

A. Yes. Under FPL’s proposed plan, Plan 2, Units 4 and 5 would be retired in 2018 and DBEC would be constructed at the same site and brought into operation in 2022. Plan 2 is suboptimal because the new unit would be brought on line two to three years prior to any reliability requirement for this unit at all, and five years before FPL projects a need for its full capacity. FPL also failed to explore whether other resources, such as higher levels of DSM, solar, or batteries, could defer, reduce, or avoid its projected need for DBEC. Indeed, FPL did not even seek to take advantage of improvements it expects in both the cost and performance of CC units. As attested to by Dr. Sim, “we see combined cycle costs dropping. In fact, we think that in the next few years we’re going to see the very first combined
cycle with a heat rate below 6,000. That’s on the horizon.\textsuperscript{36} Yet FPL would needlessly place DBEC in service without waiting for those efficiency benefits, even though there is no reliability or cost benefit to doing so.

Q. Please describe FPL’s additional analyses of delaying construction of DBEC for one or two years.

A. These plans, denoted Plan 4 and Plan 5 in materials provided in Discovery,\textsuperscript{37} purported to test the impact of bringing DBEC on line one and two years later, in 2023 and 2024, respectively. However, in constructing these plans FPL also assumed a delay in the retirement of Units 4 and 5 by the same amount of time, incurring substantial additional capital and maintenance costs\textsuperscript{38} for units that it had already determined were not needed for any reliability reason once the CSQ line is in place.\textsuperscript{39} Referring to these two plans, Dr. Sim reported that “the delays were projected to increase CPVRR costs to FPL’s customers by approximately $12 million for a one-year delay, and by approximately $38 million for a two-year delay.”\textsuperscript{40} FPL did not examine a plan in which the Units 4 and 5 retire in 2018 as planned, while DBEC or other capacity additions are delayed beyond 2022.\textsuperscript{41}

My own review of FPL’s analyses of Plans 4 and 5 shows that a different

---

\textsuperscript{36} Deposition of Dr. Steven R. Sim on November 29, 2017, page 56 at lines 12-16.

\textsuperscript{37} FPL provided spreadsheet calculations for its plans and sensitivity tests in response to Sierra Club Production Request No. 18.

\textsuperscript{38} Direct Testimony of Dr. Steven R. Sim, page 27 at 1-2 (“[C]ontinued operation of the existing Lauderdale Units 4 & 5 is projected to incur significant costs both in the near-term and in later years.”).

\textsuperscript{39} Ibid., page 29 at lines 11-14 and Exhibit SRS-2.

\textsuperscript{40} Ibid., page 37 at lines 8-11.

\textsuperscript{41} Deposition of Dr. Steven R. Sim on November 29, 2017, page 197 at lines 24-25 through page 198 at lines 1-5.
All of the additional costs found in Plans 4 and 5, relative to Plan 2, stem from FPL’s choice to delay the retirement of Units 4 and 5 by one or two years, and not from any delay in DBEC’s in-service date. In fact, by FPL’s own calculations, delaying DBEC by one or two years while retiring Units 4 and 5 in 2018 (just like in Plan 2) would cost less than Plan 2. FPL’s contention that delaying DBEC imposes additional costs is therefore unsubstantiated.

Q. Why did FPL choose to delay the retirement of Units 4 and 5 in Plans 4 and 5, if the continued operation of those units is not needed for reliability purposes?

A. Dr. Sim merely notes that FPL designed Plans 4 and 5 “to maintain the same roughly 4-year period in which a major Southeastern Florida generation component would be missing as is assumed in Plan 2.” However, Dr. Sim makes clear that with the CSQ line in place, Units 4 and 5 can be retired in 2018 without any projected imbalance or reserve margin issues arising until 2024 and 2025, respectively, and thus the four-year window is not needed to address the reliability needs raised by FPL. Nonetheless, FPL’s Plans 4 and 5 assume this four-year window would extend the operation of Units 4 and 5 until 2019 or 2020, independent of a reliability need. Moreover, there is no apparent reason why four years is any kind of “magic number,” except that it is the amount of time that would occur under FPL’s proposed plan. It appears that FPL has arbitrarily and

---

42 Direct Testimony of Dr. Steven R. Sim, page 37 at lines 1-3.
43 Ibid., page 29 at lines 7-17.
44 See Deposition of Dr. Steven R. Sim on November 29, 2017, page 178 at lines 6-12.
superficially tried to make its plans as similar as possible, but in so doing has
forgone the opportunity for more rigorous and meaningful analysis of what is
most cost effective for customers. In my experience, I have never seen a resource
planning exercise where alternative plans were constrained to have such an
arbitrary similarity to each other that is independent of any established reliability
constraint.

Q. Please describe Plan 3.

A. Plan 3 appears to have been an exercise to determine the cost of
replicating Plan 2 as closely as possible, but using large-scale solar,\textsuperscript{45} small-scale
solar, and energy storage to replicate DBEC. This plan is unrealistic and illogical
for many reasons. First, there is no need to match two plans “megawatt for
megawatt” to have a meaningful economic comparison. As indicated below, FPL
itself implicitly admits this. Second, FPL should structure its plans to meet
exogenous goals, not to match FPL’s proposed DBEC plan. Third, Plan 3 would
fail to take advantage of the inherent flexibility of using smaller, incremental
resources to cost-effectively meet reliability requirements. Fourth, Plan 3
illogically schedules these resources in ways that would be both unrealistic and
unduly expensive, front-loading large quantities of the most expensive resources
as early as 2018.\textsuperscript{46}

\textsuperscript{45} FPL refers to utility-scale solar projects as “universal” solar, and I adopt that convention here.
\textsuperscript{46} For example, Exhibit SRS-3 of Direct Testimony of Dr. Steven R. Sim shows that under Plan 3,
FPL would build 100 MW of storage in 2018 and an additional 200 MW in 2019. This is far
beyond the Company’s current experience with storage, as described in Direct Testimony of Dr.
Steven R. Sim, page 23: “FPL is currently evaluating battery performance with its work in its
smaller scale storage testing (several MW) and under its larger 50 MW Storage Pilot Program.”
Q. Did Dr. Sim explain the design of Plan 3?

A. Dr. Sim describes Plan 3 as assuming that “a sufficient amount of PV and batteries [are] added in the Southeastern Florida region by 2022 to approximate the incremental 1,163 MW of firm capacity that is added in the region in Plan 2 by the new 2x1 CC unit.”

In response to Sierra Club Interrogatory No. 13, FPL explained that: Plan 3 was designed to provide an equivalent amount of firm capacity from a combination of solar and storage in the Southeastern Florida region with the same timing, which would result in an equivalent level of system and regional reliability with the two plans, notwithstanding any practical limitations of siting and operating an unprecedented level of universal and distributed generation solar PV and energy storage in this region.

In response to Commission Staff Interrogatory No. 19, FPL further noted that:

Because DBEC Unit 7 will contribute 1,163 MW of firm capacity in Southeastern Florida by mid-2022 in Plan 2, FPL selected an equivalent amount of firm capacity from a combination of solar and storage sited in Southeastern Florida by mid-2022 for Plan 3. The objective was to have an “apples to apples” comparison in which Plan 3, at least in theory, would be identical to Plan 2 in regard to both system and regional reliability.

Q. Does this explanation make sense to you?

A. No. Not only does this make no sense from a resource planning perspective, it is inconsistent with FPL’s other analyses. Plans 1, 4, and 5 are not “identical” to Plan 2 in regard to annual reserve margins or regional balance, and FPL had no problem presenting an economic comparison between these plans and Plan 2.47 In my extensive experience participating in and reviewing resource planning processes, I do not believe I have ever seen a plan devised to use solar

47 See, e.g., Deposition of Dr. Steven R. Sim on November 29, 2017, page 119 at lines 7-13 (stating that FPL believes it conducted a meaningful economic comparison between Plans 1 and 2 in its 2017 analysis).
and storage to replicate the location, timing, and capacity characteristics of a gas
unit, and I can see no purpose that it serves, other than as an example of how a
poorly-conceived plan can be unduly costly for customers. As discussed above,
FPL’s plans should be designed to meet identified reliability or other needs
exogenous to its preferred plan design, and not to replicate that plan.

Q. How did FPL explain the sequence in which resources would be added under
Plan 3?

A. In response to Sierra Club Interrogatory No. 4, FPL claimed that “[a]n
estimated maximum projected amount of universal PV that could be sited in
Southeastern Florida was selected first. This selection is based on the fact that
universal solar is the most cost-effective way to utilize solar energy on FPL’s
system.” However, this is not how the resource plan is presented in Exhibit SRS-
3, nor is it the sequence represented in the model files supplied in response to
Sierra Club Production Request No. 18. These files make clear that, in fact, Plan 3
calls for the more costly small-scale solar resources (referred to by FPL as
distributed generation solar) constructed first, while the less costly universal solar
is installed no earlier than the last year of resource builds in 2022. This
sequencing is illogical because it would impose unnecessary costs on FPL’s

Q. Do you have any other concerns about FPL’s design of Plan 3?

A. Yes. FPL chose not only to limit large-scale solar to a few sites identified

---

48 See Florida Power & Light Company, 2017 FCSS 3- DBEC - Plan 3 - Solar+Batt - Worksheet
“Gen” (provided in response to Sierra Club Production Request No. 18) (showing that battery
storage and DG solar are placed in service beginning in 2018, while universal solar is placed in
service beginning in 2022).
by FPL, but also limited the size of each site to no more than 74.5 MW of solar. In his deposition, Dr. Sim explained that FPL defines universal solar as solar PV installations with capacity of either 74.5 MW or 60 MW.\textsuperscript{49} Dr. Sim further stated that FPL does not look to universal solar beyond 74.5 MW--the “sweet spot”--because (i) “if you go to 75 megawatts or greater, you’re subject to the Florida bid rule, and you would be required to put the project out for bid,” and (ii) 74.5 MW “falls within this window . . . [in which] you’re gaining the economies of scale.”\textsuperscript{50} The first reason proffered by Dr. Sim for FPL’s focus on 74.5 MW--Florida’s bidding rule--is an inappropriate consideration in a resource planning process, and suggests that FPL may not be seeking least-cost resources or sufficiently protecting customer interests in either its self-build or its market-based resource options. Dr. Sim acknowledged that it is possible that there are sites that can accommodate more than 74.5 MW of universal solar, but that 74.5 MW “is the maximum amount that our company is interested in pursuing for universal solar.”\textsuperscript{51}

The second reason proffered by Dr. Sim also confirms that FPL may not be seeking least-cost resources. If 74.5 MW is within a window for economies of scale, FPL should examine other parts of that window too, rather than focusing its gaze on one point that may be financially profitable for the Company, but not yield least-cost service to customers.

\textsuperscript{49} Deposition of Dr. Steven R. Sim on November 29, 2017, page 64 at lines 4-11.
\textsuperscript{50} Ibid., page 122 at lines 14-16 and page 179 at lines 14-25 through page 180 at lines 1-4.
\textsuperscript{51} Ibid., page 123 at lines 14-16.
Q. Do you have any further concerns about FPL’s design of Plan 3?

A. Yes. FPL also arbitrarily limited the incremental demand-side resources in Plan 3 to the level set by the Commission in a prior docket. This is yet another unreasonable and illogical constraint that is tailor-made to make FPL’s purported “clean energy” alternative appear unduly costly, when in fact a well-designed clean energy alternative could save customers money.

Likewise, FPL failed to assess alternate plans including solar without storage, even though such a plan was among the four most economic plans in FPL’s 2016 analysis. FPL further affirmed that the only reason that the Company added storage to Plan 3 was an attempt to mimic the characteristics of DBEC - and not to address any identified reliability need.

Given this unconventional, uneconomic, and illogical design, it is not surprising that Plan 3 turned out to be the most expensive of the plans considered by FPL. Moreover, this plan was not designed based on FPL’s reliability requirements, and does not serve any resource planning or evaluation of alternatives purpose that I can see.

Q. Is there a better way to examine the feasibility of clean energy resources to meet FPL’s reliability needs?

A. Yes. Instead of Plan 3, FPL should devise a plan that meets its reliability

---

52 Ibid., page 164 at lines 1-11.
53 Deposition of Dr. Steven R. Sim on December 4, 2017, page 26 at lines 21-25 through page 27 at lines 1-5.
54 Deposition of Dr. Steven R. Sim on November 29, 2017, page 100 at lines 11-24.
55 Exhibit SRS-4 to Direct Testimony of Dr. Steven R. Sim shows FPL’s conclusion that Plan 3 would cost approximately $1.29 billion more than Plan 2 on Cumulative Present Value of Revenue Requirements (CPVRR) basis between 2017 and 2061.
needs at the lowest possible cost, including clean-energy resources such as solar, storage, and DSM, integrated into its existing portfolio. FPL should test these options using a resource planning model such as EGEAS. FPL itself recognizes the validity of this reasoning, even though it failed to adhere to it here. Dr. Sim, FPL’s expert on resource planning, explains that FPL’s integrated resource planning process “first, determine[s] our resource needs,” then “[w]e look at available resource options that could meet those resource needs . . . .”

Q. In summary, what is the difference between your recommended strategy of using clean energy resources to delay or avoid DBEC, versus the plan analyzed by FPL which replaced DBEC with a combination of solar energy and storage?

A. FPL’s Plan 3, evaluated as part of its 2017 analyses, would use a combination of solar and storage, both installed beginning as early as 2018 (long before any reliability arises), to try to fully replicate the operations and impact of DBEC. Further, the Company made the plan appear even more costly by building the most expensive resources early, thereby both frontloading unduly high costs and foregoing the opportunity to take advantage of declining resource prices. Plan 3 included no additional demand-side resources beyond the level currently required, and, as discussed earlier, was not designed to respond optimally to FPL’s actual reliability needs.

The approach I am suggesting is to start with FPL’s projected reliability needs, i.e., a reserve shortfall and a regional imbalance projected to occur in 2024.

56 Deposition of Dr. Steven R. Sim on November 29, 2017, page 43 at lines 13-15 (emphasis added).
and 2025, respectively, and to find the least-cost combination of resources such as
demand-response, small-scale solar, large-scale solar, and perhaps storage, to
forestall those reliability shortfalls one or two years at a time. Because such
resources are inherently constructed in smaller increments, there is no need or
reason to construct the equivalent of 1,163 MW of firm capacity when the
reliability need is far smaller. Where FPL’s Plan 3 is high-cost, high-risk and
inconsistent with good utility resource planning practice, the approach I
recommend is low-cost and low-risk, and would allow the Company to get the
maximum benefit of technology and cost improvements over time.

3. Declining Cost of Solar and Storage Resources

Q. Earlier you discussed the low cost of solar and solar+storage PPAs, and
stated that you expect the prices for solar and storage resources to continue
to decline. What is your evidence in support of this expectation?

A. Numerous observers in the energy industry, the financial industry, and
government have noted the precipitous decline in costs for these resources, and
the likelihood that they will continue to fall in the future. For example, a
September 18, 2017 publication from Moody’s Investor Service\textsuperscript{57} stated the
following:

\begin{itemize}
\item \textbf{Renewable energy costs have fallen dramatically and will continue to do so.}\n\item Economies of scale and improving efficiencies have caused steep falls in capital
costs, and hence levelized cost of energy (LCOE), from solar and wind. And those
debuts are continuing, especially for solar, where panel prices have fallen over 20%\nsince late 2016.
\item \textbf{Energy storage and offshore wind costs are declining faster than expected.}\nMost forecasts have historically underestimated the pace of declines in renewable energy
\end{itemize}

\textsuperscript{57}Moody’s, \textit{Global Renewables Focus} (Sep. 2017).
capital costs and appear to be doing so now for offshore wind and energy storage. Both technologies have already reached prices predicted for 2020. They are just beginning their global spread, and greater economies of scale will spur further price reductions.

Further, the Lawrence Berkeley National Laboratory (LBNL) study referenced above\textsuperscript{58} quantified the rapid growth of solar installations throughout the United States, including the dominance of this resource in many interconnection queues, along with improving performance and falling prices. The LBNL study reports that “[m]edian installed PV project prices within a sizable sample have steadily fallen by two-thirds since the 2007-2009 period, to $2.2/WAC (or $1.7/WDC) for projects completed in 2016. The lowest 20th percentile of projects within our 2016 sample (of 88 PV projects totaling 5,497 MWAC) were priced at or below $2.0/WAC, with the lowest-priced projects around $1.5/WAC.”\textsuperscript{59}

Figure 18 from the LBNL report, reproduced here as Figure 1, shows this dramatic trend reflected in solar PPA prices over the last decade.


\textsuperscript{59} Ibid. at ii.
In addition to the industry expectations of decreasing costs for solar and storage resources described above, have you seen evidence that FPL itself anticipates lower costs for solar and storage resources in the future?

Yes. The Company’s scenario valuation files for its 2017 analyses, provided in response to Sierra Club Production Request No. 18, show the Company’s expectations for declining capital costs for small-scale solar and storage resources. I have summarized these costs in Figure 2 below on a 2017 NPVRR basis. (I have not provided the quantity of MW for the universal solar resource because it was not specified in the referenced file.) These expectations are corroborated by Dr. Sim, who explained that “we see costs for supply options and for other key aspects generally declining over time.”

Indeed, according to Dr. Sim, “there will be plenty of opportunities in the future for emerging technologies as they prove themselves to be integrated into the resource plan.”

---

60 Deposition of Dr. Steven R. Sim on November 29, 2017, page 54 at lines 15-17.
61 Ibid. at lines 18-21.
Yet by seeking to place DBEC in service before it is needed, FPL would subvert those opportunities.

Figure 2. FPL-estimated NPVRR for solar and storage technology by installation year. Based on model input files provided in response to Sierra Club Production Request No. 18.
4. There Is No Benefit To Building the Plant Before It Is Needed

Q. If there is no identified reliability need until 2024 or 2025, why is FPL proposing to bring the Dania Beach project on line in 2022?

A. According to Dr. Sim, "The result of the 2017 analyses was that retiring existing Lauderdale Units 4 & 5 in late 2018, followed by a modernization of the site by June 1, 2022 with a 2x1 CC unit (DBEC Unit 7), was projected to be the most economic option for FPL’s customers." As noted above, FPL further performed two model runs that Dr. Sim claims tested whether a one- or two-year delay in the project would benefit customers. Dr. Sim concluded that "a delay of the mid-2022 in-service date of DBEC Unit 7 is projected to be uneconomic for FPL’s customers." 

Q. Did you analyze the cost impacts produced by these analyses?

A. Yes. As described by Dr. Sim, in addition to delaying DBEC by either one or two years from FPL’s proposed mid-2022 operational date, "[i]n both scenarios, the retirement of Lauderdale Units 4 & 5 was also assumed to be delayed by either one year or two years, respectively, to maintain the same roughly 4-year period in which a major Southeastern Florida generation component would be missing as is assumed in Plan 2." FPL found that both of these plans were modestly more costly ($12 million and $38 million total, respectively, over a 44-year planning horizon) than Plan 2. However, FPL did not disaggregate these CPVRR differences into costs associated with delaying the retirements of Units 1 and 2, as compared to other costs or savings associated

---

62 Direct Testimony of Dr. Steven R. Sim, page 8 at lines 5-8.
63 Ibid., page 37 at lines 11-12.
64 Ibid., page 36 at lines 22-23 through page 37 at lines 1-3.
with the timing of DBEC, so its conclusion that these costs are due to delaying
DBEC is unfounded.

Q. Are you able to disaggregate these costs, based on materials provided by the
Company?

A. I can disaggregate the relative costs and savings of each plan sufficiently
to address this question based on FPL’s response to Sierra Club’s Production
Request No. 18. Specifically, FPL’s response, consisting of numerous
spreadsheets, allows me to determine the share of certain “fixed” (non-
volumetric) costs that are associated with the Units 4 and 5 vs. DBEC under each
plan. I have summarized these costs in Table 1.

While I am not able to assign all cost differences to either the delay in
DBEC operations or the delayed retirement of Units 4 and 5 (note “non-Unit
Specific” costs in Table 1), this much is clear: according to FPL’s own analysis,
the costly part of Plans 4 and 5 is that they delay the retirement of the Units 4 and
5. Delaying this retirement by one year will cost customers at least $33 million on
a CPVRR basis, and delaying retirement by two years will cost at least $74
million on a CPVRR basis. These numbers are twice as high or more compared to
the $12 million and $38 million FPL claims it will cost customers for its
composite plans including on a one- or two-year delay, respectively. This means
that delaying DBEC without also delaying Units 4 and 5 reduces the calculated
costs of these plans and, consequently, produces customer savings. Table 1 also
shows that, contrary to Dr. Sim’s assertion, FPL’s analysis finds that delaying
DBEC by one or two years would actually save customers $33 million or $63
million dollars, respectively.

**Table 1. Costs/(Savings) associated with Plans 4 (1-year delay) and 5 (2-year delay) Relative to Plan 2.**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Cost Category</th>
<th>Plan 2</th>
<th>Plan 4</th>
<th>Plan 5</th>
<th>Cost of 1-Year Delay (Plan 4 vs. Plan 2)</th>
<th>Cost of 2-Year Delay (Plan 5 vs. Plan 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay Construction of Dania Beach Unit 7</td>
<td>Generation Capital</td>
<td>$960</td>
<td>$942</td>
<td>$926</td>
<td>($18)</td>
<td>($34)</td>
</tr>
<tr>
<td></td>
<td>Generation Fixed O&amp;M</td>
<td>$91</td>
<td>$86</td>
<td>$82</td>
<td>($5)</td>
<td>($9)</td>
</tr>
<tr>
<td></td>
<td>Capital Replacement Charges</td>
<td>$162</td>
<td>$152</td>
<td>$142</td>
<td>($10)</td>
<td>($20)</td>
</tr>
<tr>
<td></td>
<td>Dania Beach Total</td>
<td>$1,213</td>
<td>$1,180</td>
<td>$1,150</td>
<td>($33)</td>
<td>($63)</td>
</tr>
<tr>
<td>Delay Retirement of Lauderdale Units 4 and 5</td>
<td>Generation Capital</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>Generation Fixed O&amp;M</td>
<td>$7</td>
<td>$15</td>
<td>$24</td>
<td>$8</td>
<td>$17</td>
</tr>
<tr>
<td></td>
<td>Capital Replacement Charges</td>
<td>($25)</td>
<td>($8)</td>
<td>$17</td>
<td>$17</td>
<td>$42</td>
</tr>
<tr>
<td></td>
<td>Lauderdale Units NBV</td>
<td>($52)</td>
<td>($44)</td>
<td>($37)</td>
<td>$8</td>
<td>$15</td>
</tr>
<tr>
<td></td>
<td>Lauderdale Units Total</td>
<td>($70)</td>
<td>($37)</td>
<td>$4</td>
<td>$33</td>
<td>$74</td>
</tr>
<tr>
<td>Non-Unit Specific</td>
<td>Firm Gas Transport</td>
<td>$944</td>
<td>$944</td>
<td>$944</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>System Net Fuel</td>
<td>$47,561</td>
<td>$47,573</td>
<td>$47,588</td>
<td>$12</td>
<td>$27</td>
</tr>
<tr>
<td></td>
<td>Startup + VOM</td>
<td>$652</td>
<td>$651</td>
<td>$652</td>
<td>($1)</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>Emissions Costs</td>
<td>$9,577</td>
<td>$9,577</td>
<td>$9,577</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>Non-Unit Specific Costs Total</td>
<td>$58,734</td>
<td>$58,745</td>
<td>$58,761</td>
<td>$11</td>
<td>$27</td>
</tr>
</tbody>
</table>

Q. What are the implications of your finding that delaying DBEC actually saves money for customers?

A. This finding is important not only because it suggests that FPL can save customers tens of millions of dollars by delaying DBEC. This result also strongly suggests that the longer FPL can delay constructing the plant, the more customers will save, suggesting that delaying the plant is consistent with least-cost resource planning principles. To the extent that FPL can develop the resource options I have discussed earlier in my testimony – demand-side resources, large- and small-scale solar, and storage – to forestall the need for DBEC, the better customers will be served. As I noted earlier, and as is reflected in FPL’s model files, the cost and
performance of solar generation and storage have been improving rapidly and are expected to continue to improve for some time to come. It is certainly possible that were FPL to start down the road of relying on low-cost clean energy resources and DSM, it could indefinitely delay expenditure of customer resources on an unneeded gas plant, and truly enhance its fuel diversity.

Finally, were rigorous planning and modeling eventually to demonstrate that FPL needs a new gas unit, it is likely that the delay would allow FPL to procure an even more efficient technology than DBEC. As Dr. Sim noted, “we think that in the next few years we're going to see the very first combined cycle with a heat rate below 6,000.”65 Yet by seeking to place DBEC in service before it is needed, FPL would disrupt that opportunity.

5. Illustrative Alternative Plan

Q. Have you created an alternative plan to FPL’s Plan 3 that demonstrates a lower-cost way to use clean energy resources to meet FPL’s reliability needs?

A. Yes. However, let me say at the outset that this is intended only as an illustrative example, and I do not claim to have thoroughly analyzed all of the reliability and feasibility aspects of this plan. My point is to illustrate that FPL can maintain its 20% reserve margin by deploying clean energy resources when they are needed to meet reliability requirements, and not in a way that imposes spurious costs by attempting to mimic a resource with very different practical, operational, and financial characteristics such as a gas-fired CC.

The illustrative plan I have prepared is presented and compared to FPL’s

---

65 Deposition of Dr. Steven R. Sim on November 29, 2017, page 56 at lines 13-15.
Plan 3 in Table 2. As may be seen in the table, my alternative plan relies on a smaller amount of solar and storage resources, implemented years later than under FPL’s Plan 3. I have also included a modest amount of demand response (DR) in 2025, although as suggested above, I believe that if FPL were to issue an RFP for demand response resources it would find a much greater volume available at a reasonable cost. To calculate reserve margins, I have made the same assumptions FPL made regarding the capacity value of solar - 54% for the first 265 MW, and 35% thereafter – although I do not endorse what seems to me to be a very conservative assumption in this area.¹⁶ Unlike FPL’s plan, the alternative plan does not maintain up to 1,550 MW of unneeded and costly capacity above and beyond FPL’s already conservative 20% reserve margin.

¹⁶ After 5 p.m. on December 7, 2017, the day before this testimony was due to be filed, FPL provided as a late supplemental response to Sierra Club Production Request No. 18 a workbook purporting to support its declining capacity credit assumptions. As noted in the text, I have applied these assumptions but I do not endorse them.
Table 2. FPL’s Plan 3 Compared to Illustrative Alternative Plan.

<table>
<thead>
<tr>
<th>Year</th>
<th>Plan 3</th>
<th>Alternative Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DG Solar</td>
<td>Universal Solar</td>
</tr>
<tr>
<td>2018</td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td>2019</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>2020</td>
<td>125</td>
<td>200</td>
</tr>
<tr>
<td>2021</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>2022</td>
<td>75</td>
<td>433</td>
</tr>
<tr>
<td>2023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2026</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q. Can you analyze what this illustrative plan would cost, relative to FPL’s Plans 2 and 3?

A. I cannot. I do not have access to FPL’s UPLAN model to calculate operational costs, nor do I know what resource costs might be available to FPL for either self-build or PPA offers for these resources in the indicated years. I do know that the capital costs would be many hundreds of millions of dollars less than under FPL’s Plan 3 in an NPVRR basis, and could be cost competitive with Plan 2. It is also certainly possible that, should FPL issue a market solicitation for additional DR, they would yield even more of this low-cost resource than I have included in the plan shown in Table 2. I provide this example to illustrate that FPL’s Plan 3 was not designed to yield the lowest cost scenario for relying on clean energy resources, and cannot be used to disqualify the cost effectiveness of a clean energy plan without substantial additional analysis.

Q. What factors could make a plan like the one you have proposed less costly than FPL’s Plan 2?

A. A number of factors would strongly affect the costs of an alternative, clean energy plan that FPL should evaluate to determine the ultimate costs of this alternative. None of these factors appear to have been evaluated in developing FPL’s clean energy alternative, Plan 3, but rigorous consideration of these factors could yield an alternative that costs less than, or is at least competitive with, DBEC. Unfortunately, because I do not have access to the models and information held by FPL, I am unable to quantify these factors for the Commission. These factors include:
● Using the minimum amount of new storage required each year to ensure both adequate reserve margins and regional balance under such a plan. Storage should be used incrementally, and FPL should take as much advantage as possible of ongoing rapid improvements in cost and performance. FPL should not, as it did in Plan 3 of its 2017 analysis, add storage to mimic resources from another plan being evaluated.67

● Using the maximum amount of universal solar, as opposed to DG solar, that FPL could include in its plan. This inquiry should be informed by RFPs to allow third-party providers to propose universal solar options that the Company has not considered. It should not involve consideration of size limits in Florida’s bidding rules.68

● Using other approaches to meet its regional balance needs, beyond siting additional generation and storage in Southeast Florida. I have already discussed the value of DSM in this regard, including DR that could be procured from third-party aggregators through an RFP process. FPL should also consider operational and transmission upgrade options that could increase its import capability into the region.

VI. Need for Fuel Diversity and other Concerns

1. The Project Exacerbates FPL’s Reliance on Gas

Q. What fuel diversity need does FPL propose to address in its Petition?

A. FPL argues that the proposed DBEC will enhance the Company’s fuel diversity because of the unit’s “high level of fuel efficiency.”69

Q. Do you find that DBEC will enhance FPL’s fuel diversity?

A. I do not agree that DBEC is an effective way to enhance FPL’s fuel diversity and supply reliability relative to alternative solutions available to the company. In fact, DBEC would extend FPL’s reliance on gas into the indefinite

67 See Deposition of Dr. Steven R. Sim on November 29, 2017, page 100 at lines 11-24.
68 See ibid., page 122 at lines 14-16 and page 179 at lines 14-25 through page 180 at lines 1-4.
69 Direct Testimony of Dr. Steven R. Sim, page 12 at 6.
future. As seen in Figure 3, use of gas in Florida has increased by approximately a factor of four since 2000, and it is currently projected to increase through the next decade; this single fuel “remains the dominant fuel over the planning horizon, with usage in 2016 at approximately 63 percent of the state’s net energy for load (NEL).”\textsuperscript{70} For FPL, the situation is even more extreme: gas currently accounts for 71\% of its generation, a figure that the proposed project would aggravate and perpetuate into the future.\textsuperscript{71}

![Energy Production from Natural Gas](image)

\textit{Figure 3. From Florida PSC review of utility 2017 TYSPs, page 3.}

The DBEC project would be larger than the existing Lauderdale units, run many more hours per year, and produce more Megawatt Hours (MWh) from gas.\textsuperscript{72} Further extending the Company’s reliance on a single, CO\textsubscript{2}-intensive fuel with high levels of historic volatility does not effectively advance the cost-

\textsuperscript{71} Ibid. at 51.
\textsuperscript{72} See Deposition of Dr. Steven R. Sim on November 29, 2017, page 140 at lines 19-24.
hedging benefits of reducing the Company’s exposure to fuel availability and
cost. Conversely, any plan that relied more heavily on fuel-free resources such as
solar generation and DSM would far more effectively reduce FPL’s exposure to
the higher fuel and emissions costs associated with gas.

2. Alternatives Can Help Reduce FPL’s Reliance on Gas and Promote FPL’s
Fuel Diversity

Q. Have you seen evidence that FPL recognizes zero-fuel cost resources as an
effective way to promote fuel diversity?

A. Yes. In his direct testimony, Dr. Sim describes how FPL is “pursuing cost-
effective solar energy as a means to enhance fuel diversity on its system.” This
is a far more reasonable and effective way to reduce FPL’s exposure to future fuel
and emissions costs than extending its reliance on natural gas.

VII. Conclusion

Q. What are your conclusions regarding the need for DBEC for system
reliability purposes?

A. DBEC is not needed for system reliability purposes in 2022, when the
Company proposes to bring it on line; nor has the company demonstrated that the
project meets any reliability need that could not be equally well met, at lower
cost, with alternative, incremental clean energy resources.

Q. What are your conclusions regarding whether DBEC is the most cost-
effective alternative available?

A. Building DBEC in 2022 is clearly not the most cost-effective alternative,
as the Company’s own analysis establishes that delaying DBEC by one or two

73 Direct Testimony of Dr. Steven R. Sim, page 12 at lines 12-13.
years (while retiring Units 4 and 5 in 2018) would cost less than bringing DBEC on line in 2022. Further, customer interests would be better served if the FPL delayed the project not only for the one or two years that FPL’s analysis shows would save customers money, but for as long as possible, and perhaps indefinitely, through the strategic, incremental use of clean energy resources. FPL has not followed rigorous analytical techniques or good utility practice in its development and analysis of alternatives, so the Commission cannot reasonably conclude that FPL’s proposal is the most cost-effective option.

Q. What are your conclusions regarding whether DBEC comports with the need for fuel diversity?

A. Extending FPL’s, and Florida’s, already disproportionate reliance on natural gas is not an effective or reasonable way to promote fuel diversity and supply reliability. These goals could be much more effectively advanced through reliance on technology that is not reliant on imported fuel and that is immune to any future emission-related costs.

Q. What are your conclusions regarding utilizing renewable and conservation measures to the extent reasonably available under the Company’s proposal?

A. I have demonstrated that FPL’s purported analysis of renewable and conservation measures was fatally flawed because it was limited to a single alternative plan that was illogical, hobbled by artificial constraints, and almost tailor-made to appear unduly costly for FPL’s customers. I have also demonstrated how low-cost renewables could be used to further delay, or perhaps eliminate, the need for DBEC. Based on this analysis, I conclude that FPL has
made no serious effort to use renewables and conservation measures to the extent reasonably available as part of its plan.

Q. What are your recommendations for the Commission in this matter?

A. I recommend that the Commission deny FPL’s request for an affirmative determination of need in this matter.

Q. Does this conclude your testimony?

A. Yes.
BY MS. KAPLAN:

Q    Okay.  Dr. Hausman, have you prepared a summary of your testimony?

A    Yes.

Q    Please provide that summary.

A    Chairman Graham, members of the Commission, good afternoon.

In my testimony, I review whether FPL has shown that there's a system-reliability need for the project as proposed; whether it is the most cost-effective alternative, whether FPL has meaningfully evaluated renewable and demand-side options, and whether the project promotes fuel diversity.

I show that the company has failed to meet its burden of proof under each of these requirements. The project is not needed for reliability purposes at least until 2024, as shown by Dr. Sim's testimony and exhibits. This is so, even given FPL's very-conservative reserve criteria -- reliability criteria, which exceeds the requirements of the Regional Reliability Council, the FRCC.

FPL's reserve margins provide more-than-sufficient protections from supply shortfalls in FPL's service territory and in southeast Florida. There is no reason to subject customers to excessive costs for
additional capacity beyond these ample margins.

Bringing DBEC online in 2022 cannot be the most cost-effective alternative because there is no identified reliability need at that time. The company's own analysis makes clear that it is less-costly to delay the project until it is needed for reliability purposes, absent its artificial, what I called magical four-year window constraint between retirement of the Lauderdale units and DBEC.

This constraint has no basis in known or established reliability criteria. No one asked for rigorous analysis to establish this constraint, despite the substantial additional cost it represents to consumers.

In fact, FPL has confirmed that delaying the project is less-costly, in response to Staff Interrogatory 58. Delaying the project would also allow FPL to take advantage of expected improvements in resource performance and cost.

FPL's sole consideration of renewable alternatives was fundamentally flawed. This analysis, known as Plan 3, was burdened by artificial constraints -- artificial constraints, sorry -- that have -- also have no basis in known or meaningful reliability criteria.
Specifically, FPL devised a plan under which renewable and storage resources would be built, not to optimally meet reliability needs, but to mimic the properties of the company's preferred gas plant, providing more capacity than would be needed for at least five years after the resources were in place.

Plan 3 was also made artificially costly by restricting the size of universal solar to avoid certain competitive bidding rules and by front-loading the most-expensive components year before -- years before they would be needed, and by FPL's failure to include any demand-side elements. FPL has not market-tested whether third parties could provide these resources at lower cost than the company assumed.

FPL's consideration of alternatives was also inadequate because the company failed to consider a wide range of other resource options, such as, FPL did not consider citing solar resources in southeast Florida later than 2022, nor did it consider citing these resources outside Florida -- outside southeast Florida, and using incremental renewable, storage, transmission, or other resources to meet incremental southeast Florida requirements.

FPL did not consider using demand-side management, including energy-efficiency and demand
response. FPL's plan does not promote fuel diversity.
To the contrary, this plan perpetuates for decades the
company's already-heavy reliance on gas for electricity
generation, further exposing ratepayers to the long-term
risks and costs of this fuel, including the risks and
costs of greenhouse gas emissions that so endanger
Florida and the rest of the planet.

For all these reasons, I find that the company
has not met its burden of proof, and the Commission
cannot reasonably grant its requested determination of
need.

I thank you for your attention.

CHAIRMAN GRAHAM: Do you tender this witness?

MS. KAPLAN: Yes.

CHAIRMAN GRAHAM: OPC, do you have any
questions of this witness?

MS. CHRISTENSEN: No, we do not.

CHAIRMAN GRAHAM: Florida Power & Light?

MR. MARCIL: Thank you, Mr. Chairman. Michael
Marcil for Gunster, on behalf of Florida Power &
Light.

I do have two exhibits for these -- for this
witness.

CHAIRMAN GRAHAM: Sure. Staff will pass it
out for you.
MR. MARCIL: Out of the two exhibits, Mr. Chairman, the one in the red folders has been designated confidential by the Sierra Club.

CHAIRMAN GRAHAM: Okay. And which of the two would you like to label 66 and which would you like to label 67?

MR. MARCIL: The confidential exhibit will be 66, Mr. Chairman, and then the second exhibit will be No. 68.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Will be 67.

MR. MARCIL: 67, right.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: And the description, I take it, is not confidential?

MR. MARCIL: Correct.

CHAIRMAN GRAHAM: Okay. So, we'll call it the Sierra Club task order for 66 and for 67, Sierra Club website?

MR. MARCIL: Yes, Mr. Chairman.

(Whereupon, Exhibit Nos. 66 and 67 were marked for identification.)

CHAIRMAN GRAHAM: Okay. Dr. Hausman, do you have copies of both?

THE WITNESS: Yes, I do.
CHAIRMAN GRAHAM: Okay. Your witness.

MR. MARCIL: Thank you, Mr. Chairman.

EXAMINATION

BY MR. MARCIL:

Q    Good to see you, Dr. Hausman.

A    Nice to see you.

Q    It looks like you brought some of your cold weather down from Boston since we last saw each other.

A    I apologize.

(Laughter.)

Q    All right. We're going to look first at Exhibit 66. Do you have that before you?
MS. CSANK: Mr. Chairman, if I may, Sierra Club also moves to strike the prior questions that FPL counsel asked regarding this confidential exhibit, including the question where he was reading from the confidential information.

CHAIRMAN GRAHAM: I have no problem with striking all the comments of Exhibit 66 as far.

If you would, just please start over again --

MR. MARCIL: That would be fine.
CHAIRMAN GRAHAM: -- and we'll go from there.

BY MR. MARCIL:

Q    Dr. Hausman, good to see you again.

A    Good to be back.

(Laughter.)

Q    Yeah, didn't mean to cause a tempest in a

   teapot there, but --

CHAIRMAN GRAHAM: All right. I'm sorry.

   Hold on a second.

   Court reporter, did you get that -- where

   we're going to strike from?

THE COURT REPORTER: (Nodding head

   affirmatively.)

CHAIRMAN GRAHAM: Okay. Thanks.

   I apologize.

BY MR. MARCIL:

Q    What I'm asking is, essentially, what were you

   hired to do, sir?

A    I was hired to review the materials in this

   case, to provide my expert opinion, based on those

   materials, which includes assisting with the

   promulgation of discovery, reviewing discovery

   responses, preparing expert testimony, responding to

   discovery requests on my testimony.

   There were a -- there was an updated -- maybe
it was even in my -- anyway, I was also asked to listen
to depositions, review deposition transcripts --
basically, review all of the materials in this case and
provide testimony, based on my analysis of those
materials.

Q  And you do understand you were hired to

support the Sierra Club's position.

A  Oh, yes -- well, I understand that I'm hired
to do all the things I said I would do; that I review
all the materials and provide my independent testimony
in this case, yes. But that's my job in all of my -- in
all of my professional engagements.

Q  So -- so, here, it was to support the Sierra

Club's position.

CHAIRMAN GRAHAM:  Asked and answered.

A  As -- as you pointed out --

CHAIRMAN GRAHAM:  Sir, you've already answered
the question.

BY MR. MARCIL:

Q  Did you know what the Sierra Club's position

was in this case?

A  This --

MS. CSANK:  Objection.  Ambiguous.

MR. MARCIL:  I -- I don't think that's
ambiguous.
CHAIRMAN GRAHAM: I don't think it is either.

MS. CSANK: He has -- terms Sierra Club's position -- there are numerous issues that this Commission has established for this proceeding, and he hasn't specified which of Sierra Club's positions on those issues he's asking about.

CHAIRMAN GRAHAM: Well, he said, do you know what Sierra Club's position is in this case. So, he can answer what positions he knows.

MS. CSANK: The question also didn't specify a time frame, and the order establishing procedure designated the time by which Sierra Club had to identify its position in this proceeding.

CHAIRMAN GRAHAM: Mary Anne?

MS. HELTON: I think it's a fair question to ask him, to the extent that he knows, and if he -- if he understands the question and he has an answer, I think it -- that is a question that could be answered.

CHAIRMAN GRAHAM: Thank you.

Doctor?

THE WITNESS: It is -- it is a complicated question. I mean, I was contacted by Sierra Club; asked to review materials; provided my initial assessment of the materials and of shortcomings in
the case presented by Florida Power & Light; and
identified the issues that I felt I would be able
to offer expert testimony with regard to that
filing.

Sierra Club, apparently, felt that that would
be appropriate for their case and hired me on the
basis of my -- my own independent analysis.

BY MR. MARCIL:

Q    You understood that the Sierra Club was
opposing a determination of need in this case, correct?

A    It doesn't surprise me to hear that, no.

Q    Is this the first time you're hearing that?

A    That Sierra Club is opposing the determ- --
Sierra Club is a large and multi-faceted organization.
I work with the legal counsel. And le- -- legal counsel
generally takes more of a, you know, specifically-legal
position on issues.

I know that Sierra Club's position has been
informed by my analysis and my testimony in this case.
So, they have taken the position, as you heard in
Ms. Kaplan's opening statement, that reflects what I
found in my testimony. So, I believe that they are
consistent.

Q    No, sir, my question was: Was today the first
time you've heard that the Sierra Club was opposing a
determination of need?

A  No, I'm -- I am aware -- I was previously

aware that -- that, certainly, parts of the Sierra Club

are opposing the determination of need, yes.

Q  And you were aware of that when you were

hired.

A  Again --

MS. CSANK:  Mr. Chairman, I'm going to launch

an objection as to relevance.

CHAIRMAN GRAHAM:  Overruled.  I'll let him

answer the question.

THE WITNESS:  It -- it doesn't surprise me.  I
don't believe that Ms. Kaplan said to me, we're

opposing the determination of need.  Ms. Kaplan

specifically said to me, would you please review

this filing and identify if there are any

shortcomings or issues that you feel should be

addressed.

Now, why Sierra Club did that -- you know, I'm

a smart-enough guy to know that, you know, Sierra

Club probably wouldn't have hired me or wouldn't

have bothered participating if I felt like, yeah, I

find no shortcomings -- because why would they do

that?
But I identified specific issues and I said I would provide an expert opinion on those because I identified those shortcomings. And they hired me on that basis.

BY MR. MARCIL:

Q    You've testified for the Sierra Club previous to this docket, correct?

A    Yes.

Q    And during your deposition, I think we identified that 13 of your 26 total engagements since August 2008 have been on behalf of the Sierra Club, correct?

MS. CSANK:  Objection.  Relevance grounds.

CHAIRMAN GRAHAM:  I'll allow the question.

THE WITNESS:  Do you mean 26 professional engagements in total?

BY MR. MARCIL:

Q    Correct.

A    I don't agree with that, no.

Q    Well, listed on your CV, I believe we had counted that you had done 26 items on your expert-services portion of your CV, from Pages 5 to 8. You remember us counting that? We took about a half an hour to do that?

A    Yes, but I also recall, Mr. Marcil, that I
explained to you at that time that I don't list
everything individually on my CV. For example, it lists
expert services for the New Jersey Consumer Advocate,
whom I've worked for, for many years, and I have not
actually listed every individual case that I've worked
on for them.

So, perhaps, I've been inconsistent in how I
put together my CV, but I don't really agree with
your -- with the way you're representing that.

Q    Well, let's look at your CV, then, if you can
take it out, and we'll break this down a little bit.

If you look on Pages 5 through 8 of your CV,
which is EF- -- or EH-1 -- or EDH-1.

A    Yes, sir.

Q    You list your expert testimony in services,
correct?

A    Yes.

Q    And you're the one who drafted this CV,
correct?

A    Yes.

Q    And during your deposition, we identified 26
of these items that you wrote on your CV from August
2008 forward, correct?

A    Again, I agree that there are -- well, I
accept that there are 26 bolded headlines; however, as
I've explained to you, those don't each necessarily reflect a single engagement.

Q   I'm only going by what you wrote here.

There's 26 that you wrote down in bolded headlines --

A   And I'm trying to give you context for what I wrote there. I -- I don't know what the disagreement is. I'm just explaining that, yes, that's what's written there, but you should understand what they represent.

Q   And out of those 26, 13 of those were for the Sierra Club, correct?

A   Out of the 26 items that I wrote on my resume, yes, I think we counted 13 for Sierra Club.

Q   And we also counted, since August 2008, that you had drafted eight white papers that you list on your CV for the Sierra Club.

A   Again, I take your word for it. I didn't memorize the numbers.

Q   And so, that would be 21 different work products, as you called them, in your deposition, that you've done for the Sierra Club since August 2008, correct?

A   That's -- doesn't surprise me.

Q   And you've been paid well over a hundred-thousand-dollars for all your work for the Sierra Club
over those ten years.

MS. CSANK: Objection --

A  Since --

MS. CSANK: -- as to relevance.

MR. MARCIL: Bias.

CHAIRMAN GRAHAM: I'll allow it.

THE WITNESS: Since 2008?

BY MR. MARCIL:

Q  Yes.

A  I hope so.

MR. LENOFF: Can I object to the -- to the question about the 2008? The Supreme Court's
dec-- -- the Florida Supreme Court's decision in Elkins v. Syken allows for probing this kind of information up to a reasonable time, which is normally three years.

2008 is much longer than three years ago.

MR. MARCIL: I -- there's no bright-line rule on three years.

CHAIRMAN GRAHAM: Hold on.

MR. MARCIL: Ten years is reasonable.

CHAIRMAN GRAHAM: Mary Anne?

MS. HELTON: I don't know the answer to that question. I don't know if there is a bright-line rule or not.
Let me ask Ms. Cibula.

I'm happy to look at a -- the case that counsel for Sierra Club has mentioned, if you want me to, but I'm not familiar with that case, Mr. Chairman.

CHAIRMAN GRAHAM: Do you have the case?

MR. LENOFF: I do have the -- the citation. It is 672 So.2d, 517. If you give me -- if you give me a moment, I can give you the pin site in that case.

It is at pin cite -- Page -- it is at --

MS. HELTON: If you'll -- hold on one -- okay. The pin cite is what?

MR. LENOFF: 521.

And if I may, these criteria have been adopted by the Florida Supreme Court into the official rules. I -- I can pull that cite for you as well.

MR. MURPHY: Chairman, is there an issue that he's done a lot of work for them and that they've paid him? I mean, could this be stipulated?

BY MR. MARCIL:

Q I would think even the last three years, I believe, you've done a hundred-thousand-dollars worth of work for them, haven't you?

A I don't know the exact number, but that --
I -- I've done a number of engagements.

MR. MARCIL: That -- that should solve it.

Okay. So, may I proceed?

CHAIRMAN GRAHAM: Hold on a second.

MS. HELTON: I'm spinning.

(Laughter.)

CHAIRMAN GRAHAM: Go ahead and proceed.

MR. MARCIL: Okay. Thank you.

BY MR. MARCIL:

Q  Okay. So, in that same time period, August 2008 to the present, you've never been hired to testify on behalf of any electric utility, correct?

MS. CSANK: I'll, again, launch an objection as to the relevance --

CHAIRMAN GRAHAM: I'll allow it.

MS. CSANK: -- of this question.

THE WITNESS: That's correct.

BY MR. MARCIL:

Q  Okay. So, in this case, you understand that you're here in a matter involving a petition for determination of need for a natural-gas-fired power plant, correct?

A  Yes.

Q  And there's nothing, at least, listed on your CV that involved any testimony that you've provided in
any proceeding involving a certificate of a public
convenience and necessity for a gas-fired power plant,
correct?

A I believe that's correct.

Q And you've never testified in support of the
purchase by a utility of a gas-fired power plant?

A I believe that is correct.

Q You've never testified before the Florida
Public Service Commission before today.

A That's correct.

Q You've never testified in any matters dealing
with a regulated Florida electric utility, right?

MS. KAPLAN: Asked and answered.

CHAIRMAN GRAHAM: No, the first question was:
Have you been before the Florida Public Service
Commission. The other one was: Have you ever been
against -- have you ever testified for any
regulated utility. It doesn't nec- --

MS. KAPLAN: I thought it was in Florida,
so --

CHAIRMAN GRAHAM: In Florida. It doesn't mean
in front of us. It could have been in front of
some other local case.

MS. KAPLAN: -- okay.

CHAIRMAN GRAHAM: Some other local court.
MS. KAPLAN: Okay. Thank you.

CHAIRMAN GRAHAM: That's the way I heard the question.

THE WITNESS: Would you repeat the question, please?

BY MR. MARCIL:

Q Yes, sir. You've never testified in any matters dealing with a regulated Florida electric utility, correct?

A That's correct.

Q And you've never testified relating to any Florida Power plant, correct?

A I -- that is correct.

Q You've never testified at any time in the state of Florida, correct?

MS. CSANK: Objection as to the relevance.

CHAIRMAN GRAHAM: I'll allow it.

THE WITNESS: That's correct.

BY MR. MARCIL:

Q Let's look at Page 36, Line 11 of your prefiled testimony. The question on Line -- actually, Line 13 of Page 36 states, "Have you created an alternative plan to FPL's Plan 3 that demonstrates a lower-cost way to use clean energy resources to meet FPL's reliability needs?"
Do you see that question?

A    Yes.

Q    And the first two sentences of the answer state: Yes, however, let me state -- or let me say at the outset that this is intended only as an illustrative example. And I do not claim to have thoroughly analyzed all of the reliability and feasibility aspects of this plan.

Do you see that?

A    Yes.

Q    So, this illustrative alternative plan that you've referenced, starting on Page 36 of your prefilled testimony, was not a fully-analyzed plan, correct?

A    It -- as I say, I have not thoroughly analyzed all the reliability and feasibility aspects of this plan. So, I would say the answer to your question is yes, it is not a fully-analyzed plan.

Q    And for instance, you did not analyze any of the capital costs in this illustrative alternative plan, right?

A    That's correct. My intention was not to have a plan in which I had analyzed any of those aspects. It was to illustrate a specific point that I'm pretty clear about in my testimony.

Q    And you did not do any analysis of operation
and maintenance costs in your illustrative alternative plan, correct?

A  That is correct.

Q  You did not do any analysis of any variable costs in your illustrative alternative plan.

A  That's correct.

Q  In fact, you did not do any cost analysis whatsoever in your illustrative alternative plan.

A  That's correct; however, the general tenor was later supported by a plan that FPL produced in response to a staff request. So, there was some related cost analysis done. I did not perform that analysis on this plan.

Q  And you did not use any independent information on capital costs for solar and storage in looking at your illustrative alternative plan, correct?

MS. CSANK: Objection. Ambiguous.

CHAIRMAN GRAHAM: Can you restate the question or --

MR. MARCIL: Yes.

BY MR. MARCIL:

Q  Outside of what you may have gotten from Florida Power & Light or looked at in discovery, you didn't look at any independent information of capital costs for solar and storage, correct?
A    That's not correct, no.

Q    Did you feel like you did a thorough analysis of capital costs for solar and storage?

MS. CSANK: Objection. Ambiguous.

A    What I'm trying to understand --

CHAIRMAN GRAHAM: I don't think it was --

A    -- about your question --

CHAIRMAN GRAHAM: I don't think it was ambiguous.

Go ahead and answer the question.

THE WITNESS: I'm not sure if you're asking me in general about my analysis of the cost of solar and storage or if you're asking me specifically with respect to this illustrative alternative plan.

BY MR. MARCIL:

Q    Specifically.

A    Specifically, with respect to the plan?

Q    Yes, sir.

A    In that case, I did not look at any specific cost information in putting this plan together.

Q    And you did not do a thorough analysis about whether the illustrative alternative plan is technically feasible, correct?

A    That's correct.

Q    And in this particular case, you've done no
specific calculations of the bill impacts of the Dania Beach Clean Energy Center, correct?

MR. LENOFF: Objection. Ambiguous.

CHAIRMAN GRAHAM: Can you -- I was a little lost on that question, too.

BY MR. MARCIL:

Q Yeah. So, you -- you've performed no specific calculations on what the impacts would be on customer bills from the Dania Beach Clean Energy Center, correct?

MS. CSANK: Ambiguous, still.

CHAIRMAN GRAHAM: I'll allow that question.

MS. CSANK: The time period is unclear.

CHAIRMAN GRAHAM: Can you narrow down time frame?

BY MR. MARCIL:

Q At any time.

A Are you referring to revenue requirements or, specifically, what the impact would be on the bills of individual customers?

Q Revenue requirements.

A I did review information on revenue requirements, but I did not perform independent analysis of what are the revenue-requirements impact of this plan, no.

Q And you've not done any independent analysis
of the load-generation balance information presented in FPL's petition for determination of need, correct?

A Are you still referring to the specific plan?

Q Yes.

A So, I'm -- I think you're taking this plan for much more than I intended it to be. It was merely an illustration. And no, I have not done any -- any technical or feasibility analysis of this plan.

Q And you've not independently conducted investigation of locations within Miami-Dade and Broward Counties that could support the location of an 880 -- 884-megawatt-generation plant, have you?

A No, I have not.

Q Now, sir, you've never, yourself, been responsible for developing a resource plan for a utility, correct?

A As I explained in my deposition, I have participated in that process, but I have not independently created or led that process, no.

Q And you've never -- it's never been your role to fully draft and analyze a resource plan, correct?

A That's correct.

Q And you've never developed a full resource plan as part of your expert testimony in any matter, correct?
MR. LENOFF: Objection. Asked and answered.
CHAIRMAN GRAHAM: I agree. Let's move on.

BY MR. MARCIL:
Q You've never been responsible for developing a transmission plan for a utility, correct?
A That's correct.

Q You've never been hired by a utility as a resource planner?
A That's correct.

Q You've never been hired by a utility as a transmission planner?

MS. CSANK: Objection as to relevance.
MR. MARCIL: Goes to his lack of experience.
CHAIRMAN GRAHAM: Let's move on. I think you're -- you've made your point.

BY MR. MARCIL:
Q Just one more. You've never been a systems-operation employee for a utility.
A That is correct.

Q Now, you've never been a Project Management Institute project-management professional in your experience, correct?

MS. CSANK: Objection, again, as to relevance.
CHAIRMAN GRAHAM: I'll allow it.

THE WITNESS: I'm afraid I don't -- I don't
1 understand your question.

2 BY MR. MARCIL:

3 Q Do you know what a Project Management
4 Institute project-management professional is?
5 A No.
6 Q You've never had any responsibilities for the
7 Florida Reliability Coordinating Council?
8 MS. CSANK: Objection. Ambiguous.
9 CHAIRMAN GRAHAM: I don't know if that's
10 ambiguous. Have you done any work for the Florida
11 Reliability -- the FRCC -- that's yes or no.
12 THE WITNESS: No.
13 CHAIRMAN GRAHAM: Thank you.
14 BY MR. MARCIL:

15 Q All right. Now, in this particular docket, sir, you believe that you did not have the tools or
16 information available to provide a fully-analyzed
17 resource plan, correct?
18 A I was not hired to produce a fully-analyzed
19 resource plan, nor would it be the burden on Sierra Club
20 or its experts to do that. So, I never even considered
21 it until we discussed it at length in my deposition, but
22 I agree that I do not have the tools or resources to do
23 that.
24 Q Because that requires personnel and staffing
that wouldn't be available to you, as somebody who works
for himself, correct?

CHAIRMAN GRAHAM: I think that was asked and
answered.

BY MR. MARCIL:

Q And developing a full resource plan requires
great expense, sir, correct?

MS. CSANK: Objection as to relevance.

CHAIRMAN GRAHAM: Let's move on.

BY MR. MARCIL:

Q In this case, sir, you were only paid $25,000
for your time spent prior to filing your prefiled
testimony, correct?

MS. CSANK: Again, objection to relevance.

CHAIRMAN GRAHAM: I agree.

BY MR. MARCIL:

Q In this particular case, you did not review
any information involving the Siemens transmission
model, correct?

A That's correct.

Q And you did not review any information
involving the UPLAN dispatch model.

A That is not correct.

Q You did not use that information in order to
come to your conclusions in your prefiled testimony.
A I don't entirely agree with that. It was information -- the information that was provided from the UPLAN model, I reviewed. The correction to my testimony that I just made, actually, was based on information from the UPLAN model. So, I don't -- I don't really agree with your -- with that assertion.

Q Do you know what the Siemens model is used for?

A Yes.

Q What?

A Are you referring to specifically in this case?

Q Or -- this case or in general. What is a Siemens model used for, generally?

A You're asking me about what a load-flow model is?

Q Sure.

A Shall I go on to explain dark matter as well as -- for the Chairman?

A load-flow model is used to test the ability of a transmission system or gener- -- a -- an electric system, including transmission, generation, load, other technical elements of the system to deliver power to load under a range different circumstances. It's used for a number of different purposes.
Mr. Sim has described contingency analysis. That's a very important part of the use of load-flow models to ensure that, under a range of circumstances, the system is robust and can maintain reliability, even in the case of outages of generation or transmission.

I can talk about them at great length. I love talking about load-flow models.

Q And in this case, you did not review any information involving the Siemens model because the Sierra Club did not sign a confidentiality agreement to get that information, correct?

MR. LENOFF: Objection. Asked and answered. He's already asked if he used the Siemens model.

CHAIRMAN GRAHAM: He was asked, but he didn't ask the reason why. I'll allow it.

THE WITNESS: I think there were two elements of that; one was that there was an issue, as I understand it, in terms of the confidentiality agreement; and second was that Florida Power & Light only made the model available for review at the company's designated site and in a form that I felt would not be useful for me.

So, I was asked -- Sierra Club asked me if I felt that issue was worth pursuing. And I felt,
just given the time available in this proceeding,
that it -- there wouldn't be a lot of benefit to my
being able to do that. I wouldn't be able to
actually run the model. I wouldn't be able to
fully analyze the results if I didn't have them in
electronic format on my computer.

So, my judgment, which Sierra Club accepted,
was that I would be willing to go forward without
actually directly reviewing that. And as a result,
I did not testify as to the validity or any
shortcomings, in the conclusions, based on that
model.

BY MR. MARCIL:

Q    Could you turn to Page 29, Line 11 of your
prefiled testimony, sir?
A    Yes.
Q    Okay. I'll -- I'll read the question into the
record. It says, "Earlier, you discussed the low cost
of solar and solar-plus-storage PPAs and stated that you
expect the prices for solar and storage resources to
continue to decline. What is your evidence in support
of this expectation?"

Do you see that?
A    Yes.
Q    And you write: Numerous observers in the
energy industry, the financial industry, and government
have noticed the precipitous decline in costs for these
resources and the likelihood that they will continue to
fall in the future.

Do you see that answer?

A    I used the word "noted," not "noticed," but
subject to that, I agree with your representation.

Q    The numerous observers you refer to, you --
you cite to a couple of opinion publications that are
appended to your prefiled testimony, correct?

A    Yes, I provide them as examples -- not an
exhaustive list, but they were some examples.

Q    Neither of them written by you, correct?

A    That's correct. I was citing outside sources.

Q    And in terms of economics, sir, you don't have
a degree in economics, correct?

A    That's correct.

Q    You've never taken a course in macroeconomics,

microeconomics, or econometrics?

A    I have taken a couple of classes in economics.
I don't think I took a class -- I've been out of school
for a while. I -- I worked closely with a -- an
econometrics professor on my Master's thesis. And so, I
feel I had a sort of a tutorial in econometrics, but I
don't believe I ever took a class specifically called
microeconomics or macroeconomics.  
Q    Or econometrics.  
A    Right.  
Q    And you've never been a professor at any college or university or held that title, at least, correct?  
A    That's correct.  
MS. CSANK:  Objection as to relevance.  
THE WITNESS:  I'm sorry.  
CHAIRMAN GRAHAM:  Go on.  
BY MR. MARCIL:  
Q    And sir, your degree was -- your Bachelor's Degree was not in economics, but in psychology, correct?  
A    That's correct.  
Q    And your Master's Degree from --  
MR. MURPHY:  Chairman, we -- we're supposed to -- if we're going to voir dire the witness on his expertise -- this was supposed to have been identified long ago.  
CHAIRMAN GRAHAM:  I agree.  
MR. MARCIL:  I -- I'll move on. I just had one -- one last question on that.  
Your Master's Degree from Tufts --  
MR. MURPHY:  I object to the last question.  
CHAIRMAN GRAHAM:  Move on.
MR. MARCIL: Okay.

BY MR. MARCIL:

Q    Instead, sir, what you do for a living, essentially -- 62 percent of all your billed hours have been to provide expert testimony and services, correct, since the year 2014?

A    I would say that -- I know the number you're referring to. And the way I characterized that was the percent of my hours, which were for cases, which could potentially lead to providing expert serv- -- testimony is one of the services I provide.

I would say that a hundred percent of my hours are related to providing expert services.

Q    Now, the citations you make in that particular section on Page 29 and Page 30 of your prefiled testimony -- both of those publications you cite have disclaimers in them, correct?

A    I believe that's correct, yes.

Q    In fact, the Moody's disclaimer says that the opinions included in that publication were not statements of current or historical fact?

A    I would have to look at it.

Q    And then the -- the other citation to the Lawrence Berkeley National Labs study states that the views and opinions of the authors are not -- do not
necessarily state or reflect those of the United States Government or any agency of the United States Government, correct?

A I'm familiar with these disclaimers, in general. I've looked at them in these particular papers; although, I did not memorize them. And I felt that I used the papers consistent with the disclaimers.

Q And in terms of the -- the pricing information that you provide on Page 29 and Page 30 -- could you take a look at Exhibit No. 67, I believe it was, that we marked as an exhibit?

A This would be the non-confidential?

CHAIRMAN GRAHAM: Yes. This is the one that says "Sierra Club website" on the title page.

THE WITNESS: Okay.

BY MR. MARCIL:

Q Okay. And sir, this is printed from the Sierra Club website, currently on their website. And on the third paragraph of Exhibit 67, it states, if you follow with me, "The low current market price of natural gas creates a risk that new natural-gas-powered plants will out-compete emerging forms of renewable energy in the electricity sector."

Do you see that?

A I do.
Q    And then it says, "The Sierra Club continues
to legally challenge new natural-gas plants and demand
requirements that limit their emissions of greenhouse
gasses."

Do you see that?

A    I do.

Q    And do you understand that to be Sierra Club's
position in this docket; that they're concerned that the
low current market price of natural gas creates the risk
that new natural-gas power plants will out-compete
emerging forms of renewable energy in the electric
sector?

MS. CSANK: Objection. That's compound,
argumentative, and narrative.

COMMISSIONER GRAHAM: Mary Anne?

MS. HELTON: Perhaps counsel for Power & Light
could restate the question?

MR. MARCIL: Yes, sir. Yeah -- yes.

BY MR. MARCIL:

Q    So, that first sentence that we read into the
record from the third paragraph of Exhibit 67 -- do you
see that?

A    Yes.

Q    You understood that Sierra Club had a concern
about the low current market price of natural gas,
correct?
A I have never seen this before. I don't regularly check Sierra Club's website. And I certainly don't use Sierra Club's materials as the basis of my testimony.

Q But you're not familiar with the fact that Sierra Club does have that concern about the low current market price of natural gas?
A No, I was not aware of that.

MR. MARCIL: Just a couple more questions.

If I could just have a moment.

CHAIRMAN GRAHAM: Sure.

MR. MARCIL: All right. Thank you,
Mr. Chairman.

BY MR. MARCIL:

Q Page 22, Line 19 of your prefilled testimony, sir --

A Yes.

Q And this is, at least in part, answering the question starting on Line 8, "Why did FPL choose to delay the retirement of Units 4 and 5 in Plans 4 and 5, if the continued operation of those units is not needed for reliability purposes?"

And on Line 19 through 21, you write,

"Moreover, there is no apparent reason why four years is
any kind of magic number except that is the amount of
time that would occur under FPL's proposed plan."

Do you see that?

A    Yes.

Q    And did you read anybody else's testimony in
this case, other than Dr. Sim, dealing with that issue
of the four years?

MR. LENOFF:  Objection.  Ambiguous.

CHAIRMAN GRAHAM:  I don't think so.  He can
answer the question.

MR. LENOFF:  Okay.

CHAIRMAN GRAHAM:  He asked him a simple
question -- if you've read anybody else's testimony
in this case, other than Dr. Sim's --

MR. LENOFF:  Is he referring --

CHAIRMAN GRAHAM:  -- that issue.

MR. LENOFF:  Can I -- is he referring to
before this -- and to inform this test-- --

Dr. Hausman's testimony or at any time during the
proceeding?

MR. MARCIL:  Any time.

THE WITNESS:  I have read both Dr. Sim's
testimony and the rebuttal testimony of both
Dr. Sim and Mr. Sanchez, all of which, in some way,
at least, address this issue.
BY MR. MARCIL:

Q    And then, prior to the -- filing your prefiled testimony, the only testimony you had obviously read was Dr. Sim's, correct?

A    That's the only testimony on this issue, yes.

Q    And were you familiar with -- before today -- of the testimony that we've heard that it would take four years to demolish the Lauderdale Units 4 and 5 and then construct the new Dania Beach Clean Energy Center?

A    May I -- may I amend my last response?

Q    Sure.

A    I had also listened to Dr. Sim's deposition and reviewed his deposition transcripts. So, that also -- those were other materials that I had reviewed in preparing this opinion.

And I apologize. I was thinking about that, so I don't -- I didn't catch your last question.

Q    So, you did not read anybody else's testimony or Ms. Kingston's prefiled testimony?

CHAIRMAN GRAHAM: That was asked and answered.

MR. MARCIL: But Ms. Kingston, specifically, I want to ask about.

CHAIRMAN GRAHAM: That was asked and answered.

MR. MARCIL: Okay. All right. Well, I have no further questions, then.
CHAIRMAN GRAHAM: Thank you.

Staff?

MR. MURPHY: Staff has just a few questions.

CHAIRMAN GRAHAM: Sure.

EXAMINATION

BY MR. MURPHY:

Q Hey, Dr. Hausman. I'm Charles Murphy with staff.

A Good afternoon.

Q Good afternoon.

You've testified that placing the Dania Beach plant in service in 2022 is not the most cost-effective approach; is that correct?

A Yes.

Q Does FPL placing Dania Beach in service in 2022 provide additional reliability to FPL compared to a year or two wait?

A Marginally, yes.

Q Could you explain "marginally"?

A As I described in my testimony, FPL has very-conservative reliability criteria. Those reliability criteria include a minimum 20-percent reserve margin. That reserve margin would give ample room for contingencies, for load-growth uncertainty.

If you add additional reliability, you have
diminishing returns -- I'm sorry. If you add additional
capacity, you have diminishing marginal returns in terms
of reliability.

    It could be that there is some additional
extreme event, a very-unlikely event that, you know, at
any level, you can imagine a scenario where there would
be some additional reliability benefit, but it would be
extremely small because FPL already has robust
reliability standards.

    It's far more likely that a loss of load would
be due to -- due to events that have absolutely nothing
to do with available capacity such as loss of
distribution lines or loss of -- I don't know -- some --
something on the distribution system is the most likely.

    So, they -- the additional benefit of shoring
up what's already an extremely-strong link in the chain
is -- is quite marginal.

Q    Okay. Is there a value to FPL's customers
resulting from this marginal additional reliability --
or take -- strike "marginal" -- additional
reliability -- whether it's marginal or not, whatever it
is, what -- is there a value to FPL's customers?
A    I don't believe there's a net benefit because
I believe the costs exceed -- exceed any small
reliability benefit.
Q: Well, I guess that's -- that's the question: How do we weigh the additional costs, which -- $20 million between the FPL 2 and the sensitivity run -- how do we weigh that against the additional reliability? I mean, that seems to be where those ideas intersect.

That's a complicated question. Are you with me?

A: Well, I -- I understand your question. And I think the answer is actually relatively straightforward. The way you weigh it is through proceedings where you set the reliability standards for the company. And that's -- that is the appropriate forum. And that's been done here in Florida.

I believe that it's actually come out with conservative reliability standards, but those are the standards that have been tested by the company, that are used in operations by Mr. Sanchez and his team every day, that have been approved by this Commission as being an appropriate balance between costs to customers and -- and reliability.

If FPL, then, goes and exceeds those standards, then FPL is erring on the side of charging customers more than that appropriate level of balance, in my opinion.

MR. MURPHY: That's all I have. Thank you.
CHAIRMAN GRAHAM: Before I go to the Commissioners, Mary Anne, do you have an answer to that question about time frame, three years or the 2008, as he said before, ten years?

MS. HELTON: Ms. Cibula and I did a very-cursory review of the case he cited, and we didn't see a time frame in there.

The case dealt with a medical malpractice issue, which is obviously not the type of issue that we have here. And he said that that case was cited in the comments for a civil-procedure rule, but when I look at the comments -- best I can figure, the part of the rule that it addressed is no longer in existence.

So, based on a very-cursory review, I'm not sure that I agree there's a bright line that he suggested.

CHAIRMAN GRAHAM: Mr. Lenoff?

MR. LENOFF: So, I would just maybe just seek to ask Mary Anne or just point to Section 1. -- or Rule -- Florida Rule of Civil Procedure, 1.280 -- or zero -- (B)(5) three -- like, three little "i"s, and then the number three.

MS. HELTON: If I'm going --

CHAIRMAN GRAHAM: Sure.
MS. HELTON: -- to the correct place that he's citing me to, it says that -- that says, "The identity of other cases within a reasonable time period in which the expert has testified by deposition or at trial."

So, I would say, as the tribunal, you have a discretion to determine what a reasonable time period is. I don't know that there's a bright line designated in the rule.

CHAIRMAN GRAHAM: Okay. So, we'll let the question stand.

Commissioners.

Commissioner Brown.

COMMISSIONER BROWN: I just have one question.

Thank you and welcome, Dr. Hausman --

THE WITNESS: Thank you.

COMMISSIONER BROWN: -- to the Florida Public Service Commission.

Question for you. During your opening statements, you said that delaying the unit would be less-costly; however, Dr. Sim earlier stated that delaying the unit one year, two year would bring about additional costs.

Could you explain a little bit more why delaying the unit, you believe, would be more-
costly to the customers?

THE WITNESS: Yes. Delaying the unit, per se -- so, just building the unit later -- Dr. Sim, I think, would agree -- has -- as he has -- he was describing in his testimony, the discounting issue -- in other words, just delaying that cost for customers overwhelms any small increase in the cost of the project due to inflation. So, by not making customers pay for this resource two years before they need it, that, in itself, saves them money.

So, the question is what else happens at the same time. A few things happen. One of them is the fuel penalty that the company has described. And that is why I changed my testimony at the -- I didn't -- I don't like to say I changed my testimony, but I offered a small change at the beginning of my -- of my time here today -- because I was recognizing that, indeed, there is a fuel penalty associated with waiting, and that is an additional cost to customers.

However, the bulk of the additional cost that's identified by FPL has to do with delaying the retirement of Lauderdale 4 and 5. There's a lot of costs associated with keeping those units in
operations that can be avoided by retiring them on
the current schedule.

My position is -- and what I have seen in the
record, including the rebuttal of Mr. Sim and
Mr. Sanchez, is that there is no rationale provided
why that four-year window makes any sense. It's
not like the reliability situation in 2022 is
affected by whether you happen to have Lauderdale
online in 2019 or not. It just doesn't make any
sense. And there was no testimony provided that
explained why that might make any difference.

Now, Mr. Sanchez -- well, I won't keep going
on that, but --

COMMISSIONER BROWN: So, do you think that
delaying Dania Beach by a year or two would be
less-costly, based on all of the circumstances
provided here and presented here today?

THE WITNESS: Yes, I believe that it would
and -- and that is confirmed by FPL's response to
a -- a recent staff interrogatory.

COMMISSIONER BROWN: Which one?

THE WITNESS: I believe it was No. 58, which
was the interrogatory which -- if that's --
that's -- is that -- can somebody confirm that for
me?
COMMISSIONER BROWN: Can you elaborate what the interrogatory is?

THE WITNESS: It was basically asking for a delay scenario; asking for FPL to run a scenario that would delay the Dania Beach unit until 2024, but not delay the retirement of Lauderdale. And that showed a savings relative to the company's plan -- preferred plan.

MR. LENOFF: Commissioner Brown, can I let you know, that is marked as Exhibit 52 on staff's comprehensive exhibit list, the interrogatory that Dr. Hausman --

COMMISSIONER BROWN: Thank -- thank you.

And what are the savings, in that exhibit? Do you have that in front of you?

THE WITNESS: No. I don't have the numbers in front of me, no. But it was -- it was calculated by the company. It was something on the order of $27 million, but I'm -- I'm not sure exactly what the number was.

COMMISSIONER BROWN: Okay. Thank you.

CHAIRMAN GRAHAM: Commissioner Clark, do you have any question?

COMMISSIONER CLARK: No, thank you.

CHAIRMAN GRAHAM: Okay. Redirect.
EXAMINATION

BY MS. KAPLAN:

Q    Can you identify what makes you qualified to offer the opinion you offered in this case, in your prefilled testimony, please?

A    I have been working on issues related to this for about 20 years. I have used many of the kinds of models that are used by FPL in this case, including load-flow models, planning models, dispatch models, cash-flow models. I have participated in a number of planning studies as an expert participant. I've reviewed -- you know, I -- I've just been working in this area in -- in a number of -- for a wide range of clients for 20 years.

I've even performed expert services for FPL Energy, for the unregulated affiliate of Florida Power & Light, resulting in a peer-reviewed paper that I co-authored with staff from FPL Energy.

I've worked for the -- I've been hired by the U.S. Department of Justice to apply my skills at modeling and interpreting electric utility systems.

So, this is just an area that I've worked on for a long time in a number of different -- in a number of different parts of the U.S.

Q    You mentioned your illustrative plan and that
it was for a specific purpose. Can you describe the purpose of providing that in your testimony?

A    The purpose of that plan was just to provide a contrast to the plan that was provided by FPL as Plan 3. I had certain criticisms of Plan 3 because I felt that it was designed not to meet specific reliability criteria, but to mimic the -- the Plan 2, the Dania Beach center.

And I wanted to illustrate that the company's reliability criteria could be met with a very different plan that only built resources close to the time they're needed and closer to the amount that's needed and that would be far-less costly.

As it turns out, staff requested that FPL produce a similar plan and analyze it, at least for cost in discovery. The plan that FPL produced, similarly to mine, is not what I would call a fully-analyzed plan. It's not an optimal plan because it was just, you know, the specific resource mix that staff asked for.

But it -- I was happy to see, because it confirmed my opinion, that once they did do the analysis, the cost analysis of that plan, in fact, it showed -- it showed that it met the reliability criteria at far-less cost than the company's Plan 3; many hundreds-of-millions of dollars, which is exactly the
term that I had used to describe how much could be saved
by designing a renewable-energy plan that was meant to
meet reliability criteria instead of to mimic a gas
plant.

Q You mentioned that you also provided export --
expert services to the Department of Justice.

Are there any other government entities that
have been clients of yours?

A Yes. I've worked for the -- the Vermont State
Legislature. I've worked for consumer advocates in a
number of different states. I work for the New Jersey
Consumer Advocate on an ongoing basis. I've worked for
the Iowa Consumer Advocate. I've worked for the
Illinois EPA -- I don't know if that's exactly what it's
called, but I've worked for a number of State and
Federal Government agencies.

Q How would you have approached the resource
planning differently than FPL did, for purposes of this
docket?

A I would have reviewed a -- a very different
set of plans. I think that Plan 1 that FPL reviewed
made sense. That's sort of the status-quo plan.

Plan 2 made sense, but even that was not based
on the use of a -- a planning model such as the EGEAS
model, E-G-E-A-S, which is a model that is commonly used
by utilities throughout the country and, in fact, is used regularly by FPL in its ten-year site-plan-development process. So, I would have looked at a range of different possible resource options using that model. I would have considered a wider range of possible future scenarios than the company considered. So, I think there are a number of shortcomings, most of which I've talked about -- or at least, the ones that I could sort of identify and clearly illustrate based on the information the company provided, I described in my testimony.

Q Can you clarify --

CHAIRMAN GRAHAM: Ms. -- Ms. Kaplan, I -- I hate to interrupt your redirect. Commissioner Clark has got a question. And since he's the new guy, I'll give him a little deference here.

(Laughter.)

MS. KAPLAN: Okay.

COMMISSIONER CLARK: Thank you.

Dr. Hausman, in your -- your testimony -- in the times that you have been an expert witness, is there any point in time where you've been asked to make the recommendation as to the fuel source for some other generation -- for generation for a company?
Do you -- do you do that final analysis to decide what type of generation a company should use? You get to that level?

THE WITNESS: I'm trying to think. I've worked on a wide range of different cases, but I don't think that specific question, as you phrase it, what fuel source should we use --

COMMISSIONER CLARK: Or what generating source, not necessarily fuel source. What gen- -- what type of generation should be used.

THE WITNESS: Again, that's -- that's sort of not the way planning is done. It's -- you take a number of different generation options and you put them in a model. They might include demand response, renewable energy, gas, coal -- whatever the different options are, and then generate -- and then let the model identify an optimal plan.

I've used those models. I've reviewed modeling studies using them, but I wouldn't say that I've made specific recommendations of what fuel source should be used, no.

COMMISSIONER CLARK: If the model showed that the fossil-fuel generation was the best asset to choose, would you be an advocate for that?

THE WITNESS: If the model -- I mean -- so, my
area of expertise is on the process. And if a modeling study were properly conducted with reasonable assumptions, and that were the outcome, then, I guess I would endorse that outcome.

In general, in my experience, there are a number of costs that are not included in that kind of a study. So, I haven't really encountered that situation, but I -- certainly, if that were based on reasonable assumptions, yes, I would endorse that outcome.

COMMISSIONER CLARK: Okay. Thank you.

CHAIRMAN GRAHAM: Ms. Kaplan, again, I apologize, but I wanted you to have a chance to redirect if you had to address his question. Continue, please.

BY MS. KAPLAN:

Q   Yeah, can you just clarify -- prior to Commissioner Clark's question, you had said that Plans 1 and 2 made sense in the context of the question. Can you clarify what you mean by that?

A   I mean that they were reasonable options to consider as part of an overall study. Plan 1 is the status quo; basically, we're not going to change anything.

And Plan 2 is looking at resource as -- at a
resource -- excuse me -- resource option based on available technology -- I presume, based on reasonable cost assumptions; although, I have not independently reviewed the cost assumptions.

So, it seems like, you know, a reasonable option to include in a resource-planning -- overall resource-planning analysis.

Q Would you have considered more plans than the three plans that FPL did in 2017?

A Yes.

MS. KAPLAN: No further questions.

CHAIRMAN GRAHAM: Okay. We have two documents. And you said we are not going to do with anything with the red -- the confidentiality one, 66?

MR. MARCIL: Yeah, that's correct.

CHAIRMAN GRAHAM: Okay. So, you have 67. And you want to enter that into the record?

MR. MARCIL: Yes, Mr. Chairman.

CHAIRMAN GRAHAM: Is there any objection to that?

MR. LENOFF: Yes, Mr. Chairman. First off, can we clarify whether -- are they withdrawing No. 66 --

CHAIRMAN GRAHAM: Yes.
MR. LENOFF: -- as an exhibit?

Okay. For No. 67, we do object. There's no foundation for that exhibit. Mr. Marcil did not have -- did not establish that the witness was -- you know, had any kind of familiarity with the exhibit. And you know, we don't know where it came from -- like, didn't -- based on, you know, Mr. Marcil's presentation.

CHAIRMAN GRAHAM: You don't know that this is the Sierra Club's website?

MR. LENOFF: I mean, Mr. Marcil, I don't think, has established that.

CHAIRMAN GRAHAM: Okay.

MR. MARCIL: All right. Yeah. It was actually identified in the response to interrogatory -- supplemental response, Interrogatory No. 29. They referred us to Sierra Club's website on natural gas. And I clicked on it, and that's how I found it.

So, y'all identified it from your website.

MS. CSANK: But respectfully, the copy that's present in this hearing room has not been authenticated any way. He had his opportunity to examine the witness and establish its authenticity. He failed to do so and, therefore, we object to its
admission.

CHAIRMAN GRAHAM: The witness was not familiar at all with it, the website, as from what I was told.

MS. CSANK: My understanding is the practice of this Commission is when there is a copy of a website --

CHAIRMAN GRAHAM: I -- I understand.

MS. CSANK: -- that -- that --

CHAIRMAN GRAHAM: I'm just saying the witness says he's not familiar with it, so he could not auth-- -- authenticate it.

MS. CSANK: Respectfully, Mr. Chairman, I've participated in a number of hearings --

CHAIRMAN GRAHAM: I'm agreeing with you.

MS. CSANK: Okay.

(Laughter.)

CHAIRMAN GRAHAM: So, only if you have anything else -- this is not going to be in, 67.

MR. MARCIL: Yeah, all I can say is I -- it was referenced to us in their answers to interrogatories. I clicked on it. They're not denying it came from their website. So, I don't see what the fight it.

CHAIRMAN GRAHAM: My understanding is -- and
I'll go to Mary Anne -- that it has to be authenticated by a witness.

Mary Anne? Mary Anne?

MS. CSANK: Sorry. This was --

MS. HELTON: Mr. Chairman, can -- can I say one thing --

CHAIRMAN GRAHAM: Sure.

MS. HELTON: -- before we even address whether this particular exhibit should be admitted or not?

CHAIRMAN GRAHAM: Uh-huh.

MS. HELTON: And that is, I think the much-better practice when an exhibit is being used for cross-examination purposes -- and if one of the parties has an objection to that exhibit that they plan to raise at the end when we're admitting exhibits, then they need to raise the objection at the time the exhibit is being used so that all parties are on notice and so that the party who is trying to use the exhibit can have some opportunity to try to do what he or she needs to do to get the exhibit admitted. And I don't recall the Sierra Club raising an objection at the time that counsel for Florida Power & Light was using the exhibit.

And it's also very confusing to have three different attorneys make objections when we're
dealing with one witness.

CHAIRMAN GRAHAM: My question is, because the witness that's on the stand could not authenticate the website, does that mean that we do not allow it in?

MS. CHRISTENSEN: Should not.

MS. HELTON: Typically, I would say yes, but if there was an interrogatory question that directs the answer to this website, then, seems to me that the website in question is fair game.

MR. DONALDSON: And if I can --

CHAIRMAN GRAHAM: Hold on a second.

So, if the website in question is fair game, how do they go about entering the website in question into the record?

MS. HELTON: Let me ask this question: Is the interrogatory that directs us to this particular website -- is that one of the interrogatories that was stipulated to by all of the parties?

MR. DONALDSON: No, I don't believe so.

MS. HELTON: No?

MR. DONALDSON: No.

MS. HELTON: Okay.

MR. DONALDSON: It's not in the record yet, but what we have is discovery that we sent out to
Sierra Club. This was one of the responses which directs us to the website. And there's an affiant that signed the response and affirmed the response to this interrogatory, along with other interrogatories that we sent.

So, this was actually a supplemental response that Sierra Club provided to FPL, which directed us to this website. And their affiant, Mr. Nachy Kanfer, who was also -- Nach -- Na-Kee -- I apologize -- Kanfer, which was their corporate rep, who we deposed, is the one who signed the affidavit for the supplemental response. So, it's been authenticated by Sierra Club.

And for Sierra Club to say now, that this website that they pointed us to is not an authentic representation of what we are presenting here today -- I don't see the objection.

It wasn't made contemporaneous to when it was being used, as -- as counsel -- your counsel has said -- and I believe it's proper for the Commission to give it the weight that it's due, based on the questions that were asked of the witness.

CHAIRMAN GRAHAM: Ms. Christensen?

MS. CHRISTENSEN: Thank you. Since it has --
the Commission has not been consistent on its practice of whether or not you need to make an objection contemporaneous with the use of the document.

I think it's clear from the record that this witness could not authenticate that this printout was, in fact, a printout from a website. He has no -- he's not provided the foundation for this document. And it's irrelevant whether or not there was information provided in discovery that has not been admitted into the record.

So, I would object to something that's not -- has a lack of foundation being admitted into the record at this time.

MS. CSANK: And furthermore, perhaps, clumsily, Mr. Chairman, what I was trying to articulate earlier was that I had raised an objection while the witness was being examined on this particular exhibit. I raised the objection at the time. He said he wasn't familiar with it. I didn't pursue further objections, but I did object contemparaneously.

And moreover, the issue is this is not, in fact -- the copy that's in the hearing room today, was not enclosed -- there was a URL to which we
pointed to FPL, but FPL's counsel failed to authenticate this particular copy, this particular exhibit that's in the hearing room. That's a source of confusion, I think, in the argument that FPL's counsel has presented to you.

MS. HELTON: Mr. Chairman --

CHAIRMAN GRAHAM: Hold on.

No, I am not -- I don't see me letting this Exhibit 67 in, but my question to you is: How did they go about getting the Sierra Club website into the record? Did what he say earlier get the Sierra Club's website into the record or how does -- I'm asking you for some feedback on that.

MS. HELTON: I -- can I first say I forgot that Ms. Csank had objected. So, that eases part of my problem.

They would have to authenticate the exhibit. And I had forgotten that he had said that he was not familiar with that particular page. So, if he has -- if he's not familiar with the page and cannot authenticate it -- and perhaps, this is a lesson to all of us that linking an answer to a particular URL is not necessarily the best way to answer an interrogatory question; that, if you have a particular document, that that document should be
attached.

CHAIRMAN GRAHAM: Back to my question, though. I don't have a prob-- I don't have a problem not letting 67 in, but how do they go about getting the Sierra Club website in or can they go about getting that done?

MS. HELTON: Well, they would have to find a witness who could authenticate the particular document. And I don't think that that's happened here.

MR. COX: Chairman, could I just say that it's a difficult situation here when they have no company representative as a witness in the case. That's why we went out to Cincinnati, Ohio, to depose a corporate representative.

When we asked for discovery on these types of questions, this is what they provided. They provided an affidavit attached to the response, a sworn affidavit that this is from their company. That's what we're providing today. I don't -- I don't know what else we could have done, I guess, is what I'm trying to say.

CHAIRMAN GRAHAM: Let's take a five-minute break, and I'll let my staff mill on this before I make a decision.
(Brief recess.)

CHAIRMAN GRAHAM: Mary Anne, you have the floor.

MS. HELTON: Yes, sir. I think there are ways to get websites into the record here at the Commission. And I think we have allowed copies of website pages to -- to be admitted into the record here.

When counsel for Florida Power & Light asked the witness if he was familiar with this particular website page, the witness said, no, he was not familiar. So, I think, at that point in time, we probably should have just moved on.

CHAIRMAN GRAHAM: Okay. Like I said, I've already said that we're not going to bring 67 in, but do you have a resolution as far as the affidavit that they have or -- because they had an affidavit -- af- -- whatever that word is.

MS. HELTON: Affidavit?

CHAIRMAN GRAHAM: Thank you -- from the Sierra Club with one of the interrogatories.

Now, my question is to you: Is there something that they can do -- and I guess I'm not trying to -- am I -- if I'm getting into their strategy, then I'll leave this one alone, but I
guess I'm trying to ask a question: How does one go about doing that, if you cannot get a witness to authenticate it?

MS. HELTON: Well, I guess he could have asked the witness to pull up the website as he was sitting on the -- on the -- on the stand and look at it, then. That would, perhaps, be one approach.

He could have -- Florida Power & Light could have offered up a witness that actually -- of their own that looked at the website and said, this is what the website says.

Or they could have subpoenaed the official from Sierra Club to talk to the person who, I'm assuming, was -- is -- was responsible for the website or language on the website and ask them about that.

CHAIRMAN GRAHAM: But -- so, that affidavit that they have does not do -- I mean, because you could subpoena somebody to come here or -- and I'm asking because I don't know the legal answer to this -- or you -- you send an affidavit saying, okay, we declare whatever I -- I include in this affidavit.

MS. HELTON: Well, the -- the affidavit was part of the discovery response. So, I guess,
there's -- in my mind, there's a distinction between answers to discovery and then relevant information that's admitted in the hearing.

And as I understand it, that particular discovery response -- and please correct me if I'm wrong, but the particular discovery response where -- to which that affidavit was attached was not part of the stipulated discovery that was admitted at the beginning of the proceeding.

CHAIRMAN GRAHAM: That's correct.

MS. HELTON: So, the parties could have asked for that to be stipulated to, to be admitted, or, if they had some other relevant question about that particular discovery response, they could have asked in the cross-examination que- -- question of the Sierra Club witness that maybe would have led them down that line.

CHAIRMAN GRAHAM: Okay. All right. Well, we already said that 66 and 67 are not in.

And we are done with Dr. Hausman.

Dr. Hausman, I see that you're from Auburndale, Massachusetts.

THE WITNESS: Auburndale, yes.

CHAIRMAN GRAHAM: Does that mean that you're a New England Patriots fan?
THE WITNESS: Can I take the Fifth Amendment in this venue?

COMMISSIONER BROWN: Yes.

CHAIRMAN GRAHAM: Well, I mean --

COMMISSIONER BROWN: Good answer.

CHAIRMAN GRAHAM: There's one way you can answer it. And there's the other way -- we strike your entire testimony, so --

(Laughter.)

CHAIRMAN GRAHAM: Sir --

THE WITNESS: I think you already said you were done with me. So, I'm just going to stand down.

CHAIRMAN GRAHAM: Sir, travel safe.

Okay. We're on rebuttal.

MS. CSANK: Mr. Chairman, just to confirm, may he be excused?

CHAIRMAN GRAHAM: Yes.

MS. CSANK: Thank you.

CHAIRMAN GRAHAM: I think I'm going to hold him here until Monday, but we'll let him go.

FP&L, Sanchez?

MR. DONALDSON: Yes, at this time, FPL calls Mr. Hector Sanchez.

CHAIRMAN GRAHAM: And before we continue -- I
have to apologize. Earlier FP&L asked about allowing more than one attorney to object to -- to an issue. And he is correct. I let it go the first time because she made the objection that I was getting ready to make myself. She just beat me to the button, but we do need to stay to whichever attorney is asking for the question for that witness to make those objections.

Okay. FP&L.

MR. DONALDSON: Thank you, Mr. Chairman. I don't believe Mr. Sanchez has been sworn.

CHAIRMAN GRAHAM: Mr. Sanchez, if I can get you to stand and raise your right hand.

Whereupon,

HECTOR SANCHEZ

was called as a witness, having been first duly sworn to speak the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

MR. DONALDSON: Thank you, Chair.

EXAMINATION

BY MR. DONALDSON:

Q Please state your name and business address for the record.

A My name is Hector Sanchez. My address is 4200 West Flagler Street, Miami, Florida 33154 -- 34.
Q 34. By whom are you employed and in what capacity?
A I am employed by Florida Power & Light. And I'm the director of system operations.

Q Have you prepared and caused to be filed 16 pages of rebuttal prefiled testimony in this proceeding on December 22nd of 2017?
A Yes, I have.

Q Do you have any further changes or revisions to your rebuttal prefiled testimony?
A No, I do not.

Q If I asked you the same questions contained within your rebuttal prefiled testimony, would your answers be the same?
A Yes, they would.

MR. DONALDSON: Chairman Graham, I would ask that Mr. Sanchez's rebuttal prefiled testimony be entered into the record as though read.

CHAIRMAN GRAHAM: We will enter Mr. Sanchez's prefiled rebuttal testimony into the record as though read.

(prefiled rebuttal testimony inserted into the record as though read.)
Q. Please state your name and business address.
A. My name is Hector J. Sanchez. My business address is Florida Power & Light Company, 4200 West Flagler Street, Miami, FL 33134.

Q. By whom are you employed and what is your position?
A. I am employed by Florida Power & Light Company (“FPL” or the “Company”) as the Director of System Operations.

Q. Please describe your duties and responsibilities in that position.
A. I am responsible for the real time operation of FPL’s Bulk Electric System (“BES” or “FPL System”). I also serve as the Florida Reliability Coordinating Council (“FRCC”) Reliability Coordinator, in an agent capacity for the FRCC. The FRCC is one of the eight regions in the United States (U.S.) under the jurisdiction of the North American Electric Reliability Corporation (“NERC”) for reliable operations of the BES.

Q. Please discuss the real time operation of the FPL system and the role of the FRCC Reliability Coordinator.
A. The real time operation of FPL’s BES requires coordinating, directing and controlling in a reliable and efficient manner the operations, planning, and real time dispatching of FPL’s generation, transmission, and substation facilities from FPL’s System Control Center to serve over 4.9 million FPL retail customer accounts, as well as its wholesale customers and its transmission service obligations. The FPL system, which is one of the largest in the U.S., is comprised of approximately 600 substations and almost 7,000 miles of
transmission lines ranging in voltage level from 69,000 to 500,000 volts and
over 26,000 MW of generation resources.

As the FRCC Reliability Coordinator, I coordinate and ensure the reliable real
time operation of over fifty utilities in the FRCC region as well as the
coordinated operations with other regions, including the Southeast Electric
Reliability Council to which the FRCC connects to. In essence, I keep track
of how every utility in the FRCC will be and is operating its BES and making
sure that the reliability of their system and the FRCC is not compromised, and
in the event that I determine it is, I have the authority to modify the operations
as I deem necessary.

Q. Please describe your educational background and professional
experience.

A. I received a Bachelor of Science degree in Electrical Engineering from the
University of Miami in December, 1985. In 1990, I completed the
Southeastern Electric Exchange's Course in Modern Power Systems Analysis
held at Auburn University. In 1991, I received a Master of Business
Administration degree from Florida International University. Additionally, I
have completed various other power system courses offered by Power
Technology Incorporated (“PTI”), courses offered internally at FPL, and
business and management courses at Columbia University.
Since joining FPL in 1986, I have held positions of increasing responsibility. My first positions at FPL were as an Applications Engineer in the Power Systems Control group and as an Engineer in the Protection and Control department. In 1989, I joined the System Operations group in the area of operations planning where I was responsible for performing technical analyses associated with short-term planning and operation of the FPL system. In 1994, I became a Transmission Business Manager where I was responsible for issues associated with the provision of transmission service. Subsequent to that assignment, in March 2000, I held the position responsible for the planning of the bulk transmission system and interconnections. In January of 2006, I became responsible for the operation and dispatch on a real time basis of the FPL system. Later that same year, I became the Director of Transmission Planning and Services in which I was responsible for matters relating to the provision of transmission services on the FPL system and for planning the expansion of the FPL transmission system to meet the requirements of FPL’s retail customers, wholesale customers, and its transmission service obligations. In 2009, I assumed my current position as Director of System Operations.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to rebut Sierra Club’s witness Dr. Hausman’s claim on Page 22 of his direct testimony that “…there is no apparent reason why four years is any kind of ‘magic number,’….” for the time period from retirement and demolition of Lauderdale Units 4 and 5 to the commercial
operation date of the Dania Beach Clean Energy Center (“DBEC Unit 7”) and
to explain how he fails with this contention to take into account important
operational considerations for the FPL system. My testimony provides an
operations and reliability perspective backed by 31 years of experience for a
critical dense urban region of Florida. Specifically, Dr. Hausman does not
consider a “real life” operations perspective on why it is critical that the
DBEC Unit 7 be constructed and commissioned within the demolition and
construction period of four years following the retirement of Lauderdale Units
4 and 5 beginning by late-2018. In regards to the resource planning analysis,
and in particular to the delay scenario proposed by Dr. Hausman, I provided
FPL Witness Sim specific guidance regarding the importance of constructing
the DBEC Unit 7 with the present proposed schedule. Constructing and
commissioning the DBEC Unit 7 within this four-year schedule minimizes the
operational risk to the FPL System in providing reliable service to customers
in Miami-Dade and Broward Counties (the “Southeastern Florida region”),
one of the largest metropolitan areas in the U.S.

Q. Please summarize your testimony.

A. My testimony provides a discussion of the operational realities and risks that
are faced in the Southeastern Florida region. These operational realities
require a robust area reliability margin that will be greatly assisted by placing
in-service the DBEC Unit 7 by the soonest practicable date, following the
CSQ facilities going in-service and the retirement of the existing Lauderdale
Units 4 and 5, such that the risk of being unable to provide reliable service to FPL’s customers is minimized.

Q. Please describe the Southeastern Florida region that is a focus of this docket and how FPL’s customers in this area are served.

A. The Southeastern Florida region is comprised of Miami-Dade and Broward Counties. It is essentially an “electrical peninsula” where over 40% of FPL’s total 4.9 million customer accounts are served from a combination of generation resources within this region and by finite transfer capability through transmission and substation facilities from outside this region. The amount of generation in the Southeastern Florida region is also finite, totaling approximately 5,280 MW, after the Lauderdale Units 4 and 5 are retired in late 2018. The capability to import power into the area via transmission and substation facilities is also finite; this capability is forecasted to be 7,200 MW when the CSQ transmission facilities are placed in-service and the Lauderdale Units are retired. As such, the load serving capability, presuming all generation resources, transmission, and substation facilities are in-service and performing as designed, is approximately 12,480 MW.

FPL’s service obligations in the Southeastern Florida region include not only FPL’s retail load, but also Transmission Service obligations (City of Homestead, Florida Keys Electric Cooperative, and the City of Key West)

---

1 5,280 MW is the sum of the output of the following generation units: Turkey Point (TP) 3 and 4 totaling 1,672 MW; TP 5 totaling 1,147 MW; Lauderdale 6 CTs totaling 1,155 MW; Port Everglades (PE) totaling 1,237 MW; and GTs totaling 69 MW.
which are forecasted in year 2022 to be approximately 10,789 MW\(^2\). But in reality, high loads or loads that exceed 90% of the annual forecasted summer peak, do not occur on just one day for one hour in August as is typically seen in a planning reserve margin calculations. For the past three summers from May 15\(^{th}\) through September 15\(^{th}\) (124 days which is considered the high load season for real time operations), FPL’s load exceeded 90% of the annual summer forecasted peak on 37 to 56 days of the total days within this time frame. Furthermore, FPL’s loads exceeded 90% of the peak load forecast on each of those days for an average of almost six hours from approximately 1 PM to 7 PM. As such, FPL is exposed to prolonged periods of high loads, where operational risk is much higher, for approximately one third of the year, and during those days when the load exceeded 90% of the annual summer forecasted peak for one quarter of the day, as evidenced by the up to 354 hours (product of 56 days and 6 hours per day) per year in each of the years from 2015 through 2017.

Q. **What do you consider when managing the real time operations of the load serving capability and service obligations that you discuss?**

A. I take into account the forecasted load, available transmission, substation, and generation resources. Additionally, I consider operational situations that may be applicable based on my years of experience operating the system and

---

\(^2\) FPL uses for Transmission Planning and Operations purposes a “P80” load forecast instead of the “P50” that is used by Resource Planning in assessments. The P80 for the Southeastern Florida region is approximately 200 MW higher than the P50. The rationale for using the P80 is to account for non-coincidence of loads (e.g., hotter temperatures in the Southeastern Florida region as compared to the rest of the state) and the need to have facilities in place that can meet such higher load. Note that a P80 still provides a 20% risk that the loads will be even higher.
mitigation measures. To help clarify my thinking, as part of this process with respect to Southeastern Florida region, I make use of what I term an “area” reliability margin calculation, which combines aspects of a reserve margin calculation and load flow analysis. For example, based on the projected load serving capability and service obligations for 2022, without DBEC Unit 7, FPL will have an area reliability margin at the forecasted peak load of approximately 1,691 MW for the Southeastern Florida region. The area reliability margin calculation, as it is used in the context for the specifics associated with the Southeastern Florida region, is different from a planning reserve margin calculation or a load flow analysis. Maintaining a robust area reliability margin for this area is important since it provides the critical support for the combination of unexpected situations that are common in the operations timeframe and more extreme situations such as hurricanes and wild fires.

Q. Please discuss potential events occurring in isolation or combination that can occur during the operations time frame.

A. On any given day, and sometimes for multiple days, during the high load season (May 15th to September 15th), generation resources such as Turkey Point (TP) Units 3, 4, or 5, or Port Everglades (PE) Unit 5 (or a combination thereof) may be unavailable. In accordance with NERC Reliability Standards, FPL must be prepared to sustain the sudden loss of any generation resource or transmission or substation facility at any time, while continuing to serve load reliably with all facilities within applicable ratings and voltages within limits.
Moreover, within 30 minutes after the loss of a generation resource or transmission or substation facility, FPL must replace this amount of generation and posture the system for the next contingency, such that if it were to occur, customers would continue to be served reliably. Additionally, there are strict voltage limits at the Turkey Point Nuclear Switchyard that are Nuclear Regulatory Commission requirements that must be adhered to on a pre-contingency basis. The bottom line is that as the operator of one of the largest electric systems in the U.S., comprised of one of the largest metropolitan areas in the U.S., FPL must have the resources needed to be able to reliably serve FPL’s customers. This includes serving customers reliably with the potential for multiple resources - generation, transmission, and substation facilities - being unavailable on an unplanned and prolonged basis, while always being ready to have any other generation resource or transmission or substation facility trip out of service and continue to serve customers reliably.

For example, in 2022 when the area reliability margin for the Southeastern Florida region is projected to be 1,691 MW with all generation resources (without DBEC Unit 7) and import capability available, if PE5 (with a generation capacity of 1,237 MW) was to experience an unplanned outage during peak load summer conditions, the real time area reliability margin for this area would be 454 MW. A margin of 454 MW for the Southeastern Florida region would entail operating the FPL system without sufficient load
serving capability to absorb the contingency of TP3, TP4, and/or TP5 also failing, and potentially, depending on the specific system conditions, possibly certain 500,000 volts equipment, also becoming unavailable. Multiple variations of the scenario described above are possible, which is indicative of the need for a more robust area reliability margin for the Southeastern Florida region, which will be greatly assisted by DBEC Unit 7.

Q. **How will the area reliability margin change if the DBEC Unit 7 is not placed in service as you move forward in time?**

A. By 2025, the area reliability margin for the Southeastern Florida region will decrease to 1,282 MW as the load continues to increase. This amount of area reliability margin is barely enough to cover the loss of PE5, let alone, any multiple unit outages. Regardless of which of the units in the Southeastern Florida region are unavailable, any multiple unit outages would result in FPL being unable to supply the entire load required by customers. This does not even account for the potential unavailability of transmission and/or substation facilities. This 2025 scenario is not a good situation to be in operationally because the risk of shedding firm load (i.e., turning lights off) greatly increases in a scenario where more than one event occurs due to the reduced area reliability margin. I do not see where Dr. Hausman appreciates or recognizes this risk.
Q. Is it possible to have multiple units experience an unplanned outage at the same time?

A. Yes, absolutely. Not only is it possible, but unfortunately it sometimes occurs at the most inopportune time. For example, during the cold weather condition in the early morning hours 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 generation outages. Additionally, just two hours after experiencing that winter peak, a TP nuclear unit at full output of approximately 750 MW experienced a sudden and unplanned outage that, if it were to have occurred just 2-3 hours prior, FPL would have likely been shedding firm customer load.

Q. Please provide more details on the more extreme situations that you previously mentioned?

A. Extreme and unexpected situations such as wild fires and hurricanes can pose a significant risk to serving customers in the Southeastern Florida region. Such occurrences cannot be addressed with traditional planning reserve margin calculations. On multiple occasions during my tenure leading System Operations, wild fires have occurred in the vicinity of the corridors that contain multiple transmission lines that bring power into this region. During these situations, FPL must posture its system for the loss of one or more of these multiple transmission facilities while continuing to serve its customers. This includes operating at full output all available generation resources in the Southeastern Florida region, such that if multiple transmission facilities trip
due to the wild fire resulting in reduced load serving capability, FPL would reduce the chances of shedding firm customer load.

In fact, and as evidence of the criticality of this scenario, FPL’s 2017 Annual Capacity Dry Run held last month simulated a fire in one of the corridors containing transmission lines that import power into the Southeastern Florida region. In this particular scenario, because the time frame simulated was during a high load period, the projected area reliability margin was insufficient, and FPL would have needed to shed tens of thousands of firm load customers for multiple hours to avoid a cascading instability situation or blackout in the region. I note that this result was projected even with the full 884 MW capacity of Lauderdale Units 4 and 5 in-service. Undoubtedly, the DBEC Unit 7 being brought in-service as soon as possible after the retirement of Lauderdale 4 and 5 would mitigate much of the need to perform firm load shedding in a future similar scenario and demonstrates that, all else being equal, it is better to have generation resources in the region where transmission import capability is heavily relied upon.

Hurricanes pose a similar threat to Southeastern Florida. For example, during Hurricane Matthew last year, FPL prepared for a scenario in which that storm would have impacted the area of Palm Beach County and northward. This scenario would have left the Southeastern Florida region unscathed, but could have resulted in damage to generation resources and transmission facilities
that contribute to the import of power into the Southeastern Florida region. In such a scenario, having additional generation resources in Southeastern Florida would obviously be advantageous in mitigating the risk.

Q. Is there any other point you would like to discuss regarding the area reliability margin?

A. Yes. When DBEC Unit 7 comes on line, it improves the area reliability margin for the Southeastern Florida region in two ways. Specifically, DBEC Unit 7 provides an additional 1,563 MW of area reliability margin comprised of 1,163 MW from the DBEC Unit 7 and approximately 400 MW more import transfer capability. The 400 MW of import transfer capability results from where and how the DBEC is connected to the FPL system and the resulting impacts on power flows on the transmission and substation system.3

This increase in 2022, when the DBEC Unit 7 is placed in service, results in an area reliability margin for the Southeastern Florida region of 3,254 MW. This is the magnitude of area reliability margin that I consider sufficient for one of the major metropolitan areas of the U.S.

Q. Why are you concerned with Dr. Hausman’s delay discussion on pp. 21-23 of his testimony in this proceeding?

A. Dr. Hausman implies that delaying the in-service date of the DBEC Unit 7 by several years should be considered while keeping the 2018 retirement date as planned for Lauderdale Units 4 and 5. I disagree. Delaying the in-service

---

3 The CSQ line will provide an increase in import capability into the Southeastern Florida region of approximately 1,200 MW assuming that either Lauderdale 4 & 5 or DBEC Unit 7 is in operation. With the retirement of the Lauderdale units, and no DBEC Unit 7, this increase in import capability is only about 800 MW. The import capability returns to 1,200 MW as soon as DBEC Unit 7 goes into service.
date of DBEC Unit 7 after retiring Lauderdale Units 4 and 5 would increase operational and reliability risk to Southeast Florida at a time when we are focused on reducing risk to the region. As I discuss above, it is imperative that a robust area reliability margin be maintained for the Southeastern Florida region. This region is one of the major metropolitan centers of the U.S. which continues to grow at a relatively fast pace as seen by the skyline from downtown Miami northward. Additionally, the delaying of the DBEC Unit 7 to after 2022 and, after retiring the 884 MW from the existing Lauderdale Units in 2018, not only reduces the area reliability margin by the 884 MW that would be unavailable from the existing Lauderdale generation resources, and delays the additional 400 MW of transmission import capability that will occur once DBEC Unit 7 goes in-service, but does so in the face of projected load growth during the years 2023 to 2025 in the Southeastern Florida region. This projected load growth further reduces the area reliability margin by 409 MW. As such, the sooner the DBEC Unit 7 project is placed in service the less the risk there is to the Southeastern Florida region, especially in the latter years. Combinations of the high loads during prolonged periods of the year, unplanned generation, transmission, and/or substation outages, exacerbated by any delay with the in-service date of the DBEC Unit 7, will result in increased operational challenges and risks to serving customers in the Southeastern Florida region. Constructing DBEC Unit 7 as soon as practicable decreases this risk to the Southeastern Florida region.
Q. Dr. Hausman suggests that additional demand response (“DR”) resources, at least in part, could be substituted for DBEC Unit 7. Please discuss how you consider FPL’s residential and commercial/industrial load management capabilities in Southeastern Florida region in your analysis of the available area reliability margin.

A. In the event that the area reliability margin for Southeastern Florida region is exhausted, FPL would use its DR capabilities to reduce the load in this area. It is important to note that DR is not utilized for economic purposes, but solely for reliability as a resource when all other generation resources and transmission imports have been exhausted. However, using DR for reliability reasons is different than using operating generation for reliability reasons for at least two reasons. First, the seriousness of using DR for reliability is evidenced by the fact that NERC Reliability Standard EOP-002 requires that in the event that FPL utilizes DR in such a context, it must declare itself to the FRCC Reliability Coordinator an Energy Deficient Entity, and in turn, the FRCC Reliability Coordinator would declare an Energy Emergency Alert Level 2, the second highest of three levels. Such declarations must not be taken lightly since they are indicative of serious operational reliability issues. It is clearly within the realm of possibilities that repeated use of such declarations would not be viewed favorably.

Second, there is the issue of how long FPL’s system operators may need relief from extreme loads and/or problems with generation, transmission, and
substation facilities. In the January 2010 situation previously discussed, FPL was operating all available generation, including its peaking units, around the clock for approximately 24 hours. DBEC Unit 7 will be capable of operating around the clock in such a circumstance. Conversely, as FPL witness Sim has discussed with me previously, there is a risk of losing DR capability after DR is operated repeatedly, and for multiple hours in each instance, due to participating DR customers dropping out of the programs as a result of experiencing the effects of their load being controlled repeatedly and for prolonged periods of time.

Q. Does the January 2010 situation offer other insight into Dr. Hausman’s preference for solar and storage instead of DBEC Unit 7?

A. Yes. Of the resource options discussed in this docket, DBEC Unit 7 is uniquely capable of: (i) providing capacity and energy at FPL’s winter peak hour of 6 AM to 7 AM, and (ii) operating continuously around the clock for 24 hours.

Q. Does this conclude your testimony?

A. Yes.
BY MR. DONALDSON:

Q    And am I correct, Mr. Sanchez, that you do not have any exhibits attached to your rebuttal prefiled testimony?

A    That is correct.

Q    All right. Would you please provide a summary of your rebuttal prefiled testimony to the Commission.

A    Yes, I will.

Good afternoon, Chairman Graham and Commissioners. My name is Hector Sanchez. I am -- I am the director of system operations for Florida Power & Light, one of the major utilities in the United States. I am responsible for the real-time operations of the FPL system.

I also serve as Florida Reliability Coordinating Council, or typically referred to as the FRCC, reliability coordinator in an agent capacity for the FRCC. The FRCC is one of the eight regions in the United States under the jurisdiction of the North American Reliability Corporation, typically referred to as the -- as NERC, or N-E-R-C, for reliable operations of the bulk electric system.

The real-time operation of the FPL system requires coordination of the operations, planning, and minute-to-minute real-time dispatching of FPL's
As the FRCC reliability coordinator, I ensure the reliable operations of over 50 utilities in the FRCC, as well as the coordinated operations with other regions, including the Southeast Electric Reliability Council, to which the FRCC connects to. My team and I have the privilege of having the job to keep the lights on in Florida.

I have been in my current role as director of system operations for over seven years and, as of two weeks ago, celebrated 32 years of my career with FPL. In addition to my formal education and continuing education, during the course of my career, during these 32 years, I have done just about everything you can do in my field and have learned much in the process.

Altogether, this experience situates me in a position to provide guidance as to how FPL plans to serve its customers since I must then operate what is planned, and manage operational reliability risks for over 4.9 million customers.

I am here today to refute Witness Hausman's assertion regarding the four-year delay and support, from an operational perspective, the decision to
modernize the existing Fort Lauderdale plant, with the
construction of the Dania Beach Energy Center as soon as
practical.

The southeastern-Florida region -- one of the
largest metropolitan areas in the United States, with a
load that is almost as large as that of New -- of the
New York City area, is an area where a regional
imbalance is being enhanced by implementation of this
project, in short order.

Unlike other regions in the United States,
Florida is a peninsula, with the southeastern region of
Florida being at the end of that peninsula. Florida,
and especially the southeastern region, doesn't have the
benefit of multiple transmission connections to other
parts of the country as others -- areas do to provide
energy assistance during times of need.

This unique geography of the southeastern-
Florida region peninsula with one of the largest
metropolitan areas in the United States, at the end of a
300-mile peninsula, make it a very-challenging area to
provide reliable service.

During FPL's proposed four-year construction
period of time between 2018 and 2022, prior to the Dania
Beach Energy Center being placed in service, the
Corbett-Sugar-Quarry line provides for a limited amount
of time to import additional power to the southeastern-
Florida region to bridge the retirement of Lauderdale
and the construction of the Dania Beach Energy Center,
even as the load in southeast Florida continues to
increase.

Delaying the in-service date beyond 2022 of
the Dania Beach Energy Center increases the risk of a
reliability issue in the southeast-Florida area,
specifically the ability to serve customers.

The risk that I refer to includes many
possibilities such as unplanned generation and/or
transmission issues, or extreme events such as wildfires
and hurricanes. All of these types of events have
occurred in the past.

The Dania Beach Energy Center is unique in
that it enhances the ability to address these risks by
providing an operational tool to manage the type of
events that occur on the system.

Based on the retirement date of 2018, it is
imperative that the Dania Beach Energy Center go in
service by 2022 to mitigate the risk to the
southeastern-Florida region.

The Dania Beach Energy Center is an investment
that will provide operational benefits to the
southeastern-Florida region -- one of the largest
metropolitan areas in the -- in the United States -- the level of robust reliability that it merits for many years to come after 2022.

Thank you.

CHAIRMAN GRAHAM: Thank you, sir.

MR. DONALDSON: Thank you, Mr. Sanchez.

I tender the witness for cross.

CHAIRMAN GRAHAM: Sierra Club?

MR. LENOFF: Thank you, Mr. Chairman.

EXAMINATION

BY MR. LENOFF:

Q Mr. Sanchez, this will not be the first time that you've given a statement about this proceeding, correct?

A That's correct.

Q You -- your deposition was taken on January 8th, 2018?

A Yes, it has.

Q And you're also aware that Dr. Sim has been deposed for this proceeding, correct?

A Yes, I am.

Q And -- but you are not familiar with the statutory factors for a need determination that are set out in Section 403.519, Florida Statutes; is that correct?
Q    Nor are you familiar with the order 
establishing issues for this docket; isn't that correct?
A    That is correct.
Q    And you were not familiar with the order 
establishing procedure during your deposition on 
January 8th.
A    That is correct.
Q    And regarding the subjects on which you 
testify in this proceeding, you have never authored or 
co-authored any publication in a peer-reviewed journal.
A    That is correct.
Q    And you've never testified against the need 
for generation proposed by FPL?
A    I have never testified against the need of -- 
by -- proposed by FPL.
Q    Nor have you testified against the need for 
generation proposed by any utility.
A    No, I have not.
Q    And you are familiar with -- or you have a 
familiarity with solar PV resources, yes?
A    Yes, I am.
Q    And you've never testified that there is an 
affirmative need for solar resources; is that correct?
A    That is correct.
And in fact, for this docket, you never considered the potential to increase the generation within southeast Florida using solar PV resources; is that correct?

That is correct.

Nor did you consider for this docket the reliability functions of additional or existing energy efficiency in southeast Florida; is that correct?

That is correct.

And the only resource you considered for this docket is the Dania Beach Energy Center, correct?

I wouldn't say that. My job is to consider the resources. I'm here to testify why it's important to get the Dania Beach Energy Center --

It --

online by 2022, not to determine which resources should be included.

So, as part of your analysis, the only -- or in your analysis, the only resource that you considered was the Dania Beach Energy Center? Is --

The only energy resource at issue for me to consider was the Dania Beach Energy Center.

So, the answer to my question is yes; is that correct?

I guess I don't understand your question.
Q In your analysis, you considered a -- a
generation resource; is that correct?
A In my analysis, I considered the effect of
Dania Beach Energy Center -- of whether it would come in
in 2022 or at a later date.
Q Did you consider any other resources?
A No. I was not asked to consider any other
resource.
Q And it would have been FPL that would have
asked you to consider other resources?
A That is correct.
Q Okay. And just so we're clear on some terms,
when I refer to southeast Florida, I'm using that term
in the same way that it's used in your testimony; and
that is to refer to Miami-Dade and Broward County.
Okay?
A That's correct.
Q And when I say, DBEC, I'm referring to the
Dania Beach Energy Center that FPL proposes to place in
service. Okay?
A Understood.
Q And did the data used for your analysis come
from FPL's legal counsel?
A I'm sorry. If you could, repeat the question,
please.
Q    Did the data used for your analysis come from FPL's legal counsel?

A    No, it did not.

MR. LENOFF: So, I would like to use an exhibit, please.

Mr. Chairman, can I mark this exhibit for identification as, I believe, No. 68?

CHAIRMAN GRAHAM: Yes, that's correct.

MR. LENOFF: Thank you.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: The title of this would be Florida Power & Light's response to Sierra Club's Interrogatory No. 60.

MR. LENOFF: I think -- could we say Attachment 1 of FPL's response to Sierra --

CHAIRMAN GRAHAM: Sounds good. We'll add that.

MR. LENOFF: Thank you, Mr. Chairman.

(Whereupon, Exhibit No. 68 was marked for identification.)

(Transcript continues in sequence in Volume 3.)
CERTIFICATE OF REPORTER

STATE OF FLORIDA )
COUNTY OF LEON )

I, ANDREA KOMARIDIS, Court Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 22nd day of January, 2018.

____________________________
ANDREA KOMARIDIS
NOTARY PUBLIC
COMMISSION #GG060963
EXPIRES February 9, 2021