

BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

PETITION FOR RATE INCREASE BY  
FLORIDA POWER & LIGHT COMPANY.  
\_\_\_\_\_ / DOCKET NO. 160021-EI

PETITION FOR APPROVAL OF  
2016-2018 STORM HARDENING PLAN  
BY FLORIDA POWER & LIGHT  
COMPANY.  
\_\_\_\_\_ / DOCKET NO. 160061-EI

2016 DEPRECIATION AND  
DISMANTLEMENT STUDY BY,  
FLORIDA POWER & LIGHT COMPANY.  
\_\_\_\_\_ / DOCKET NO. 160062-EI

PETITION FOR LIMITED  
PROCEEDING TO MODIFY AND  
CONTINUE INCENTIVE MECHANISM,  
BY FLORIDA POWER & LIGHT  
COMPANY.  
\_\_\_\_\_ / DOCKET NO. 160088-EI

VOLUME 10

(Pages 1022 through 1239)

PROCEEDINGS: HEARING

COMMISSIONERS  
PARTICIPATING: CHAIRMAN JULIE I. BROWN  
COMMISSIONER LISA POLAK EDGAR  
COMMISSIONER ART GRAHAM  
COMMISSIONER RONALD A. BRISÉ  
COMMISSIONER JIMMY PATRONIS

DATE: Wednesday, August 24, 2016

TIME: Commenced at 9:00 a.m.  
Concluded at 11:40 a.m.

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

REPORTED BY: LINDA BOLES, CRR, RPR  
Official FPSC Reporter  
(850) 413-6734

APPEARANCES: (As heretofore noted.)

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**P R O C E E D I N G S**

**CHAIRMAN BROWN:** Everybody refreshed? Good.

So I want to share with you all a personal goal of mine. That personal goal is to get through five witnesses today, and what that means is obviously we will be staying past my originally scheduled evening stopping point, which was around 7:00 really. So what I anticipate, and I apologize for modifying the schedule for you all, but given our very tight time constraints and the amount of witnesses that we still have, I believe we're going to have to motor through a little bit later than anticipated. So we'll be taking a 30-minute dinner break later this evening. We will be taking breaks every two to three hours, roughly 10 to 15 minutes. But I just wanted to give you all a heads-up. It is an ambitious goal, so I wanted to share it with you to hopefully embrace that goal as well.

We are reconvening this hearing.

Commission Patronis has a comment.

**COMMISSIONER PATRONIS:** More just a question.

If we get through the five early, does that mean we get to leave early too?

**MR. LITCHFIELD:** Second the motion.

**CHAIRMAN BROWN:** Absolutely. Thank you.

Thank you for that.

1 All right. Any questions before we proceed?

2 **MR. LITCHFIELD:** Madam Chair, FPL has one  
3 minor item before we proceed.

4 **CHAIRMAN BROWN:** Sure.

5 **MR. LITCHFIELD:** Yesterday when Ms. Santos was  
6 on the stand, she received a couple of questions from  
7 Commissioner Brisé to which she didn't have instant  
8 recall. We are prepared -- the questions specifically,  
9 I think, related to the amount of time that the call  
10 center took to contact a supervisor and the percentage  
11 of calls that were actually handled or wound up being  
12 handled by a supervisor. And we're prepared to provide  
13 that as a late-filed exhibit, if Chairman Brisé --  
14 excuse me, former Chairman Commissioner, current  
15 Commissioner Brisé would like to have that information.

16 **CHAIRMAN BROWN:** Commissioner Brisé.

17 **COMMISSIONER BRISÉ:** Yeah. From my  
18 perspective, I think that's an important metric for me  
19 to look at.

20 **CHAIRMAN BROWN:** Any objection? I know  
21 Mr. Moyle has one.

22 **MR. MOYLE:** So, yeah, the old late-filed  
23 exhibit one. So I guess what I would just ask is that  
24 it be provided to us in advance and let us look at it  
25 and see what it says. And we, you know, may or may not

1 have an objection.

2 **MR. LITCHFIELD:** That's certainly acceptable.

3 **CHAIRMAN BROWN:** That sounds reasonable.

4 All right. We are on Mr. Reed (sic).

5 Mr. Reed (sic) was sworn in yesterday, and FIPUG has --

6 **MR. DONALDSON:** Mr. Goldstein.

7 **CHAIRMAN BROWN:** God, it's only 9:00 o'clock  
8 too.

9 **THE WITNESS:** But I'll respond to Reed also.

10 **CHAIRMAN BROWN:** Goldstein, Goldstein. Sorry,  
11 Mr. Goldstein.

12 **THE WITNESS:** No worries.

13 **EXAMINATION**

14 **BY MR. MOYLE:**

15 **Q** Good morning.

16 **A** Good morning, sir.

17 **Q** So just to follow up on a couple of questions  
18 that we talked about last night, I may not have been as  
19 clear or precise. I think we had a little bit of  
20 discussion at least with your counsel with respect to  
21 whether the record had evidence in it that saltwater  
22 intrusion was potentially a threat to an aquifer and a  
23 drinking source. I know you said in your testimony that  
24 it's not, but is that a potential threat as we sit here  
25 today?

1           **A**     I think what I said was there's been no harm  
2 to any aquifer. I presume that something possibly not  
3 treated -- it's been long known that the hypersaline  
4 plume is migrating west. That was known in 1972 when  
5 the canals were built, and we've taken steps to address  
6 that. I believe the steps we've entered into with the  
7 local authorities and the Department of Environmental  
8 Protection will result in -- continue to result in  
9 absolutely no harm to any water.

10           **Q**     Okay. And that -- I guess -- but my precise  
11 question is, has it been identified as a potential  
12 threat? And it can be answered yes or no. If it has  
13 not been identified as a potential threat to the aquifer  
14 and drinking water, just you can tell me no. If it has,  
15 you can say yes.

16           **A**     You know, I'm not a technical expert, but,  
17 yes, I guess it has been identified as a potential  
18 threat. It's clear there's been no actual harm, and the  
19 steps we're taking will keep it that there's no actual  
20 harm.

21           **Q**     Okay. Another safety question.

22           **A**     Yes, sir.

23           **Q**     Do you still store your spent nuclear fuel  
24 rods in pools at Turkey Point?

25           **A**     Yes. All nuclear plants store spent fuel in



1 pools onsite. And all nuclear plants also have now an  
2 integrated spent fuel storage facility because the  
3 federal government has not met its responsibility to  
4 take spent fuel. So we've all built what we call  
5 ISFSIs, integrated spent fuel storage devices, for  
6 long-term storage until the federal government meets its  
7 obligations.

8 Q Right. And they look like big, Olympic-sized  
9 pools; right? They're big pool-looking things with  
10 radioactive fuel rods swimming in them; is that fair?

11 A I don't think that's a fair characterization.  
12 They are water and the fuel rods stay in their place.  
13 They don't swim. And they are very, very, very  
14 carefully monitored and the NRC inspects them. We have  
15 people inspecting them or watching over them at all  
16 times. So they are safe.

17 Q Okay. And as the person in charge of safety,  
18 are you satisfied that these pools with the -- I mean,  
19 they are radioactive, right, the rods?

20 MR. DONALDSON: Let me object. I don't think  
21 any of this is in his deposition -- or, excuse me, in  
22 his prefiled testimony, and I don't believe  
23 Mr. Goldstein said that he is the person in charge of  
24 safety. So it mischaracterizes his testimony and  
25 statements to the --

1           **MR. MOYLE:** I think he told me last night when  
2 I asked him about his testimony, he pointed out he was  
3 in charge of safety, but he said it was radiological  
4 safety. So I think this is radiological safety.

5           **CHAIRMAN BROWN:** Objection overruled. I'll  
6 allow the witness to answer the question to the best of  
7 his knowledge.

8           **THE WITNESS:** Great. So to be clear, safety  
9 does not report to me. The question I thought you asked  
10 me last night was about strategic planning, and safety  
11 is certainly one of the things we focus on in all of our  
12 planning: short term, long term, daily, et cetera.

13           The fuel rods are radioactive. However, when  
14 they're in water, there's no radioactive releases and  
15 no -- you know, so there's no dose that people are  
16 getting.

17 **BY MR. MOYLE:**

18           **Q** Okay. How high above the mean -- the sea  
19 water level or the -- how high above the ground are the  
20 pools?

21           **A** I don't know.

22           **Q** Okay. Are you satisfied that if a -- let's  
23 hope there's not a storm, but if there's a storm, that  
24 there's sufficient safety that the water won't be  
25 released into Biscayne Bay or the cooling canals or the

1 Everglades or John Pennekamp Park?

2 **A** Yes, sir, I'm satisfied. And much, much more  
3 importantly, the Nuclear Regulatory Commission, which  
4 inspects our sites, is also satisfied. We've gone  
5 through extensive inspections, physical inspections and  
6 procedure inspections over, well, the whole life of the  
7 plant, but certainly in the last few years after  
8 Fukushima, and we've gotten a clean bill of health at  
9 all of our sites.

10 **Q** Okay. Thank you. The -- let me direct you to  
11 page 14 of your testimony.

12 **A** Yes, sir.

13 **Q** I have found that in this electric world, a  
14 lot of times acronyms are used. And I always want to  
15 make sure -- it's helpful to understand the acronyms,  
16 and you use one on page (sic) 5, GHG. Is that  
17 greenhouse gas?

18 **A** I'm sorry. On page --

19 **Q** I'm sorry. Page 14, line 5.

20 **A** Yes, that is greenhouse gases.

21 **Q** And when you use the phrase "GHG," what does  
22 that entail in your view?

23 **A** I don't have a technical explanation that I  
24 can give you.

25 **Q** So in terms -- I have heard that there are

1 five greenhouse gases. Does that ring a bell with you?

2 **A** I don't know the answer.

3 **Q** Okay. You say on line 13 -- this is, again,  
4 on page 14 -- that "They prevent the release of more  
5 than 15 million tons of carbon dioxide annually." When  
6 you say, "they," I assume you're talking about, what,  
7 the FPL nuclear plants?

8 **A** Yes. I believe the word "they" is referring  
9 to the noun "plants" in the prior line. That's correct.

10 **Q** Okay. You don't have any independent  
11 knowledge of this statement, do you?

12 **A** Are you asking whether I calculated this and  
13 verified this on my own? I did not. You are correct, I  
14 don't -- it was reported in the Nuclear Energy Institute  
15 study which was completed last year, so the calculations  
16 were done by people with deep technical expertise.

17 **Q** Okay. And you also reference a study down  
18 further on page 14 where you talk about that, I guess,  
19 they determined that there were some economic  
20 activities, some positive economic activity; is that  
21 right?

22 **A** That's right.

23 **Q** And, again, you don't have any independent  
24 knowledge of the positive economic activity referenced  
25 in your testimony; correct?

1           **A**     Well, again, I didn't personally do the  
2     calculations.  The calculations were done by an  
3     independent party, the Nuclear Energy Institute, which  
4     studied the economic activity, that's the salaries, the  
5     other services purchased in the environment right around  
6     our plants and elsewhere throughout Florida, and they  
7     did those calculations.  Those folks are qualified to do  
8     that.

9           **Q**     So let's, you know, with the yes/no convention  
10    that's used here, am I correct that you don't have any  
11    independent knowledge with respect to the economic  
12    impacts?  If you'd just say, "Yes, that's correct" or,  
13    "No, you're wrong."

14          **A**     What would you consider independent knowledge?  
15    I read the report that the NEI did.  I believe they -- I  
16    provided them data that they needed that was  
17    independently requested.  I believe the basis that they  
18    did it on, but I didn't do the calculation.

19          **Q**     Okay.  Is your knowledge then based on the  
20    information in the report solely?

21          **A**     Yes, sir.

22          **Q**     That was probably a better question.

23                   And you didn't attach -- that report is not  
24    part of your exhibits, is it?

25          **A**     I don't believe it is.

1           **Q**     Okay. Was that report anything that you  
2           authenticated when PSC staff asked you those questions  
3           when you first took the stand?

4                   **MR. DONALDSON:** I believe it was provided in  
5           discovery, so we can certainly give it to Mr. Moyle, if  
6           he wants it. I believe --

7                   **MR. MOYLE:** I think I'm good.

8                   **THE WITNESS:** Yes. It was in South Florida  
9           Health Association's third interrogatories No. 94. A  
10          copy of that report is in the record. I -- it was not  
11          in my testimony, but I have it here and I believe it's  
12          accessible to all.

13          **BY MR. MOYLE:**

14                   **Q**     So I'm just trying to understand, did -- when  
15           you authenticated those documents, do you think you  
16           authenticated that or, no, you just don't know?

17                   **A**     I placed it -- my method was I placed a  
18           checkmark next to each of the documents that were in  
19           Exhibit 579. That was not one of them, so I don't  
20           believe I authenticated that in that form. If I'm  
21           wrong, please -- my counsel will hopefully correct me.

22                   **Q**     No, that's fine. I just wanted to understand  
23           your understanding of what you authenticated and what  
24           you didn't.

25                   **MR. MOYLE:** So can I just have one minute? I

1 think I may be done.

2 **CHAIRMAN BROWN:** Sure.

3 **THE WITNESS:** One thing I would say is I did  
4 provide that response to that interrogatory, so from my  
5 perspective, I've authenticated it. Maybe not in this  
6 setting here, but you can be sure that anything that  
7 went under my name was scrutinized.

8 **BY MR. MOYLE:**

9 **Q** Right. And I guess with respect to the fuel  
10 savings that you testify, same question. You don't have  
11 independent knowledge about the fuel savings that you  
12 testified to on page 15, line 8?

13 **MR. DONALDSON:** Let me object for a quick  
14 second, please. I'm trying to understand which  
15 particular issue these line of questionings are  
16 addressing. And I have the issue list here in front of  
17 me, and I don't see some of these issues specifically  
18 identified as issues where positions were taken. And so  
19 I'm just trying to understand where this line of  
20 questioning is going.

21 **CHAIRMAN BROWN:** Mr. Moyle, can you direct --  
22 thank you, Counselor.

23 Mr. Moyle, can you please direct me to the  
24 page and the line item of his prefiled direct?

25 **MR. MOYLE:** Well, sure. Sure. So the

1 reference with respect to -- you don't want me to go  
2 backwards with respect to the economic activity. We  
3 covered that; right?

4 **CHAIRMAN BROWN:** No. Just direct me where --

5 **MR. MOYLE:** So I was asking him about page 15,  
6 line 8. He says, "FPL's nuclear generation has resulted  
7 in over 17 billion in fuel savings from  
8 January 2000 through 2015." And my question was, did he  
9 have independent knowledge of that fact?

10 **CHAIRMAN BROWN:** I'll allow the question.

11 **THE WITNESS:** So, again, my answer would be  
12 the same. I did not personally do the calculation. In  
13 this case, I spoke to our economists who have done the  
14 calculation. They look at the fuel usage without  
15 nuclear plants and what it would be with our plants and  
16 they've done the calculation. And I validated the math,  
17 but I did not personally perform the calculation.

18 **BY MR. MOYLE:**

19 **Q** Who was the economist you spoke with?

20 **A** Dr. Sims.

21 **Q** So you relied on what he told you?

22 **A** I do.

23 **Q** Okay. You're aware he's not a witness in this  
24 case.

25 **A** I understand that.



1           **MR. MOYLE:** That's all I have.

2           **CHAIRMAN BROWN:** Thank you, Mr. Moyle. And  
3 thank you, Mr. Goldstein.

4           Next is Hospitals, Mr. Wiseman.

5           **MR. WISEMAN:** Thank you, Madam Chairman.

6                                   **EXAMINATION**

7           **BY MR. WISEMAN:**

8           **Q**     Good morning, Mr. Goldstein.

9           **A**     Good morning, sir.

10          **Q**     Mr. Goldstein, could you refer to page 8 of  
11 your testimony, please.

12          **A**     I'm there.

13          **Q**     Okay. On line 16 you talk about the NRC  
14 maintaining and tracking a set of performance  
15 indicators. Do you see that?

16          **A**     Yes, sir.

17          **Q**     Okay. Then down on 20 to 21, you reference an  
18 Exhibit MG-2, which has -- which displays some of those  
19 indicators; is that right?

20          **A**     That's correct.

21          **Q**     All right. Could you turn to your Exhibit  
22 MG-2, please. Do you have that?

23          **A**     I have that.

24          **Q**     Okay. The -- up at the top of it, it says,  
25 "Unplanned reactors scrams per 7,000 critical hours,

1 automatic to manual." Do you see that?

2 **A** I do.

3 **Q** Okay. What's a scram?

4 **A** A scram is a trip of a reactor. A scram is  
5 a -- it's an acronym and I don't recall what it stands  
6 for. But effectively it's when the reactor trips,  
7 whether manually tripped or one of the automatic systems  
8 trips it.

9 **Q** Okay. And what undertakings has FPL taken in  
10 order to diminish its number of unplanned reactor  
11 scrams?

12 **A** We've taken -- we've undertaken many, many  
13 actions. I mentioned yesterday we have daily reviews of  
14 the plant status at all times, we have many safety  
15 systems, and we've put in place a series of indicators  
16 that are early warning indicators where we see any risk  
17 to water flow or valves or any of the pumps or motors in  
18 order to prevent those tripping, which might lead to a  
19 reactor trip. And we've reduced our number of unplanned  
20 trips.

21 **Q** Now if I recall from your testimony yesterday,  
22 you've been with FPL for maybe four or five years; is  
23 that right?

24 **A** Five years.

25 **Q** Five years. And before that, you were with

1 two food companies: One I don't recall the name, and  
2 the other was Vlastic, the pickle company. Is that  
3 correct?

4 **A** Among other -- with a number of companies,  
5 those are -- A&P and Vlastic are among them. I've not  
6 been in the nuclear business before.

7 **Q** Right. And so if I wanted to ask questions  
8 about the technical aspects of these undertakings that  
9 have been performed by FPL with respect to its nuclear  
10 fleet, I assume that there are people at FPL with far  
11 more knowledge from a technical perspective than you  
12 have; correct?

13 **A** That's correct.

14 **Q** Okay. Could you give me just the names and  
15 titles of some of those people, top people who you would  
16 recommend would have that expertise?

17 **MR. DONALDSON:** Let me object. What's the  
18 relevance here? Mr. Goldstein is the person that is the  
19 witness for nuclear in this case, and I don't  
20 understand -- this is not a discovery deposition, so  
21 it's irrelevant at this point in time in the proceeding.

22 **CHAIRMAN BROWN:** Mr. Wiseman.

23 **MR. WISEMAN:** Madam Chairman, the witness has  
24 offered testimony in support of FPL's proposal in this  
25 case. He's the -- I can't remember -- the chief

1 financial officer of the nuclear fleet, but a similar  
2 title. And I understand he has the expertise to talk  
3 about dollars. But in order to understand what --  
4 whether the dollars that FPL has in this case are  
5 reasonable costs that FPL should be permitted to recover  
6 from ratepayers, it's important to understand what the  
7 underlying basis for those costs are.

8 If -- I think it's important to understand who  
9 has that expertise and whether FPL has offered  
10 individuals as witnesses with that expertise. If it  
11 hasn't, it seems to me that that goes to the question of  
12 whether or not FPL should be permitted to recover those  
13 costs.

14 **CHAIRMAN BROWN:** FPL.

15 **MR. DONALDSON:** Well, discovery, I believe,  
16 began on March 15th of this year, and there have been  
17 numerous months that Mr. Wiseman and his firm had the  
18 opportunity to ask those series of discovery questions  
19 to find the foundation for that. These are the issues  
20 in the case that Mr. Goldstein is dealing with. I don't  
21 specifically see which particular issue this -- in the  
22 Prehearing Order this deals with, and so that's why I'm  
23 objecting.

24 **CHAIRMAN BROWN:** Mr. Litchfield.

25 **MR. LITCHFIELD:** Yeah. Just to add one more

1 thought to Mr. Donaldson's points. We file a direct  
2 case and then staff convenes the parties and we develop  
3 a list of issues. The list of issues is developed in  
4 part by staff, in part by all the parties here. We  
5 determine, in fact, what we are going to litigate in  
6 this case, and it's an extensive list of issues. And  
7 had Mr. Wiseman identified this particular issue earlier  
8 on, we would have had somebody on rebuttal. I just fail  
9 to see what issue we're really traversing here. It  
10 seems like now we're simply trying to play a little bit  
11 of "gotcha" here.

12 **CHAIRMAN BROWN:** Mr. Wiseman.

13 **MR. WISEMAN:** An issue clearly in this case is  
14 whether FPL should be entitled to recover the costs it's  
15 claimed in association with maintaining its nuclear  
16 facilities and performing -- and it's put on testimony,  
17 including by Mr. Goldstein, that says that it's  
18 performing at this wonderful level in terms of its  
19 nuclear performance. I think I have the right to test  
20 whether FPL has put on credible evidence to support its  
21 proposal to recover those costs. This is not discovery.

22 **CHAIRMAN BROWN:** Can you repeat the question?

23 **MR. WISEMAN:** Yeah. The question was simply  
24 to identify -- I asked Mr. Goldstein to identify the  
25 people within FPL who would have the technical expertise

1 to discuss issues related to the undertakings it's taken  
2 with respect the accomplishment of these indicators on  
3 Exhibit MG-2.

4 **CHAIRMAN BROWN:** Mr. Wiseman, I'll allow the  
5 question if you rephrase it and ask him if he has any  
6 knowledge of who prepared it rather than asking for  
7 specific names, just a broader question.

8 **MR. WISEMAN:** Thank you, Madam Chair.

9 **BY MR. WISEMAN:**

10 **Q** Mr. Goldstein, do you know who prepared this  
11 chart that's your Exhibit MG-2?

12 **A** I do.

13 **Q** And can you give me the names of those  
14 individuals?

15 **A** Well, the individual that prepared it is an  
16 analyst in our licensing group. The information comes  
17 directly from the Nuclear Regulatory Commission website  
18 where they maintain this information that's publicly  
19 available for viewing.

20 And I just, if I could, you know, I think the  
21 notion that one needs to be a deep technical expert to  
22 be able to understand this information I don't agree  
23 with. I think the fact is an experienced businessperson  
24 or an experienced executive of different types can look  
25 at this information and understand the trends and the

1 quality of the information. Our performance has been  
2 superb on every level. This is one of them. Safety is  
3 a very strong suit. I mentioned also our personnel  
4 safety is very strong as well. And if I refer you to  
5 Exhibit MG-5, you can see our INPO index improving, our  
6 generation improving, and our cost per megawatt hour  
7 improving significantly. Our plants are the best  
8 performing plants on that measure of cost per megawatt  
9 hour, the best performing plants in the industry of  
10 their size, because scale does matter. And so -- and  
11 that performance has been recognized in the industry.  
12 So I think the notion that one needs to be an engineer  
13 to be able to understand the safety statistic is wrong.

14 Q Mr. Goldstein, you're not a nuclear  
15 engineering; correct?

16 A No, sir.

17 Q And you wouldn't claim to have the expertise  
18 to run a nuclear plant, would you?

19 A No, I wouldn't.

20 Q Okay. And you wouldn't claim to have the  
21 expertise to make technical decisions, not financial,  
22 technical on what undertakings should be taken to  
23 maintain the operation of nuclear facilities; is that  
24 true?

25 **CHAIRMAN BROWN:** Mr. Wiseman, it looks like

1 there's an --

2 **MR. DONALDSON:** Let me object for a second  
3 because it seems like he's trying to challenge his  
4 expertise at this point in time, and I believe that that  
5 should have been something that was done during the  
6 prehearing. So if that is the route that these lines of  
7 questions are going, I object to that.

8 **CHAIRMAN BROWN:** Mr. Wiseman, it does appear  
9 that you're trying to attempt to do a little voir dire  
10 here.

11 **MR. WISEMAN:** Well, I'm not trying -- all I'm  
12 trying to establish is that there are other people  
13 within FPL who did have the technical expertise to offer  
14 testimony with respect to these issues and FPL didn't  
15 offer them.

16 **CHAIRMAN BROWN:** Objection sustained. Please  
17 move along with your questions.

18 **MR. WISEMAN:** That's my final question. Thank  
19 you very much.

20 **CHAIRMAN BROWN:** Okay. Thank you.

21 Next up is Retail Federation, Mr. Wright.

22 **MR. WRIGHT:** I don't have any questions for  
23 Mr. Goldstein. Thank you, Madam Chairman.

24 **CHAIRMAN BROWN:** Thank you, Mr. Wright.

25 FEA.



1                   **MR. JERNIGAN:** No questions, ma'am.

2                   **CHAIRMAN BROWN:** Thank you.

3                   Sierra Club.

4                   **MS. CSANK:** No questions.

5                   **CHAIRMAN BROWN:** Thank you.

6                   Wal-Mart.

7                   **MS. ROBERTS:** No questions.

8                   **CHAIRMAN BROWN:** Thank you.

9                   AARP.

10                  **MR. COFFMAN:** No questions from AARP.

11                  **CHAIRMAN BROWN:** Thank you.

12                  Larsons, Mr. Skop.

13                  **MR. SKOP:** Thank you, Madam Chair. No  
14                  questions for this witness.

15                  **CHAIRMAN BROWN:** Thank you.

16                  And staff.

17                  **MS. BROWNLESS:** No questions. Thank you,  
18                  ma'am.

19                  **CHAIRMAN BROWN:** And, Commissioners, any  
20                  questions?

21   **EXAMINATION**

22                  **BY MR. DONALDSON:**

23                    **Q**     Mr. Goldstein --

24                    **A**     Yes, sir.

25                    **Q**     -- would you agree that -- well, can I have

1 your opinion on whether technical differences and  
2 technical decisions on nuclear operations can have an  
3 economic consequence?

4 **MR. MOYLE:** I think he's a fact witness, not  
5 an expert, so it's improper to ask him for his opinion.

6 **MR. DONALDSON:** Again, this is challenging  
7 someone's expertise. There has been no one here that  
8 actually has testified or presented any kind of motion  
9 to strike this witness as an expert, so it's really late  
10 in the game for this type of objection.

11 **MR. MOYLE:** But you can read his testimony.  
12 It's all factual.

13 **CHAIRMAN BROWN:** Hold on one second. I  
14 believe the Hospitals has an objection.

15 **MR. WISEMAN:** Yes. FPL just objected to the  
16 whole line of questioning and -- which you sustained at  
17 the end, and now they're going back into it. I think  
18 that's improper. If it was an objectionable before,  
19 it's objectionable now.

20 **CHAIRMAN BROWN:** Restate the question, please.

21 **MR. DONALDSON:** The question was whether or  
22 not a technical decision can have a consequence on the  
23 financial metrics and operations of the nuclear plant.  
24 He's the vice president of finance for the nuclear  
25 fleet. It's within his gambit and expertise on that

1 type of decision that he just recently spoke about.

2 It's a proper question in response to Mr. Wiseman.

3 **CHAIRMAN BROWN:** I'll allow the question.

4 **THE WITNESS:** Could you repeat the question,  
5 please?

6 **BY MR. DONALDSON:**

7 **Q** Sure. Can technical decisions have an  
8 economic consequence in the operation of a nuclear power  
9 plant?

10 **A** Certainly. The answer is yes. I mean, all  
11 decisions have an economic consequence: some are small,  
12 some are big. But technical decisions absolutely have  
13 an economic consequence. It's really imperative for a  
14 chief financial officer of a business or an operating  
15 unit to understand the alternatives associated with the  
16 decision; as best one can, ask the right questions; and  
17 then support making the right decision based on the  
18 technical knowledge provided. I don't think it's  
19 necessary to be a technical expert, but certainly  
20 assessing the alternatives to make a decision is very  
21 important.

22 **MR. DONALDSON:** Okay. Thank you. No further  
23 questions.

24 **CHAIRMAN BROWN:** Okay. Great. We're on to  
25 exhibits. FPL.

1           **MR. DONALDSON:** At this time, FPL would like  
2 to enter into the record Exhibits 62 through 66.

3           **CHAIRMAN BROWN:** Are there any objections?

4           **MR. MOYLE:** We would object on the basis of  
5 hearsay.

6           **CHAIRMAN BROWN:** Any other objections?

7           Mr. Moyle, your objection is noted. We will  
8 enter into the record Exhibits 62 through 66.

9           (Exhibits 62 through 66 admitted into the  
10 record.)

11           Mr. Donaldson, would you like your witness  
12 excused at this time?

13           **MR. DONALDSON:** Yes. And can he be excused  
14 for the remainder of the hearing? He only filed  
15 prefiled direct.

16           **CHAIRMAN BROWN:** I think that's a reasonable  
17 request. Do any of the parties object?

18           He may be excused.

19           **MR. DONALDSON:** Thank you.

20           **CHAIRMAN BROWN:** Thank you. Safe travels.

21           **THE WITNESS:** Thank you.

22           **CHAIRMAN BROWN:** All right. On to Manuel  
23 Miranda.

24           (Pause.)

25           **COMMISSIONER EDGAR:** Mr. Guyton, are you up?

1           **MR. GUYTON:** I am. Thank you.

2           **COMMISSIONER EDGAR:** Okay. We're ready when  
3 you are.

4           **MR. GUYTON:** I do not believe Mr. Miranda has  
5 previously been sworn.

6           **COMMISSIONER EDGAR:** If you would, rise with  
7 me and raise your right hand.  
8 Whereupon,

9                           **MANUEL B. MIRANDA**

10 was called as a witness on behalf of Florida Power &  
11 Light Company and, having first been duly sworn,  
12 testified as follows:

13           **COMMISSIONER EDGAR:** Thank you.

14           **MR. GUYTON:** Commissioners, Mr. Miranda has  
15 prefiled direct testimony in both the rate case and the  
16 storm hardening proceeding. And in the interest of  
17 time, we're going to introduce both of those testimonies  
18 and his summary in --

19           **COMMISSIONER EDGAR:** Wait a minute. Would you  
20 say that one more time?

21           **MR. GUYTON:** Mr. Miranda has prefiled direct  
22 testimony in both the rate case proceeding and the storm  
23 hardening proceeding. We're going to address both of  
24 those at the same time.

25           **COMMISSIONER EDGAR:** Okay. That works for me.

1 Okay. I just wanted to make sure I was clear. Thank  
2 you.

3 **MR. GUYTON:** Therefore, my introduction will  
4 be a bit longer than it might otherwise being.

5 **EXAMINATION**

6 **BY MR. GUYTON:**

7 **Q** Would you please state your name and business  
8 address for the record.

9 **A** My name is Manuel B. Miranda. My business  
10 address 700 Universe Boulevard, Juno Beach, Florida  
11 33408.

12 **Q** And by whom are you employed and in what  
13 capacity?

14 **A** I'm employed by Florida Power & Light. I'm  
15 the senior vice president of our power delivery business  
16 unit.

17 **Q** And have you prepared and caused to be filed  
18 35 pages of prepared direct testimony in the rate case  
19 proceeding in Docket No. 160021?

20 **A** Yes, I have.

21 **Q** And if I were to ask you the same questions as  
22 contained in your direct testimony, would your answers  
23 be the same?

24 **A** Yes, they would.

25 **MR. GUYTON:** Madam Chair, I'd ask that

1 Mr. Miranda's direct testimony in Docket No. 160021 be  
2 inserted into the record as though read.

3 **CHAIRMAN BROWN:** We will insert Mr. Miranda's  
4 prefiled direct testimony into the record as though  
5 read.

6 **MR. GUYTON:** Thank you.

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**I. INTRODUCTION**

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**Q. Please state your name and business address.**

A. My name is Manuel B. Miranda. 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 the Senior Vice President of Power Delivery.

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

A. As the Senior Vice President of Power Delivery, I am responsible for the planning, engineering, construction, operation, maintenance and restoration of FPL's transmission and distribution ("T&D") electric grid. This includes the systems, processes, analyses, and standards utilized to ensure that FPL's T&D facilities are safe, reliable, secure, effectively managed and in compliance with regulatory requirements.

**Q. Please describe your educational background and professional experience.**

A. I have a Bachelor of Science in Mechanical Engineering from the University of Miami and a Master in Business Administration from Nova Southeastern University. I joined FPL in 1982 and have more than 33 years of technical, managerial and commercial experience gained from serving in a variety of positions within Customer Service, Distribution and Transmission. Over the



1 last 10 years, I have held several vice president positions within Distribution  
2 and Transmission, including my current position.

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

4 A. Yes. I am sponsoring the following exhibits:

- 5 • MBM-1 MFRs Co-sponsored by Manuel B. Miranda
- 6 • MBM-2 Percentage of FPL Feeders Hardened/Underground
- 7 • MBM-3 FPL's FPSC SAIDI 2006-2015
- 8 • MBM-4 FPL's FPSC MAIFIE 2006-2015
- 9 • MBM-5 Regional SAIDI Benchmarking
- 10 • MBM-6 AFS Avoided/Actual Customer Interruptions ("CI")

11 **Q. Are you co-sponsoring any Minimum Filing Requirements ("MFRs") in**  
12 **this case?**

13 A. Yes. Exhibit MBM-1 lists the MFRs that I am co-sponsoring.

14 **Q. What is the purpose of your testimony?**

15 A. The purpose of my testimony is to: (1) demonstrate that FPL provides superior  
16 T&D reliability; (2) describe the initiatives FPL is implementing to strengthen  
17 and modernize its T&D infrastructure; (3) explain the ongoing plan for capital  
18 investments associated with the five major drivers that are making FPL's  
19 T&D infrastructure stronger, smarter, more secure and more reliable; and (4)  
20 demonstrate that FPL's T&D Operations & Maintenance ("O&M") expenses  
21 are reasonable.

22

23

1 **Q. Please summarize your testimony.**

2 A. FPL's T&D electrical grid is one of the most storm-resilient and reliable in the  
3 nation. This has been achieved through the development and implementation  
4 of our forward-looking storm-hardening, reliability and grid modernization  
5 initiatives, combined with the use of cutting-edge technology and strong  
6 employee commitment. With these industry-leading initiatives and our  
7 proposed 2016-2018 plans, FPL will further strengthen its infrastructure,  
8 improve system reliability and develop a system even more capable of  
9 meeting ever-increasing needs and expectations.

10

11 FPL's comprehensive reliability program and grid modernization initiatives  
12 are producing superior reliability performance for our customers. For  
13 example, in 2015, FPL achieved its best-ever T&D System Average  
14 Interruption Duration Index ("SAIDI") results on record and, for the tenth  
15 consecutive year, FPL's SAIDI was the best among Florida investor-owned  
16 electric utilities ("IOUs"). Additionally, FPL's 2014 performance ranked  
17 44% better than the national average, according to the most recent data  
18 reflected in PA Consulting's annual reliability benchmarking summary.  
19 SAIDI is recognized as the most relevant and best overall reliability metric.

20

21 It is well documented that Florida is impacted by hurricanes more than any  
22 other state. This was clearly demonstrated when, in 2004 and 2005, FPL's  
23 service territory was impacted by seven named storms. With the experience

1           gained from this onslaught of storms, FPL and the Florida Public Service  
2           Commission (“FPSC” or “Commission”) recognized that significant changes  
3           were required to construct an electrical grid that would be more storm-  
4           resilient. As a result, industry-leading initiatives were undertaken to improve  
5           storm resiliency, including the implementation of storm preparedness and  
6           storm hardening plans, cyclical infrastructure inspections, and vegetation  
7           management programs. With the execution of FPL’s proposed 2016-2018  
8           storm-hardening plan, 60% of all distribution feeders (the backbone of the  
9           distribution system) will be storm hardened or underground. In addition to  
10          providing increased storm resilience, FPL’s storm preparedness and hardening  
11          initiatives also provide our customers with improved day-to-day reliability.  
12          For example, day-to-day, storm-hardened feeders perform approximately 40%  
13          better than non-hardened feeders.

14  
15          FPL’s initiatives have been recognized by many, including our customers,  
16          public officials and others throughout the electric industry. First, and most  
17          important, our customers have taken notice of their improved service  
18          reliability, as reflected in the significant reduction in customer dissatisfaction -  
19          a decrease of over 65% since 2006 - as measured by the substantially reduced  
20          number of FPSC-logged service-quality complaints per 10,000 customers.  
21          Second, during U.S. Energy Secretary Ernest Moniz’s January 2016 tour of  
22          FPL’s facilities in Miami-Dade County, Dr. Moniz stated, “Modernizing the  
23          U.S. electrical grid is essential to reducing carbon emissions, creating

1           safeguards against attacks on our infrastructure and keeping lights on.” He  
2           also emphasized that FPL stands out in its innovations to strengthen the grid,  
3           when he said, “FPL really is on the cutting edge of addressing a grid for the  
4           21<sup>st</sup> century and particularly in the area of resilience,” and “It’s really what we  
5           need.” Third, in October 2015, FPL was the recipient of three PA Consulting  
6           ReliabilityOne™ awards. The three awards, which acknowledge electric  
7           utilities for providing customers with the highest levels of reliability in the  
8           industry recognized FPL for: (1) outstanding technology and innovation (for  
9           the second consecutive year); (2) the best overall system-wide reliability  
10          performance (in both outage duration and frequency) for large IOUs in the  
11          Southeast Region (also, for the second consecutive year); and (3) being “a  
12          consistent top performer in the industry” and for demonstrating “a tremendous  
13          commitment to maintaining reliability for their customers from every level of  
14          the organization.” As a result, FPL received the National Excellence Award,  
15          PA Consulting’s top annual honor and one of the most prestigious awards in  
16          the industry.

17

18          FPL remains committed to continuing its effective management of forward-  
19          looking investments and expenses necessary to construct, operate, maintain,  
20          and improve its T&D electrical grid. These investments and expenses result  
21          from: (1) executing FPSC storm-hardening initiatives; (2) customer growth  
22          and system expansion; (3) executing our comprehensive T&D reliability/grid  
23          modernization initiatives; (4) servicing the electrical grid/other support

1 activities; and (5) complying with regulatory requirements. Our effective  
2 management of costs has helped us provide this excellent service while also  
3 delivering outstanding value for our customers.

4  
5 Today's digital society, economy, national security and daily life are more  
6 dependent on reliable electric service than ever before. While FPL's efforts to  
7 strengthen, modernize and improve the reliability of the electric grid have  
8 produced superior results, a significant amount of work remains to be  
9 completed. The demands for safe, reliable and secure electric service are  
10 certain to escalate, as evidenced by the U.S. Department of Energy's ("DOE")  
11 "Grid Modernization Initiative," issued in March 2015, and its "Grid  
12 Modernization Multi-Year Program Plan," issued in November 2015.  
13 Reflecting on the state of the nation's electric T&D system generally, the  
14 documents recognize that "the grid we have today does not have the attributes  
15 necessary to meet the demands of the 21<sup>st</sup> century and beyond" and the future  
16 grid will need to "deliver resilient, reliable, flexible, secure, sustainable, and  
17 affordable electricity to consumers." These goals align with those that FPL,  
18 with the FPSC's oversight and guidance, has vigorously pursued for more  
19 than a decade.

20  
21 To date, our nation-leading initiatives have positioned us well to achieve these  
22 future grid objectives, in addition to providing better service to our customers  
23 today. FPL's 2016-2018 plans and initiatives are integral to our ability to

1 meet the ever-increasing needs and expectations of customers -- today and in  
2 the future.

3

4

## II. OVERVIEW OF POWER DELIVERY

5

6 **Q. Please provide an overview of the Power Delivery organization at FPL.**

7 A. FPL's Power Delivery business unit is responsible for the planning,  
8 engineering, construction, operation, maintenance and restoration of FPL's  
9 T&D facilities. It consists of approximately 2,900 employees, 16 distribution  
10 management areas, two distribution control centers, seven transmission  
11 management areas and two system control centers spread throughout the  
12 approximately 28,000 square miles of FPL's service territory.

13 **Q. Please provide an overview of FPL's T&D electric grid.**

14 A. As of year-end 2015, FPL's T&D electric grid consists of nearly 75,000 miles  
15 of lines - approximately 68,000 miles of distribution overhead (42,000 miles)  
16 and underground (26,000 miles) lines and 6,900 miles of high-voltage  
17 transmission lines. There are also approximately 1.2 million distribution  
18 poles, 65,000 transmission structures and more than 600 distribution and  
19 transmission substations installed throughout FPL's service territory.

20 **Q. Does operating and maintaining an electrical system in Florida present  
21 FPL with unique challenges?**

22 A. Yes. As the electric service provider throughout approximately half of  
23 Florida, FPL is well-acquainted with Florida's unique geographic and

1 weather-related challenges, which are unlike any other in the country. For  
2 example: (1) Florida is more susceptible to tropical storms, hurricanes, and  
3 major hurricanes (Category 3 or higher) than any other state; (2) FPL's service  
4 territory is the most storm-susceptible within Florida, as it has approximately  
5 500 miles of coastline (one of the longest of any utility in the U.S.) directly  
6 exposed to storms from the Atlantic Ocean and the Gulf of Mexico; (3)  
7 because the vast majority of our customers live within 20 miles of the coast, a  
8 significant amount of our electric infrastructure is constantly exposed to the  
9 corrosive effects of salt spray, and when a storm hits, the highest wind speeds;  
10 (4) Florida also experiences more thunderstorms and lightning than any other  
11 U.S. region (in fact, in 2015, FPL experienced approximately 395,000  
12 lightning strikes, 15% more lightning strikes than in any previous year over  
13 the last decade); and (5) Florida's subtropical climate promotes one of the  
14 fastest vegetation growth rates in the nation. However, with FPL's continuous  
15 commitment to operational excellence and superior performance, we expect to  
16 continue to successfully address these unique challenges.

17

### 18 III. STORM HARDENING THE INFRASTRUCTURE

19

20 **Q. Why did FPL undertake to strengthen its infrastructure?**

21 A. In 2006, following the significant 2004/2005 storm seasons (when seven  
22 hurricanes affected FPL's service territory), FPL began to implement its  
23 FPSC-approved initiatives to strengthen its T&D infrastructure.

1 **Q. Please describe the specific actions that FPL has taken to strengthen and**  
2 **harden the T&D infrastructure.**

3 A. Below is a summary and status of the FPSC-approved initiatives to strengthen  
4 and harden FPL's T&D infrastructure:

5

6 FPSC STORM HARDENING

7 Distribution – Since 2007, consistent with Rule 25-6.0342, F.A.C., and  
8 subsequent FPSC orders (Order Nos. PSC-07-1023-FOF-EI, PSC-11-0082-  
9 PAA-EI and PSC-13-0639-PAA-EI), FPL has been executing its approved  
10 three-prong distribution storm hardening plan that: (1) increases the strength  
11 and storm resilience of distribution critical infrastructure facilities (“CIF”)   
12 (e.g., feeders serving hospitals and 911 centers) to the National Electrical  
13 Safety Code’s (“NESC”) extreme wind-loading criteria (“EWL”); (2)  
14 incrementally hardens, up to and including EWL, community projects (e.g.,  
15 feeders serving grocery stores and gas stations); and (3) provides for new  
16 construction to be built to meet EWL. Additionally, as a result of lessons  
17 learned from Hurricane Sandy, in 2014 and 2015 FPL implemented and  
18 completed an initiative to better protect 12 more flood-susceptible vaults  
19 within the downtown Miami network system. At year-end 2015, over 70% of  
20 all CIF and Community Project feeders throughout FPL’s system have been  
21 hardened.

22



1        Transmission – Since 2007, FPL has been implementing its FPSC-approved  
2        plan to storm-harden its transmission system. This includes replacing all  
3        wood transmission structures (with steel or concrete structures) and all  
4        ceramic post insulators on concrete poles (with polymer post insulators).  
5        Additionally, in 2013 and 2014 (also as a result of lessons learned from  
6        Hurricane Sandy), FPL implemented and completed an initiative to better  
7        protect 223 substations located in higher-risk storm surge/flood areas. At  
8        year-end 2015, 100% of the ceramic post insulators on concrete poles have  
9        been replaced. Additionally, 15,491 wood structures have been replaced,  
10       resulting in a transmission structure population that is approximately 85%  
11       steel and concrete, as of year-end 2015.

12

### 13        DISTRIBUTION POLE/TRANSMISSION STRUCTURE INSPECTIONS

14        Distribution - From 2006-2013, FPL initiated and completed its first eight-  
15        year inspection cycle, which includes conducting visual, strength and load  
16        tests on all distribution poles. Any pole not meeting standards was either  
17        reinforced or replaced. To date, FPL has reinforced or replaced  
18        approximately 10% of its distribution pole population. In 2016, FPL is in the  
19        midst of its second eight-year inspection cycle.

20        Transmission – FPL currently has approximately 65,000 transmission  
21        structures. Since 2007, FPL has executed its approved transmission structure  
22        inspection plan, which requires visual ground-level inspections on 100% of  
23        these structures annually, bucket truck/climbing inspections on a 6-year

1 (wood) or 10-year (steel or concrete) cycle and strength and load tests. Any  
2 structure not meeting standards is reinforced, remediated or replaced.

3

4 VEGETATION MANAGEMENT

5 In 2007, FPL's approved plan (FPSC Order No. PSC-07-1023-FOF-EI)  
6 established three-year and six-year average trim cycles for feeders and  
7 laterals, respectively, and mid-cycle feeder trimming (feeders requiring more  
8 frequent trimming). From 2007 to 2015, FPL cleared more than 125,000  
9 miles of lines – a distance that is more than five times the earth's  
10 circumference.

11

12 OVERHEAD-TO-UNDERGROUND CONVERSIONS

13 In 2007, to reduce storm restoration costs for all customers, FPL began to  
14 provide a 25% incentive for applicable government-sponsored overhead-to-  
15 underground conversions through its approved Government Adjustment  
16 Factor ("GAF") tariff. FPL's approved standard overhead-to-underground  
17 conversion tariff also has been modified to provide incentives (up to 25%) for  
18 all overhead-to-underground conversion projects. Through 2015, 21  
19 municipalities have taken advantage of these incentives.

20 **Q. What benefits do customers receive from FPL's efforts to strengthen the**  
21 **T&D infrastructure?**

22 **A.** The storm strengthening/hardening initiatives provide for a more storm-  
23 resilient system that is expected to prevent and mitigate storm-related

1 infrastructure damage and, as a result, reduce storm-related outages,  
2 restoration times and restoration costs. Additionally, as previously mentioned,  
3 these initiatives also provide significant day-to-day reliability benefits.

4 **Q. Please elaborate on the benefits of these initiatives.**

5 A. Storm Hardening – For distribution, with our approved 2007-2015 targeted  
6 storm hardening efforts, we expect that fewer facilities will be damaged,  
7 fewer outages will occur, and that overall restoration time and costs will be  
8 reduced. This expectation, of course, underlies the entire FPSC-approved  
9 storm hardening program. As provided in FPL’s previously approved storm  
10 hardening plan filings, a 30-year net present value analysis indicates that the  
11 net present value restoration cost savings per mile of a hardened feeder could  
12 be approximately 45-70% of the cost to harden that same mile of feeder.  
13 Additionally, because feeders perform approximately 40% better once they  
14 have been hardened, customers also receive day-to-day reliability benefits.

15  
16 For transmission facilities, our initiatives to replace all wood transmission  
17 structures with steel or concrete structures, replace all ceramic post insulators  
18 with polymer post insulators and address those substations more prone to  
19 storm surge/flooding are expected to produce a more storm resilient  
20 transmission system.

21

22 Pole Inspections – The FPSC-mandated distribution pole and transmission  
23 structure inspections ensure FPL’s pole/structure populations remain in

1 compliance with NESC/FPL construction standards and are more storm-  
2 resilient.

3

4 Vegetation Management – FPL’s approved vegetation management plan  
5 provides storm-related and day-to-day benefits (as supported by the analysis  
6 provided in Docket No. 060198-EI).

7

8 Overhead-to-Underground Conversions – FPL’s analysis (which served as  
9 the basis for the 25% GAF tariff incentive), indicates that reductions in storm-  
10 related damage, outages, overall restoration time, and storm restoration costs  
11 are expected when large contiguous areas of distribution overhead facilities  
12 are converted to underground. Also, day-to-day, underground facilities  
13 perform better than overhead facilities.

14 **Q. What are the 2016-2018 plans for storm strengthening/hardening?**

15 A. Storm Hardening – FPL is filing its 2016-2018 Electric Infrastructure Storm  
16 Hardening Plan (the “Plan”), in compliance with Rule 25-6.0342, F.A.C.,  
17 contemporaneously with its rate case filing. For Distribution, executing the  
18 Plan will result in 100% of FPL’s feeders serving CIF and Community  
19 Projects being hardened by year-end 2016. Completing these feeders in 2016  
20 is consistent with FPL’s commitment provided in its approved 2013-2015  
21 storm hardening plan. Targeting CIF and Community Project feeders has  
22 been an important first step, providing not only increased storm resilience but  
23 also significant day-to-day reliability benefits; however, it is only a first step.

1           Upon completion of all CIF and Community Project feeders in 2016, FPL's  
2           next step is to move forward with completing the task of hardening FPL's  
3           system-wide feeder network. Approximately 60% of the feeder network will  
4           remain to be hardened and is at a greater risk of incurring storm damage until  
5           the hardening is completed. Broadening the scale and scope of feeder  
6           hardening to expeditiously address all feeders within FPL's system is  
7           appropriate and necessary because it:

- 8           • helps to address customers', public officials' and other stakeholders'  
9           expectations for increased storm resiliency, fewer outages and prompt  
10          service restoration, as evidenced by recent storm events (e.g. Hurricane  
11          Sandy in the northeast);
- 12          • is aligned with the goals of the U.S. DOE, i.e., developing a more resilient  
13          and reliable system to meet future demands; and
- 14          • expands the benefits of hardening, including improved day-to-day  
15          reliability for all customers throughout the system.

16

17          Beginning in 2016, FPL's next proposed phase of hardening addresses the  
18          remaining feeders in its system by focusing on: (1) "wind-zone hardening"  
19          and (2) "geographic hardening." "Wind zone hardening" targets those feeders  
20          with the largest disparity in current strength vs. EWL. "Geographic  
21          hardening" targets substations without any hardened feeders. Upon execution  
22          of FPL's Plan, at year-end 2018, approximately 800 additional feeders will be  
23          strengthened to EWL. While 40% of FPL's feeder system will still need to be

1 addressed after 2018, a more substantial part of FPL's system will be  
2 hardened, expanding the improved storm resiliency and reliability benefits of  
3 hardening to more customers. See Exhibit MBM-2 for the cumulative  
4 percentage of feeders hardened/underground by year (2006-2018) for CIF and  
5 Community Project feeders and all feeders system-wide.

6

7 Additionally, to further expand the benefits of hardening throughout its  
8 distribution system, in 2018, FPL will initiate its lateral hardening initiative.

9 While hardening feeders (the backbone of the distribution system) has been  
10 and remains the highest priority for hardening, as improving their storm  
11 resiliency provides the largest initial benefit for customers, the full benefits of  
12 a hardened electrical grid cannot be realized without the hardening of laterals.  
13 Laterals, which tap off of feeders, are the final step in the distribution primary  
14 voltage delivery system. As laterals make up a significant portion of the  
15 overhead miles in FPL's distribution system, hardening laterals is necessary to  
16 provide the full benefits of a hardened distribution system to all customers.

17

18 For transmission, efforts will continue to focus on replacing all remaining  
19 wood transmission structures. By year-end 2018, fewer than 5,000 wood  
20 structures are expected to be in place, resulting in a transmission structure  
21 population that is 93% steel and concrete.

22

1           Pole/Structure Inspections – During 2016-2018, FPL will continue with its  
2 approved T&D pole inspection plans, annually performing cycle inspections  
3 and reinforcing, remediating, or replacing any poles/structures not meeting  
4 NESC/FPL standards.

5  
6           Vegetation Management – During 2016-2018, FPL will continue to execute  
7 its FPSC-approved plan for cycle trimming distribution feeders and laterals  
8 and mid-cycle feeder trimming, resulting in approximately 15,000 miles of  
9 distribution lines being trimmed annually.

10

11           Overhead to Underground Conversions – During 2016-2018, FPL will  
12 continue to support governmental entities that have either initiated or will  
13 pursue overhead-to-underground conversions.

14

#### 15   **IV. T&D RELIABILITY PROGRAM**

16

17   **Q.    Please provide an overview of FPL’s T&D reliability program.**

18    A.    While FPL’s storm hardening initiatives’ primary focus is strengthening the  
19 T&D infrastructure to reduce storm-related outages/restoration times, FPL’s  
20 T&D reliability program’s primary focus is to reduce day-to-day  
21 outages/restoration times. FPL’s T&D reliability program, which has  
22 produced superior results, includes multiple initiatives that prevent outages  
23 and reduce outage durations. For distribution, reliability initiatives are

1 developed by identifying and analyzing causes of past interruptions. FPL then  
2 targets those interruption causes that, if remedied/repared, will yield the  
3 largest benefits. For the transmission system, reliability initiatives focus on  
4 facility/system assessments, targeted maintenance, prevention through  
5 prediction, utilizing smart grid technology and prevention of recurrence.

6 **Q. Please provide an overview of FPL's T&D reliability initiatives' results.**

7 A. The T&D reliability initiatives employed by FPL continue to produce  
8 improved and superior reliability results. For instance, as can be seen on  
9 Exhibits MBM-3 and MBM-4, in 2015, FPL achieved best-ever performance  
10 results on record for T&D SAIDI and for the T&D Momentary Average  
11 Interruption Frequency Event Index ("MAIFIE"). These best-ever SAIDI and  
12 MAIFIE results are 23% and 33%, respectively, better than the results  
13 achieved in 2006. Additionally, for the tenth consecutive year, FPL's 2015  
14 T&D SAIDI was the best among the Florida IOUs. In fact, the 2015 Florida  
15 major IOU T&D FPSC SAIDI average is 50% higher than FPL's 2015 T&D  
16 SAIDI (see Exhibit MBM-5).

17

18 Exhibit MBM-5 also shows FPL's SAIDI performance (calculated using the  
19 Institute of Electrical and Electronics Engineers ("IEEE") 2.5 beta  
20 methodology) for 2014 (72.1 minutes) and 2015 (63.7 minutes) which ranked  
21 44% and 50% better, respectively than the national average. This ranking was  
22 determined utilizing the most recent data reflected in PA Consulting's annual  
23 reliability benchmarking summary. The benchmarking study included 2014



1 SAIDI results (the vast majority calculated using IEEE's 2.5 beta  
2 methodology) from more than 150 IOUs throughout the nation. Achieving  
3 these excellent reliability performance results in 2015, despite the extreme  
4 level (approximately 395,000) of lightning strikes, demonstrate that our grid  
5 modernization and reliability initiatives are effective and beneficial. With  
6 FPL's continued commitment and the necessary investments to employ these  
7 initiatives, we expect our superior reliability performance will continue to  
8 improve.

9 **Q. Please provide specific examples of your key distribution system**  
10 **reliability initiatives.**

11 A. Key distribution system reliability initiatives include:

12 Vegetation Management – While providing storm benefits, vegetation  
13 management continues to also be a key, long-standing reliability initiative that  
14 provides day-to-day reliability benefits for customers. Vegetation-related  
15 outages continue to be one of the top causes of interruptions, primarily the  
16 result of Florida's year-round growth cycle. With annual cycle trimming of  
17 feeders and laterals and mid-cycle feeder trimming, FPL has averaged  
18 trimming over 15,000 miles annually – the equivalent of trimming a line  
19 running around the earth's circumference approximately every 1.7 years. FPL  
20 also continues to promote our "Right Tree Right Place" public education  
21 program with local governments and customers to educate them on our  
22 trimming program, practices, safety issues and proper tree placement.

1        Grid Modernization/Smart Grid – This program includes several initiatives  
2        that have recently been a significant focus for FPL, as we continue to develop  
3        a modern, automated and self-healing grid. Included in these initiatives are  
4        smart devices, e.g., automated feeder switches (“AFS”), automated lateral  
5        switches (“ALS”) and fault current indicators (“FCI”) that automatically  
6        identify and/or isolate problematic line sections and/or clear temporary faults  
7        – avoiding and/or mitigating interruptions and reducing restoration times and  
8        costs. These devices are providing significant reliability improvement results.  
9        For example, as shown in Exhibit MBM-6, AFS devices were responsible for  
10        avoiding over 680,000 customer interruptions in 2015 and, in two days in  
11        January 2016 (when FPL’s service territory was impacted by two significant  
12        weather events, including multiple tornados), over 42,000 customer  
13        interruptions were avoided. As can be seen on Exhibit MBM-6, the total  
14        number of potential customer interruptions without AFS installed on the  
15        affected feeders is nearly twice the actual number of customer interruptions.  
16        For example, in 2015, there would have been 1,464,974 customer  
17        interruptions instead of the actual 784,559, if not for the AFS installed on  
18        those feeders. This illustrates that smart grid technology improves reliability  
19        for our customers.

20

21        Underground Cable – This initiative addresses “direct-buried” feeder and  
22        lateral cable failure modes through rehabilitation (by injecting the cable with

1 silicone, which extends its useful life) or, when rehabilitation is not an option,  
2 replacement. These solutions prevent interruptions and improve service.

3 Targeted Performance Improvement – This includes multiple initiatives that  
4 address infrastructure/devices experiencing a higher number of outages and/or  
5 momentary interruptions. Examples of these reliability initiatives include  
6 priority feeders, submarine cable, momentary outliers and device outliers.

7 **Q. Please provide specific examples of key FPL transmission system  
8 reliability initiatives.**

9 A. Key transmission system reliability initiatives include:

10 Facility/System Assessments – Under this initiative, transmission line and  
11 substation assessments are conducted utilizing equipment diagnostics and both  
12 on-site and remote system surveillance in order to evaluate and determine the  
13 health of facilities and equipment. Holistic station and equipment  
14 assessments, including oil sampling/testing, equipment/protective system  
15 testing, thermal imaging and climbing inspections are performed, which  
16 provide information used to prevent or predict equipment/facility failures.  
17 Also, certain system surveillance is accomplished through equipment  
18 performance monitoring and diagnostics, using remote monitoring tools and  
19 analysis programs.

20

21 Targeted Maintenance – Information obtained during condition assessments is  
22 evaluated using predictive models. A plan is then developed to replace or  
23 conduct targeted maintenance on major equipment and facilities. Targeted

1 maintenance extends the useful life of equipment and minimizes costs by  
2 deferring the need for substantial investment in new equipment and facilities.

3

4 Prevention through Prediction – By combining remaining useful life  
5 determination and risk assessment, a plan is developed to replace major  
6 transmission equipment/facilities in a more predictive manner. When such  
7 replacements are made, technological advances and design improvements are  
8 incorporated to reduce future interruptions and maximize asset utilization.

9

10 Prevention of Recurrence – Through the use of the Event Response Process  
11 (where each outage event is recorded, classified and analyzed),  
12 countermeasures are developed to prevent the recurrence of similar events.  
13 For example, if it is determined that a relay operated improperly, the root  
14 cause is determined, and countermeasures are implemented to similar devices  
15 throughout the system to prevent recurrence.

16

17 Grid Modernization/Smart Grid – FPL continues to incorporate intelligent  
18 technology within substation systems to better anticipate and respond to  
19 system disturbances. For example, substation transformer relay scheme  
20 upgrades utilize microprocessor-based systems to gather power system data,  
21 assess equipment operating conditions and enable the use of auto-restoration  
22 and self-healing systems. This improves reliability, increases situational  
23 awareness of grid operations and optimizes asset utilization.

1        Vegetation Management – Transmission facilities must also be protected from  
2        Florida’s abundant and fast-growing vegetation. To ensure system stability  
3        and compliance with North American Electric Reliability Corporation  
4        (“NERC”) reliability standards, 100% of FPL’s transmission right-of-way is  
5        inspected twice a year, with necessary trimming identified and completed.

6        **Q.     How has FPL used information technology to improve system reliability?**

7        A.     Recently, FPL has focused its efforts to significantly increase the utilization of  
8        information technology and automation to modernize the grid so that it is  
9        smarter, self-healing and more reliable. This focus was initiated in 2009, with  
10       FPL’s smart meter deployment, and has continued with the installation of  
11       other smart grid devices, e.g., AFS, ALS and FCI. In addition to improving  
12       reliability, a more modernized grid also reduces costs, as restoration costs are  
13       reduced due to fewer outages. Below, I describe several other key  
14       information technology initiatives:

15

16       System Control Center – FPL’s System Control Center (“SCC”) is a state-of-  
17       the-art facility that enables more efficient operation and coordination of FPL’s  
18       transmission and substation network. This includes ensuring full compliance  
19       with all applicable standards, e.g., NERC and Critical Infrastructure  
20       Protection (“CIP”) cyber security standards/requirements. The quality and  
21       availability of energy management system tools and status information on  
22       FPL’s transmission and substation system allow for improved and continuous  
23       monitoring and control by system operators.

1           Power Delivery Diagnostic Center (“PDDC”) – The PDDC acts as a “nerve  
2           center” for FPL’s smart grid. In real time, the PDDC monitors critical  
3           operating parameters of T&D equipment/devices; gathers and analyzes data  
4           from advanced sensors, monitors, switches, smart meters, etc.; and utilizes  
5           FPL-developed analyses, applications, algorithms and other tools to predict  
6           likely equipment failures so that remediation can be efficiently planned and  
7           completed before a failure/outage occurs. The PDDC also provides analyses  
8           of system events and coordination and support to the SCC, Distribution  
9           Dispatch offices and T&D operations. For instance, when an outage event  
10          occurs, the PDDC immediately begins to collect and analyze pertinent data,  
11          while the restoration crew is still in route to the event site. Equipped with  
12          this information upon arrival, the restoration crew is able to perform the  
13          restoration more quickly and effectively.

14  
15          Restoration Spatial View (“RSV”) – RSV, an FPL-developed application that  
16          runs on iPads, iPhones and laptops, provides real time situational awareness  
17          (from multiple systems) and acts as a “one-stop shop” for restoration crews. It  
18          provides real-time outage information, weather radar/alerts, electrical network  
19          information, customer energy consumption, voltage, crew location and more –  
20          all layered on a map view. A significant customer benefit includes the  
21          restoration confirmation feature, which allows restoration crews to confirm  
22          the power status of all smart meters affected by an outage before leaving the  
23          area. This has resulted in fewer repeat customer calls/restoration crew visits.

**V. GROWTH/SYSTEM EXPANSION**

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**Q. Do new service accounts, new major construction projects and increased electrical demand in an area affect FPL's T&D planning and operations?**

A. Yes. All of the above can significantly impact FPL's resources, costs and reliability. From 2014-2018, FPL expects to add nearly 300,000 new service accounts. Accommodating new customers, whether it is a typical residential customer or a major project (e.g., the 83-story Panorama Tower, currently under construction in downtown Miami, which will become the tallest building in Florida and tallest residential building on the eastern seaboard south of New York), requires the installation of new infrastructure. Depending on the new customer's load, additional infrastructure required could be as simple as installing a single service to a home or business or could require constructing new feeders and/or transmission lines and substations. Similarly, the cumulative effect of increases in load due to new customers and/or increased customer usage/demand in certain areas also can require upgrades to existing infrastructure and/or the installation of new facilities.

New major projects throughout FPL's service territory also can have a significant impact on resources and costs (e.g., new feeders, new transmission lines and even new T&D substations). For example, in addition to the Miami Panorama Tower mentioned earlier, several other major projects currently

1 under construction or expected to be under construction during 2016-2018  
2 include:

- 3 • the Brickell City Center, the single largest project currently  
4 underway in downtown Miami with multiple towers and over  
5 five million square feet of office, residential, hotel, retail, and  
6 entertainment space (with ultimately 34,000 kVA of connected  
7 load, requiring four new feeders and seven new vaults);
- 8 • the Hillsborough Technology Center in Deerfield Beach, a one  
9 million square feet business park comprised of industrial,  
10 office and hotel space;
- 11 • Babcock Ranch, a 17,000 acre planned community under  
12 development in southwest Florida, with nearly 18,000  
13 households and five million square feet of light industry, retail,  
14 offices and civic space; and
- 15 • the expansion of Port Canaveral, which will establish the port  
16 as a cargo destination and increase port usage with several new  
17 terminals.

18

19 **VI. EMERGENCY PREPAREDNESS/RESPONSE**

20

21 **Q. Does FPL have plans/processes in place to respond to emergency events?**

22 A. Yes. NextEra Energy's/FPL's Corporate Emergency Management Plan  
23 ("CEMP") provides a framework by which FPL can respond effectively to all



1 types of threats and hazards. The CEMP applies to all threats and incidents  
2 including: severe weather, cybersecurity, grid or supply disruptions, physical  
3 security, floods, fires, chemical spills, pandemics, civil unrest, or any other  
4 hazards that threaten FPL's systems, employees, or contractors.

5 **Q. Does FPL conduct training and exercises to ensure the organization is**  
6 **ready to respond to potential threats or incidents?**

7 A. Yes. FPL's comprehensive and multifaceted emergency response training  
8 occurs throughout the year to ensure that employees are ready and prepared to  
9 respond to an emergency event. Additionally, for certain potential significant  
10 threats or events, simulated events/response exercises are annually conducted  
11 to enhance training and preparedness, e.g., company-wide storm dry run,  
12 capacity shortfall, and cyber security simulations/exercises.

13 **Q. Does FPL's emergency preparedness and training extend beyond FPL?**

14 A. Yes. In addition to interactions between FPL and other agencies that typically  
15 take place as a result of emergency preparation drills, other external entities  
16 (e.g., the FPSC, Florida Office of Public Counsel, U.S. DOE, the Edison  
17 Electric Institute ("EEI"), and Pacific Gas & Electric Company) routinely  
18 attend FPL's annual storm dry run event to observe and learn about our  
19 restoration processes.

20

21 Also, as part of FPL's continued leadership in emergency preparedness and  
22 response, FPL serves as a member of the National Response Executive  
23 Committee ("NREC"). The NREC is an industry group, coordinated through

1 EEI, that is responsible for overseeing nationwide mutual assistance and  
2 resource sharing during events that are larger than can be accommodated  
3 through the industry regional mutual assistance processes.

4

5 In the area of cyber security, FPL performs annual drills to ensure readiness of  
6 the organization and participates in industry forums (e.g., Electricity  
7 Subsector Coordinating Council and NERC activities) to ensure lessons  
8 learned from industry are applied.

9 **Q. Please provide other examples of Power Delivery's efforts to ensure**  
10 **emergency preparedness.**

11 A. For storms, in addition to providing significant employee training, other  
12 planning and preparations include securing necessary foreign crew resources,  
13 storm staging sites, logistics (e.g., lodging), equipment and inventory and  
14 having communication capabilities and processes ready. Having these plans  
15 and processes in place prior to each storm season allows FPL to execute its  
16 effective restoration plan as soon as it is safely possible.

17

## 18 VII. REGULATORY COMPLIANCE

19

20 **Q. Are the operation and maintenance of FPL's T&D systems significantly**  
21 **impacted by mandated compliance with regulations?**

22 A. Yes. As a regulated electric utility, the T&D systems' operation and facilities  
23 must comply with a variety of policies, standards, orders and the requirements

1 of federal, regional, state and local regulatory commissions and agencies. In  
2 addition to FPSC rules and requirements, these include the requirements of  
3 Federal Energy Regulatory Commission (“FERC”), NERC, the U.S.  
4 Environmental Protection Agency (“EPA”), U.S. Department of Homeland  
5 Security, Occupational Safety and Health Administration, Florida Department  
6 of Environmental Protection (“FDEP”), and cities and counties. Of course,  
7 compliance with newly mandated requirements can incrementally increase  
8 costs for new and existing assets and require implementation of new and/or  
9 enhanced processes and related training.

10 **Q. Please provide examples of rules, regulations and requirements that can**  
11 **have a significant impact on FPL’s T&D operations, processes and costs.**

12 A. Under the direction of FERC, NERC has developed and issued more than 100  
13 reliability standards, containing in excess of 1,600 requirements and sub-  
14 requirements that govern the operation and maintenance of FPL’s bulk electric  
15 system. Additionally, new NERC CIP standards, addressing cyber and  
16 physical security, have been mandated to protect utilities’ most critical  
17 transmission assets from malicious cyber and physical attacks.

18  
19 FPL is also subject to a wide range of environmental laws and regulations  
20 (e.g., U.S. EPA, FDEP, the Florida Fish and Wildlife Conservation  
21 Commission) to protect our natural resources. These laws and regulations  
22 require FPL to incorporate environmental protection/stewardship into the  
23 design, construction, operation and maintenance of its T&D facilities.

1 **VIII. IMPROVING COMMUNICATIONS WITH CUSTOMERS**

2

3 **Q. What measures have been implemented to improve customer**  
4 **communications?**

5 A. FPL continually strives to improve the service we provide our customers. In  
6 addition to improving the reliability of electric service, this means increasing  
7 overall customer satisfaction with initiatives such as improving how we  
8 communicate with our customers and providing customers with better  
9 information. By providing easier access to better information, customers are  
10 better situated to make more informed decisions. Several examples of recent  
11 initiatives deployed to improve customers' overall service and satisfaction  
12 include the implementation of the Customer Preference Center on FPL's  
13 website ([www.FPL.com](http://www.FPL.com)) and the establishment of our Major Projects and  
14 Construction Services organization.

15 **Q. Please provide additional information for these initiatives.**

16 A. Customer Preference Center – This is a recently launched application on  
17 FPL's website that enables customers to choose their preferences among  
18 options for receiving automated FPL communications. This includes what  
19 communications they wish to receive (e.g., all, none or certain  
20 communications for outage alerts, planned outages, scheduled tree trimming  
21 in the area, hardening projects), how they wish to receive the communications  
22 (e.g., email, phone, text messages) and when they receive such  
23 communications (e.g., any time during the day or a specific time of day).

1 Additional improvements, currently expected to be implemented before year  
2 end 2016, include certain website redesigns that will make it easier for  
3 customers to report outages from their desktop computer or mobile device  
4 and, for large builders/developers, to initiate electrical construction needs or  
5 obtain the status of their electrical construction projects.

6

7 Major Projects and Construction Services – This is an organization within  
8 FPL that was recently established to specifically foster improved partnerships  
9 with large builders/developers in order to better understand their needs, better  
10 coordinate their projects and ensure FPL’s project commitments are met.

11 **Q. Have these initiatives been recognized by customers?**

12 A. Yes. As noted earlier, the cumulative success of FPL’s initiatives to improve  
13 our service and how we communicate with our customers have contributed to  
14 reducing FPSC service-related logged complaints by 65% over the last  
15 decade.

16

## 17 IX. FPL’S T&D COSTS

18

19 **Q. Please provide an overview of FPL’s actual/forecasted T&D costs.**

20 A. Historically, FPL’s capital expenditures and O&M expenses result from five  
21 major cost drivers: (1) FPSC storm hardening; (2) growth; (3) reliability/grid  
22 modernization; (4) grid servicing/support; and (5) complying with other  
23 regulatory agency requirements. For capital expenditures, the major drivers

1 have been FPSC storm hardening, growth and reliability/grid modernization.  
 2 For O&M expenses, the major drivers have been grid servicing/support, other  
 3 regulatory commitments and reliability/grid modernization. For 2014-2017  
 4 and 2018, these same major cost categories are expected to continue to drive  
 5 FPL's T&D capital expenditures and O&M expenses.

6

7

**A. T&D CAPITAL EXPENDITURES**

8

9 **Q. What are FPL's T&D actual/projected capital expenditures for 2014-**  
 10 **2017 and 2018?**

11 A. Total FPL T&D capital expenditures for 2014-2017 and 2018 are \$6.47 billion  
 12 and \$1.95 billion, respectively. As discussed earlier, the major drivers for  
 13 capital expenditures historically and the projected periods are the same.

14 **Q. Please provide 2014-2017 and 2018 capital expenditures by major driver.**

15 A. Below are the 2014-2018 capital expenditures for each major driver:

16

(\$Billions)

17

<u>Major Driver</u>	<u>2014-2017</u>	<u>2018</u>	<u>2014-2018</u>	<u>%</u>
18 FPSC Hardening	\$1.67	\$0.87	\$2.54	30%
19 Growth	\$1.72	\$0.57	\$2.29	27%
20 Reliability/Grid Modernization	\$1.93	\$0.28	\$2.21	26%
21 Grid Servicing/Support	\$0.82	\$0.17	\$0.99	12%
22 Other Regulatory Commitments	<u>\$0.33</u>	<u>\$0.06</u>	<u>\$0.39</u>	<u>5%</u>
23 Total	\$6.47	\$1.95	\$8.42	100%

1 Earlier in my testimony, I discussed each of these drivers, their specific  
2 components and their importance in maintaining a resilient, reliable and  
3 compliant T&D system.

4 **Q. Please provide additional details for FPSC Hardening.**

5 A. For 2014-2017 and 2018, the vast majority of the FPSC Hardening category,  
6 \$1.37 billion and \$0.79 billion, respectively, result from FPL's efforts to  
7 further storm-harden FPL's T&D grid (e.g., feeder hardening). Distribution  
8 pole/transmission structure inspections, \$0.30 billion for 2014-2017 and \$0.08  
9 billion for 2018, account for the remaining costs in this category.

10 **Q. Please provide additional details for Growth.**

11 A. The capital expenditures associated with the installation of new service lines  
12 to serve the approximately 300,000 new service accounts being added during  
13 2014-2018 are \$0.55 billion for 2014-2017 and \$0.18 billion for 2018.  
14 Capital expenditures for expansion and upgrades of both T&D  
15 facilities/infrastructure to ensure the safe and reliable operation of the grid for  
16 2014-2017 and 2018 are \$1.13 billion and \$0.38 billion, respectively.  
17 Remaining capital expenditures in this cost category are associated with new  
18 large major construction projects and new streetlight systems.

19 **Q. Please provide additional details for Reliability/Grid Modernization.**

20 A. Capital expenditures associated with the distribution reliability/grid  
21 modernization initiatives for 2014-2017 and 2018 are \$1.54 billion and \$0.20  
22 billion, respectively. For transmission, reliability capital expenditures for  
23 2014-2017 are \$0.39 billion and for 2018, \$0.08 billion, respectively.

1 **Q. Please provide additional details for distribution-related Reliability/Grid**  
2 **Modernization capital expenditures.**

3 A. The installation of distribution smart grid devices account for \$0.64 billion for  
4 2014-2017 and \$0.07 billion for 2018. The capital expenditures associated  
5 with the underground inspection, repair and rehabilitation of underground  
6 equipment and the priority feeder reliability initiatives are \$0.65 billion for  
7 2014-2017 and \$0.07 billion for 2018. The remaining components for this  
8 category, accounting for \$0.25 billion for 2014-2017 and \$0.06 for 2018, are  
9 associated with other various distribution reliability initiatives (e.g., hand-hole  
10 and pad-mount transformer inspections, submarine cable repairs/replacement,  
11 momentary and other device outliers).

12 **Q. Please provide additional details for transmission-related Reliability/Grid**  
13 **Modernization capital expenditures.**

14 A. Capital expenditures associated with transmission facility/system assessments,  
15 targeted maintenance, and the prevention through prediction/reoccurrence  
16 initiatives account for \$0.29 billion for 2014-2017 and \$0.07 billion for 2018.  
17 The remaining transmission reliability-related capital expenditures are  
18 associated with modernizing the transmission grid (e.g., upgrading/digitizing  
19 substation transformer relays and installing substation fault information  
20 capabilities). Capital expenditures for these initiatives are \$0.10 billion for  
21 2014-2017 and \$.01 billion for 2018.

22

23



1 **Q. Please provide details for Grid Servicing/Support.**

2 A. Capital expenditures associated with the three major components of this key  
3 driver category include: (1) restoring customers' service, \$0.40 billion for  
4 2014-2017 and \$0.11 billion for 2018; (2) operating/maintaining FPL's  
5 vehicle fleet, \$0.18 billion for 2014-2017 and \$0.03 for 2018; and (3) other  
6 various support activities (e.g., purchase of tools, computer systems/software,  
7 maintenance/upgrades of office facilities, and responding to customer  
8 requests). For 2014-2017, these costs are \$0.24 billion and for 2018, \$0.03  
9 billion).

10 **Q. Please provide details for Other Regulatory Commitments.**

11 A. This remaining major driver category, accounting for approximately \$0.33  
12 billion and \$0.06 billion in 2014-2017 and 2018, respectively, includes costs  
13 associated with various mandated laws, rules and regulations that have been  
14 previously discussed.

15

16 **B. T&D O&M EXPENSES**

17

18 **Q. What are FPL's T&D O&M expenses for the 2017 Test Year and 2018**  
19 **Subsequent Year?**

20 A. Total T&D O&M expenses for the 2017 Test Year and 2018 Subsequent Year  
21 are \$372.4 million and \$396.3 million, respectively.

22

23

1 **Q. How do T&D O&M expenses compare to typical benchmarks utilized by**  
2 **the FPSC for evaluating the reasonableness of O&M expenses?**

3 A. FPL's total T&D 2017 Test Year and 2018 Subsequent Year O&M expenses  
4 compare favorably to the benchmarks typically used by the Commission to  
5 evaluate the reasonableness of O&M expenses (e.g., MFR C-8, Details of  
6 Changes in Expenses and MFR C-41, O&M Benchmark Variance by  
7 Function). For example, FPL's 2017 Test Year and 2018 Subsequent Year  
8 T&D O&M expenses are significantly below the FPSC O&M benchmark,  
9 approximately \$34 million and \$26 million, respectively.

10 **Q. Is there other information available that indicates FPL's T&D O&M**  
11 **expenses are reasonable?**

12 A. Yes. As contained in FPL witness Reed's testimony and Exhibit JJR-4,  
13 benchmarking of FPL's T&D O&M expenses demonstrates that FPL has  
14 "shown excellence in controlling its Distribution O&M expenses" and  
15 "performed well in controlling Transmission O&M expenses."

16 **Q. Does this conclude your direct testimony?**

17 A. Yes.

1 **BY MR. GUYTON:**

2 Q Mr. Miranda, you had exhibits that were  
3 identified as Exhibit MBM-1 through MBM-6 attached to  
4 your direct testimony.

5 A Yes, I did.

6 Q And were these prepared under your direction,  
7 supervision, and control?

8 A Yes, they were.

9 **MR. GUYTON:** Madam Chair, I'd note that those  
10 have been pre-identified in the staff Comprehensive  
11 Exhibit List as Exhibits 67 through 72.

12 **CHAIRMAN BROWN:** Thank you. And at this time,  
13 staff will be authenticating -- asking authentication  
14 questions of this witness.

15 **MS. LEATHERS:** Thank you, Chairman.

16 **EXAMINATION**

17 **BY MS. LEATHERS:**

18 Q Good morning, Mr. Miranda. I'm Margo Leathers  
19 with Commission staff.

20 Have you reviewed staff Exhibit 579?

21 A Yes, I have.

22 Q And did you prepare the exhibits listed under  
23 your name or were they prepared under your supervision?

24 A Yes, they were.

25 Q Are these exhibits true and correct to the

1 best of your knowledge and belief?

2 **A** I believe they were. Some corrections were  
3 provided to staff, and I assume that they were provided  
4 to you. If not, I can go over what those were.

5 **Q** Could you please go over those?

6 **A** Yes. In Exhibit 500 in response to FIPUG's  
7 first request for production of documents No. 26(b)  
8 refers to an attachment. It does not appear to be on  
9 the CD.

10 In Exhibit 518, the response to South Florida  
11 Hospital Association's 10th request for production  
12 No. 208, it appears that a response is on the CD but the  
13 question is not included.

14 In Exhibit 520, which FPL responds to South  
15 Florida Hospital's 15th request for production,  
16 No. 226 through number 228 refers to an attachment, but  
17 the attachment does not appear to be on the CD.

18 And then in Exhibit 523, I sponsor FPL's  
19 responses to the South Florida Hospital's 19th request  
20 for production Nos. 253 through 257, 259 through 262,  
21 and 265, and these responses refer to an attachment that  
22 does not appear to be included.

23 **CHAIRMAN BROWN:** Mr. Moyle.

24 **MR. MOYLE:** So I'm not a thousand percent sure  
25 on how this procedure is going to work, but I would like

1 to ask the court reporter to mark this portion of the  
2 transcript if we're going to subsequently next week be  
3 making objections to documents.

4 **CHAIRMAN BROWN:** And you would like to ask the  
5 court reporter to --

6 **MR. MOYLE:** To mark it, to note it so that I  
7 can go back and have it transcribed. And when they try  
8 to move these documents in, I can say, "Well, here's  
9 what he said. It's not part of the CD or the document  
10 is missing." So, you know, I don't know that I want to  
11 argue that now. I don't think he's authenticated those  
12 pieces. But as I understand it, our last day we're  
13 going to have an exhibit in or out discussion, so I just  
14 want to --

15 **CHAIRMAN BROWN:** And that's correct.

16 **MR. MOYLE:** -- have it noted so I can ask the  
17 court reporter, "Please print just this section."

18 **CHAIRMAN BROWN:** FPL, any comments?

19 **MR. GUYTON:** That's fine. If he wants to be  
20 able to refer to it, we have no problem with that.

21 **CHAIRMAN BROWN:** Okay. Staff.

22 **MS. BROWNLESS:** We have no problem with that  
23 either.

24 **CHAIRMAN BROWN:** Okay. Continue, staff.  
25

1 **BY MS. LEATHERS:**

2 Q Mr. Miranda, with those corrections, are the  
3 exhibits true and correct to the best of your knowledge  
4 and belief?

5 A Yes, they are.

6 Q And would your responses be the same today as  
7 when you prepared them?

8 A Yes, they are.

9 Q And are there any portions of your listed  
10 exhibits -- are any portions of your listed exhibits  
11 confidential?

12 A No, they are not.

13 **MS. LEATHERS:** Thank you.

14 **CHAIRMAN BROWN:** Thank you.

15 Mr. Guyton.

16 **EXAMINATION**

17 **BY MR. GUYTON:**

18 Q Have you also prepared and caused to be filed  
19 ten pages of direct testimony in the storm hardening  
20 proceeding, Docket No. 160061?

21 A Yes, I have.

22 Q And if I were to ask you the questions  
23 contained in your direct testimony in the storm  
24 hardening proceeding today, would your answers be the  
25 same?

1           **A**     Yes, they would be.

2           **MR. GUYTON:** Madam Chair, I'd ask that  
3 Mr. Miranda's direct testimony in the storm hardening  
4 proceeding be inserted into the record as though read.

5           **CHAIRMAN BROWN:** I will enter -- we will do  
6 the -- we will do just that. Thank you.

7           **MR. GUYTON:** Thank you.

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**I. INTRODUCTION**

**Q. Please state your name and business address.**

A. My name is Manuel B. Miranda. 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 the Senior Vice President of Power Delivery.

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

A. As the Senior Vice President of Power Delivery, I am responsible for the planning, engineering, construction, operation, maintenance and restoration of FPL’s transmission and distribution (“T&D”) electric grid. This includes the systems, processes, analyses, and standards utilized to ensure that FPL’s T&D facilities are safe, reliable, secure, effectively managed and in compliance with regulatory requirements.

**Q. Please describe your educational background and professional experience.**

A. I have a Bachelor of Science in Mechanical Engineering from the University of Miami and a Master in Business Administration from Nova Southeastern University. I joined FPL in 1982 and have more than 33 years of technical, managerial and commercial experience gained from serving in a variety of positions within Customer Service, Distribution and Transmission. Over the



1 last 10 years, I have held several vice president positions within Distribution  
2 and Transmission, including my current position.

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

4 A. Yes. I am sponsoring the following exhibits:

- 5 • MBM-1 FPL’s Electric Infrastructure Storm Hardening Plan (“Plan”)
- 6 • MBM-2 Percentage of FPL Feeders Hardened/Underground

7 **Q. What is the purpose of your testimony?**

8 A. The purpose of my testimony is to: (1) present and provide an overview of  
9 FPL’s 2016-2018 Plan (attached as Exhibit MBM-1); (2) demonstrate that  
10 FPL’s 2016-2018 Plan complies with the National Electrical Safety Code  
11 (“NESC”) and appropriately adopts the NESC’s extreme wind loading  
12 standards (“EWL”) for FPL’s distribution system; and (3) present FPL’s  
13 2016-2018 deployment strategy, including the facilities affected, the location  
14 of those facilities (for 2016), an estimate of FPL’s costs and benefits  
15 (including the effect on reducing storm restoration costs and customer  
16 outages) and input received, including costs and benefits, from third-party  
17 attachers. My testimony shows that FPL’s 2016-2018 Plan complies with  
18 Rule 25-6.0342, Florida Administrative Code (“F.A.C.”), and should be  
19 approved by the Florida Public Service Commission (“FPSC” or  
20 “Commission”).

21  
22  
23

1 **Q. Please provide some historical perspective and an overview of FPL's**  
2 **overall hardening strategy.**

3 A. FPL has created a transmission and distribution (“T&D”) electrical grid that is  
4 one of the most storm-resilient and reliable in the nation. We have achieved  
5 this through the development and implementation of our forward-looking  
6 storm-hardening, reliability and grid modernization initiatives, combined with  
7 the use of cutting-edge technology and strong employee commitment. With  
8 these industry-leading initiatives and our proposed 2016-2018 Plan, FPL will  
9 further strengthen its infrastructure, improve overall system reliability and  
10 develop a system even more capable of meeting ever-increasing needs and  
11 expectations.

12  
13 It is well documented that Florida is impacted by hurricanes more than any  
14 other state. Additionally, with its significant coast line exposure and the fact  
15 that the vast majority of FPL’s customers live within 20 miles of the coast,  
16 FPL is the most susceptible electric utility to storms within Florida. This was  
17 clearly demonstrated when, in 2004 and 2005, FPL’s service territory was  
18 impacted by seven named storms. With the experience gained from this  
19 onslaught of storms, FPL and the Commission recognized that significant  
20 changes were required to construct an electrical grid that would be more  
21 storm-resilient. As a result, industry-leading initiatives were undertaken to  
22 improve storm resiliency, including the implementation of storm  
23 preparedness, cyclical infrastructure inspections, and vegetation management

1 programs. In addition to providing increased storm resilience, FPL's  
2 hardening initiatives also provide our customers with improved day-to-day  
3 reliability. For example, day-to-day, storm-hardened feeders perform  
4 approximately 40% better than non-hardened feeders.

5 **Q. How has FPL's hardening strategy been recognized for strengthening  
6 and modernizing its electrical grid?**

7 **A.** During a January 2016 tour of FPL's facilities in Miami-Dade County, U.S.  
8 Energy Secretary Ernest Moniz stated that, "Modernizing the U.S. electrical  
9 grid is essential to reducing carbon emissions, creating safeguards against  
10 attacks on our infrastructure and keeping lights on." He also emphasized that  
11 FPL stands out in its innovations to strengthen the grid, when he said, "FPL  
12 really is on the cutting edge of addressing a grid for the 21<sup>st</sup> century and  
13 particularly in the area of resilience," and "It's really what we need."

14  
15 Today's digital society, economy, national security and daily life are more  
16 dependent on reliable electric service than ever before. While FPL's efforts to  
17 strengthen, modernize and improve the reliability of the electric grid have  
18 produced superior results, our work is not done. The demands for safe,  
19 reliable and secure electric service are certain to escalate, as evidenced by the  
20 U.S. Department of Energy's ("DOE") "Grid Modernization Initiative,"  
21 issued in March 2015, and its "Grid Modernization Multi-Year Program  
22 Plan," issued in November 2015, which recognize that "the grid we have  
23 today does not have the attributes necessary to meet the demands of the 21<sup>st</sup>

1 century and beyond,” and the future grid will need to “deliver resilient,  
2 reliable, flexible, secure, sustainable, and affordable electricity to consumers.”  
3 These goals align with those that FPL, with the FPSC’s oversight and  
4 guidance, has vigorously pursued for more than a decade.

5  
6 To date, our nation-leading initiatives have positioned us well to achieve these  
7 future grid objectives. FPL’s 2016-2018 plans and initiatives are appropriate,  
8 necessary and crucial to our efforts to continue to develop an electric grid that  
9 has a greater capability to meet the ever-increasing needs and expectations of  
10 customers -- today and in the future.

11 **Q. Please provide an overview of FPL’s 2016-2018 plans for storm  
12 strengthening/hardening.**

13 A. FPL is filing its 2016-2018 Plan in compliance with Rule 25-6.0342, F.A.C.  
14 For Distribution, executing the 2016-2018 Plan will result in 100% of FPL’s  
15 system-wide Critical Infrastructure Facilities (“CIF”) (e.g., hospitals, 911  
16 centers, police/fire stations) and Community Project (grocery stores, gas  
17 stations, pharmacies) feeders being hardened by year-end 2016. Completing  
18 these feeders in 2016 is consistent with FPL’s commitment provided in its  
19 approved 2013-2015 storm hardening plan. Targeting CIF and Community  
20 Project feeders has been an important first step towards providing not only  
21 increased storm resilience but significant day-to-day reliability benefits.

22  
23

1           Upon completion of all CIF and Community Project feeders in 2016, FPL's  
2           next step is to move forward with completing the task of hardening FPL's  
3           system-wide feeder network. Approximately 60% of the feeder network will  
4           remain to be hardened and is at a greater risk of incurring storm damage until  
5           that hardening is completed. Broadening the scale and scope of feeder  
6           hardening to expeditiously address all feeders within FPL's system is  
7           appropriate and necessary because it:

- 8           • helps to address customers', public officials' and other stakeholders'  
9           expectations for increased storm resiliency, fewer outages and prompt  
10          service restoration, as evidenced by recent storm events (e.g. Hurricane  
11          Sandy in the northeast);
- 12          • expands the benefits of hardening, including improved day-to-day  
13          reliability, to all customers throughout the system; and
- 14          • is aligned with the goals of the U.S. DOE (i.e., developing a more  
15          resilient and reliable system to meet future demands).

16

17          Beginning in 2016, FPL's next proposed phase of hardening addresses the  
18          remaining feeders in its system by focusing on: (1) "wind-zone hardening"  
19          and (2) "geographic hardening." "Wind zone hardening" targets those feeders  
20          with the largest disparity in current strength vs. EWL. "Geographic  
21          hardening" targets substations without any hardened feeders. Upon execution  
22          of FPL's 2016-2018 Plan at year-end 2018, approximately 800 additional  
23          feeders will be strengthened to EWL. While 40% of FPL's feeder system will

1 still need to be addressed after 2018, a much more substantial part of FPL's  
2 total system will have been hardened, extending the improved storm resiliency  
3 and reliability benefits of hardening to more customers. My Exhibit MBM-2  
4 shows the cumulative percentage of feeders hardened/underground by year  
5 (2006-2018) for CIF and Community Project feeders and all feeders system-  
6 wide.

7  
8 Additionally, to further expand the benefits of hardening throughout its  
9 distribution system, FPL will initiate its lateral hardening initiative in 2018.  
10 While hardening feeders (the backbone of the distribution system) has been  
11 and remains the highest priority for hardening, as improving their storm  
12 resiliency provides the largest initial benefit for customers, the full benefits of  
13 a hardened electrical grid cannot be realized without the hardening of laterals.  
14 Laterals, which tap off of feeders, are the final step in the distribution primary  
15 voltage delivery system. As laterals make up a significant portion of the  
16 overhead miles in FPL's distribution system, hardening laterals is necessary to  
17 provide the full benefits of a hardened distribution system to all customers.

18  
19 For transmission, efforts will continue to focus on replacing all remaining  
20 wood transmission structures. By year-end 2018, fewer than 5,000 wood  
21 structures are expected to be in place, resulting in a transmission structure  
22 population that is 93% steel and concrete.

23

1 **Q. Does FPL’s 2016-2018 Plan comply with the NESC, as required by Rule**  
2 **25-6.0342(3)(a), F.A.C.?**

3 A. Yes. For Distribution, Section 2.0 of FPL’s Plan contains a description of the  
4 NESC requirements and Section 2.2 of the Plan describes how FPL’s Plan  
5 complies with these requirements. For Transmission, see Section 2.0 (NESC  
6 Requirements and Compliance) of FPL’s 2016-2018 Plan.

7 **Q. Does FPL’s 2016-2018 Plan address the extent to which the Plan adopts**  
8 **EWL for new construction, major planned work, critical infrastructure**  
9 **and along major thoroughfares, as required by Rule 25-6.0342(3)(b),**  
10 **F.A.C.?**

11 A. Yes. Section 2.1 (Extreme Wind Loading Criteria (“EWL”), Section 3.0  
12 (Infrastructure Hardening Strategy), Section 4 (Extreme Wind Speed Regions  
13 for Application of EWL), Section 5 (Application of New Design and  
14 Construction Standards), and Section 10 (Underground Distribution Facilities)  
15 of FPL’s 2016-2018 Plan explain how FPL is adopting/applying EWL to  
16 existing and newly installed distribution infrastructure and how distribution  
17 underground facilities are designed to mitigate flooding and storm surge. For  
18 Transmission, see Section 3.0 of FPL’s 2016-2018 Plan.

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1 **Q. Does FPL's 2016-2018 Plan explain the systematic approach that FPL**  
2 **will follow to achieve the desired objectives of enhancing reliability and**  
3 **reducing restoration costs and outage times associated with extreme**  
4 **weather events, as required by Rule 25-6.0342(4)(a)-(e), F.A.C.?**

5 A. Yes. Section 6 (Deployment Plans), Section 7 (Design and Construction  
6 Standards), Section 8 (Attachments by Other Entities), Section 11 (Projected  
7 Costs and Benefits) of FPL's 2016-2018 Plan describe the facilities affected;  
8 include technical design specifications, construction standards and  
9 construction methodologies to be employed; identifies the communities and  
10 areas where the infrastructure improvements are to be made; addresses the  
11 extent to which the improvements involve joint use facilities; estimates costs  
12 and benefits, including the effect on reducing storm restoration costs and  
13 customer benefits; and estimates costs and benefits obtained from third-party  
14 attachers, including the effect on reducing storm restoration costs and  
15 customer benefits. For Transmission, see Sections 4-6 of FPL's 2016-2018  
16 Plan.

17 **Q. Did FPL seek input from and attempt in good faith to accommodate**  
18 **concerns raised by third-part attachers, as required by Rule 25-6.0342(6),**  
19 **F.A.C.?**

20 A. Yes. On February 19, 2016, FPL sent its draft 2016-2018 Plan to  
21 representatives of all known attachers (99 entities), inviting comments and  
22 soliciting input (by March 4, 2016) on their costs and benefits resulting from  
23 FPL's Plan. As of March 9, FPL received no comments/concerns from



1           attaching entities that required FPL to modify its 2016-2018 Plan.  
2           Additionally, no attaching entity provided information related to their costs  
3           and benefits associated with FPL's 2016-2018 Plan. See Section 8.2 (Input  
4           from Attaching Entities) and Section 11.1 (Costs) and Section 11.2 (Benefits)  
5           of FPL's 2016-2018 Plan.

6   **Q.    Should the Commission approve FPL's 2016-2018 Plan?**

7   A.    Yes. As described throughout my testimony and contained in FPL's Plan,  
8           FPL's 2016-2018 Plan meets the requirements set out in Rule 25-6.0342,  
9           F.A.C., and, therefore, should be approved by the Commission.

10 **Q.    Does this conclude your direct testimony?**

11 A.    Yes.

1 **BY MR. GUYTON:**

2 **Q** Mr. Miranda, do you have Exhibits MBM-1 and  
3 MBM-2 attached to your prepared direct testimony in the  
4 storm hardening proceeding?

5 **A** Yes.

6 **Q** And were these exhibits prepared under your  
7 direction, supervision, and control?

8 **A** Yes, they were.

9 **MR. GUYTON:** Madam Chair, I'd note that those  
10 have been identified in staff's comprehensive list as  
11 Exhibits 73 and 74.

12 **CHAIRMAN BROWN:** So noted.

13 **BY MR. GUYTON:**

14 **Q** Mr. Miranda, would you please provide for the  
15 Commission a summary of your direct testimonies in both  
16 the rate case proceeding and in the storm hardening  
17 proceeding.

18 **A** Yes. Thank you.

19 Good morning, Madam Chairman and  
20 Commissioners. As a result of today's digital society  
21 and economy, our lives are more dependent on reliable  
22 electric service than ever before. FPL's efforts to  
23 strengthen, modernize, and improve the reliability of  
24 the electric grid have produced superior and best-ever  
25 reliability performance; however, a significant amount

1 of work still remains. Our proposed plants will allow  
2 us to further expand the benefits as we continue our  
3 efforts to meet our customers' ever increasing needs and  
4 expectations.

5 Florida is impacted by more hurricanes than  
6 any other state in the nation. Following the 2004 and  
7 2005 hurricane season, we received substantial feedback  
8 from our customers and public officials that significant  
9 and fundamental changes were required to construct an  
10 electric grid that would be more storm resilient.

11 FPL and the Commission experience on lessons  
12 that we learned resulted in our industry leading storm  
13 hardening initiatives to increase our storm resiliency.  
14 This initiative also resulted in significant day-to-day  
15 reliability benefits. While we have made great strides  
16 to improve and start this journey together, it is still  
17 a first step.

18 For example, while we expect to complete  
19 hardening of all key critical infrastructure feeders by  
20 the end of this year, it results in only 40 percent of  
21 our total feeder network being hardened or underground.  
22 While FPL's proposed 2016 and 2018 hardening plan, the  
23 benefits of hardening will be expanded to even more  
24 customers as another 20 percent of our feeder network or  
25 60 percent in total will be hardened or placed

1 underground. FPL plans to continue to incorporate smart  
2 technology into our reliability and grid modernization  
3 efforts. With these initiatives, FPL has produced  
4 superior performance in the area of reliability, despite  
5 significant challenges.

6 As residents of Florida, we live in a region  
7 that experiences more thunderstorms and lightning than  
8 any other in the United States. In fact, in 2015 FPL's  
9 service territory experienced nearly 395,000 lightning  
10 strikes, yet FPL was still able to achieve results,  
11 best-ever results for two of our industry reliability  
12 standard metrics, SAIDI and MAIFIE. SAIDI measures the  
13 average time a customer is without service and is also  
14 the best overall reliability metric. MAIFIE measures  
15 the frequency of momentary interruptions.

16 Additionally, our reliability performance  
17 compares extremely well to others in Florida and in the  
18 nation. In Florida, the average SAIDI for the other  
19 IOUs is 50 percent higher than Florida Power & Light,  
20 and FPL's SAIDI is 44 percent better than the national  
21 average. And our customers have recognized this  
22 excellent performance as well as our service quality  
23 logged complaints have been reduced by 65 percent over  
24 the last decade. Others have recognized it as well, as  
25 FPL was a recent recipient of three PA Consulting

1 ReliabilityOne awards. This included the National  
2 Reliability Excellence Award, one of the most  
3 prestigious awards in the industry, for our sustained  
4 leadership, innovation, and achievement in the area of  
5 electric reliability. Also earlier this year, the U.S.  
6 Secretary of Energy, Ernest Moniz, toured FPL facilities  
7 and noted that FPL is really on the cutting edge of  
8 addressing the grid for the 21st Century. And in the  
9 area of storm resiliency, he stated, "It's really what  
10 we need."

11 FPL remains committed to continue its  
12 effective management of forward-looking investments and  
13 expenses. The major drivers of our costs continue to be  
14 associated with the hardening of our storm initiatives,  
15 expansion of our system to support our steadily  
16 increasing residential growth and significant large  
17 commercial projects, the execution of our comprehensive  
18 reliability and modernization initiatives, complying  
19 with regulatory requirements such as national cyber and  
20 physical security standards, and servicing the electric  
21 grid, and other support activities.

22 Madam Chairman and Commissioners, the  
23 experience and knowledge that we have gained with each  
24 storm has helped us build a stronger and more reliable  
25 system; however, in order to complete our journey to

1 build a more resilient grid of the future, more work is  
2 required. We look forward to working together and  
3 remain committed to providing excellent service and  
4 delivering outstanding value for our customers today and  
5 into the future. And that concludes my summary.

6 **CHAIRMAN BROWN:** Thank you, Mr. Miranda.

7 **MR. GUYTON:** Thank you, sir.

8 We tender Mr. Miranda for cross-examination.

9 **CHAIRMAN BROWN:** Thank you, and good morning  
10 and welcome.

11 **THE WITNESS:** Good morning. How are you?

12 **CHAIRMAN BROWN:** Public Counsel.

13 **MS. CHRISTENSEN:** No questions for this  
14 witness.

15 **CHAIRMAN BROWN:** Mr. Moyle.

16 **MR. MOYLE:** Thank you, Madam Chairman.

17 **EXAMINATION**

18 **BY MR. MOYLE:**

19 **Q** Good morning, sir.

20 **A** Good morning.

21 **Q** You, in your opening statement, referenced  
22 Florida having a lot of lightning strikes; is that  
23 right?

24 **A** Yes, sir.

25 **Q** The source of that information is from an

1 article that was in a magazine; is that right?

2 **A** No. That's from NOAA. They actually capture  
3 each lightning strike.

4 **Q** Did you provide or sponsor an interrogatory  
5 answer where it referenced a story in a magazine, or was  
6 the reference to NOAA?

7 **A** I'm sure we provided several responses to  
8 interrogatories. If you have the specific one, I'd be  
9 happy to look at it.

10 **Q** Okay. You -- I want to understand a couple of  
11 things, if I can. You have an acronym for community  
12 centers that get extra attention; is that right?

13 **A** Can you refer -- can you clarify that for me?

14 **Q** Sure. On page 9, line 14.

15 **MR. GUYTON:** What rate case?

16 **MR. MOYLE:** It's in the rate case.

17 **THE WITNESS:** Yes, for community projects,  
18 what we call our community feeders.

19 **BY MR. MOYLE:**

20 **Q** Right. So I guess I was referring to the  
21 acronym EWL.

22 **A** Extreme wind loading.

23 **Q** Right. And do you build -- what is extreme  
24 wind loading?

25 **A** So following the 2004 and 2005 hurricane

1 season, the electric industry builds to certain  
2 construction standards. And in the distribution arena  
3 there's really two basic standards that the industry  
4 follows, the most basic of which is Grade C  
5 construction, which is what typically all utilities  
6 across the nation build to. It's typically about 60- to  
7 80-mile-an-hour winds.

8 Florida Power & Light in its history always  
9 built to the next standard up, which is what we call  
10 Grade B construction, and has been building to that  
11 standard for many years. And that's about 104 miles per  
12 hour. Following the 2004 and 2005 hurricane season, if  
13 you recall, Commissioners, we met with the Commission  
14 and we took the step to elevate what we call our  
15 standard to extreme wind Grade B, which is the highest  
16 standard within the NESC code, and that's what we have  
17 moved towards in strengthening our grid. And so in our  
18 service territory, we now build -- you know, all our new  
19 construction and the feeders that we are hardening we  
20 are now building to that new standard.

21 Q What's the wind standard on that?

22 A Would you repeat your question?

23 Q Sure. The standard you said, the EWL that  
24 you're building to, you gave wind standards of the other  
25 two. Do you have a wind standard on that?



1           **A**     Yes, sir.  So within -- we've broken it up  
2 into three zones.  The majority of -- for example, in  
3 the urban areas -- Dade, Broward, Palm Beach, and then  
4 the west coast -- about 145 miles per hour; and then the  
5 second zone is 130 miles per hour; and the third zone is  
6 105 miles per hour.  And they're anchored effectively on  
7 the same code as the Florida Building Code has for your  
8 houses here in Florida.

9           **Q**     So why are you calling out on lines 14 and 15  
10 grocery stores and gas stations?  Are you -- do you  
11 harden those to a different standard or treat those  
12 differently than other customers?

13          **A**     No, sir.  The reason that we call those out,  
14 following the storms, we took effectively a two-prong  
15 approach of what we wanted to harden initially.  We  
16 identified what we called critical infrastructures.  
17 These are your hospitals, your 911, your police  
18 stations.  And by the end of this year, by the end of  
19 2016, 100 percent of those circuits that we had  
20 identified will be completed.

21                   The second grouping of circuits that we  
22 identified were what we call community feeders.  And  
23 what happened after those storms, if you recall, and I  
24 know it's been over a decade and sometimes you forget  
25 the destruction that a hurricane can cause, but

1 following that, a lot of our customers didn't have  
2 somewhere to go -- basic necessities. So they wanted to  
3 go get gasoline; they wanted to go get, you know, basic  
4 food, you know; some -- go to a mall, for example.

5 So what we did is we took a look at our  
6 circuits across our service territories and said which  
7 one of our circuits have a lot of these essential  
8 services so that we can harden them so that our  
9 communities can at least have somewhere to go to get  
10 some essential services following a hurricane? So  
11 that's why they were categorized. And also by the end  
12 of this year, those circuits that we identified will be  
13 completed as well.

14 **Q** Okay. So that was just with respect to how  
15 you do your construction work; is that right? You  
16 identified those community circuits to say let's do  
17 those before we do others?

18 **A** We prioritized by starting with our critical  
19 infrastructure and the community circuits, yes.

20 **Q** And do you also do that same priority when  
21 restoring electricity?

22 **A** I'm sorry.

23 **Q** Do you follow a priority when restoring  
24 electricity, if you know, to go hospitals first? If  
25 there's a storm that hits, a hurricane, do you --

1           **A**     Oh, I'm sorry, the restoration. Yes. What we  
2 do is immediately after a storm our highest priority is  
3 our critical infrastructure. And we work with local  
4 community leaders, we work with the EOCs. And as you  
5 know, the EOCs get opened up after a storm and they help  
6 us prioritize. But those are our first phase of  
7 restoration is to get those critical infrastructure  
8 feeders back up and running immediately after a storm.

9           **Q**     Okay. And then do you -- to take this  
10 priority that you just talked about, with respect to  
11 community centers, grocery stores, and gas stations, are  
12 they next on your restoration?

13          **A**     They're typically our next priorities, yes.

14          **Q**     And then residential would be third or last?

15          **A**     So the remaining population after that, we try  
16 to get the most customers on as quickly and as safely as  
17 possible.

18          **Q**     Okay. All right. I want to just better  
19 understand a little bit with respect to your storm  
20 hardening. I know you say that you have, what is it, 80  
21 percent of your transmission is done right now on storm  
22 hardening?

23          **A**     Our transmission structures, we have made a  
24 commitment to replace all our structures, whether steel  
25 or concrete. As of today, we're approximately 85 --

1 85 percent of our structures are either steel or  
2 concrete at this point.

3 Q Okay. When do you expect to have 100 percent  
4 of that done?

5 A Well, with our current plan, we would have at  
6 the end of -- at this proposal at the end of 2018 we  
7 will have 93 percent, and we're hoping by 2020, at that  
8 time period, to be completed with those.

9 Q Okay. Do you know how long those are -- those  
10 steps you've taken to harden them are expected to last?

11 A Well beyond my career, I hope. So I would  
12 say, you know, our structures -- our concrete poles can  
13 last 50 to 60 years.

14 Q And with respect to the storm hardening steps  
15 you take with respect to your distribution system, how  
16 long do you think -- how long are those projected to  
17 last?

18 A Those are a little different, Mr. Moyle,  
19 because there you do have -- there not every pole, and  
20 when you harden, it's not a strict replacement with  
21 concrete poles. So what we try to do when we harden a  
22 distribution circuit, we take a very prudent approach  
23 and we have a hardening tool kit, if you will. And we  
24 apply that hardening tool kit to each circuit, and each  
25 circuit has a different approach. In some cases, you

1 can harden an existing structure with a simple down guy.  
2 You can structure that pole so it doesn't move. In some  
3 cases, you just replace a wood pole with a bigger wood  
4 pole. In other cases, you place an intermediate pole.  
5 And in the ultimate case, you replace a concrete pole.  
6 So, but once we harden a feeder going forward, it will  
7 be built to that new standard forever and ever at that  
8 point.

9 Q Okay. And my question was if you knew how  
10 long they were projected to last.

11 A Again, they will always remain at the extreme  
12 wind loading going forward. Components of it will be  
13 replaced throughout its history.

14 Q So when you replace them, do you replace them  
15 all at once, or do you go check them and say, "This one  
16 is bad. We need to replace this one"?

17 A We would go to a wood pole, for example, and  
18 say, "This pole is good. We're going to leave it in  
19 place." But it may already be 20 years old and it might  
20 be due replacement in, you know, eight years or ten  
21 years following. But we will keep up with that pole  
22 either through our pole inspection program or our  
23 maintenance program to make sure that that pole always  
24 sustains its hardening.

25 Q What percent of the storm hardening has taken

1 place on the distribution network?

2           **A**     At the end of this year -- well, at the end of  
3 2015, it was approximately 34 percent of our feeders  
4 were either hardened or underground. At the end of this  
5 year, it will be approximately 41 percent.

6           **Q**     And when you say "feeders," that means  
7 distribution; is that right?

8           **A**     That's correct, sir.

9           **Q**     Okay. And then at what rate will you continue  
10 to do it on an annual basis? If we're at 41 percent  
11 now, do you do 5 percent a year, 10 percent a year?

12           **A**     What we have shown -- we file our plan for  
13 three years, so the plan that we file is from '16, '17,  
14 and '18. This is our fourth filing, as we're required  
15 with the Commission. So at the end of 2018, we'll be  
16 approximately 60 percent of our circuits will be  
17 hardened.

18           **Q**     So can you tell me the percent per year? Do  
19 you have a goal to do a percent per year?

20           **A**     Well, there's -- we file -- we're  
21 approximately doing about 10 percent per year. So we'll  
22 be at 40 at the end of this year, 50 at the end of '17,  
23 and approximately 60 percent at the end of '18.

24           **Q**     Okay. On page 12, line 13, you say that  
25 feeders perform approximately 40 percent better once

1 they've been hardened. Did you determine that  
2 40 percent number?

3 **A** It was under my -- yes. Our team -- our team  
4 calculated that, yes.

5 **MR. MOYLE:** If I could have a minute.

6 **CHAIRMAN BROWN:** Sure.

7 **BY MR. MOYLE:**

8 **Q** Who's PA Consulting?

9 **A** They're an independent firm that's out there  
10 that does benchmarking across our industry.

11 **Q** Do you -- do they provide services to you?

12 **A** They have provided some recently, but very  
13 little.

14 **Q** So to the extent you're relying on information  
15 provided by PA Consulting, you wouldn't have independent  
16 knowledge of that; is that right?

17 **A** That's correct.

18 **MR. MOYLE:** That's all I have. Thank you.

19 **CHAIRMAN BROWN:** Thank you.

20 Hospitals. You are Mr. Rappolt or Mr. --

21 **MR. SIQVELAND:** Siqveland.

22 **CHAIRMAN BROWN:** Say that again.

23 **MR. SIQVELAND:** Siqveland.

24 **CHAIRMAN BROWN:** Siqveland.

25 **MR. SIQVELAND:** Yeah, like the "Q" is a "G."

1 It's a Norwegian name.

2 **CHAIRMAN BROWN:** Okay. Thank you.

3 **MR. SIQVELAND:** I have some exhibits. I have  
4 four, to be precise, and --

5 **CHAIRMAN BROWN:** Okay. Our staff will assist  
6 you. Thank you. We're at number 613.

7 **MR. MOYLE:** Can I ask a question of  
8 clarification?

9 **CHAIRMAN BROWN:** On what?

10 **MR. MOYLE:** Mr. Goldstein. Did he count as  
11 one?

12 **COMMISSIONER GRAHAM:** No.

13 **CHAIRMAN BROWN:** No.

14 **MR. MOYLE:** No.

15 **CHAIRMAN BROWN:** This is officially one.  
16 We're at 613. Would you like to identify one  
17 of these as 613 right upfront?

18 **MR. SIQVELAND:** No.

19 **CHAIRMAN BROWN:** Okay. We'll hold onto it.

20 **MR. SIQVELAND:** Shortly, though, yeah. Thank  
21 you.

22 **CHAIRMAN BROWN:** Sure. We appreciate it. You  
23 may proceed with your cross.

24 **EXAMINATION**

25 **BY MR. SIQVELAND:**



1 Q Good morning, Mr. Miranda.

2 A Good morning.

3 Q You were talking with Mr. Moyle about feeders,  
4 and those are generally higher voltage distribution  
5 lines than a lateral; correct?

6 A Yes. A feeder typically is what we call the  
7 main backbone line, and that typically is -- it runs  
8 through -- you know, it's what carries the larger  
9 voltage. Then from there we step it down to laterals or  
10 we go to laterals, which are more your neighborhood  
11 lines.

12 Q So then generally speaking, a -- more FPL  
13 customers would rely on the integrity of a feeder versus  
14 a lateral? There would be less customers served by a  
15 lateral than a feeder ultimately?

16 A Yes, that's correct. Typically an average  
17 feeder has about 1,500 customers. A lateral would have  
18 about 35 customers on average, on average.

19 Q Mr. Miranda, would you agree that when we're  
20 talking about cost-effectiveness in the context of storm  
21 hardening, you know, as the rule, you know, the PSC's  
22 regs explicitly require, you know, utilities to prove  
23 that, you know, hardening investments are cost-effective  
24 or at least that the utility is, you know, aggressively  
25 analyzing that with each of their plans. Would you

1 agree that an activity that produces optimum results for  
2 the expenditure is a cost-effective activity?

3 **A** I think, you know, the standard for hardening  
4 has also been, you know, that we filed an economic  
5 analysis that we submit, and we want to make sure that  
6 our investments are prudent and reasonable and that, you  
7 know, we want to make sure that the benefits that we're  
8 receiving are there for the storm resiliency of the  
9 grid.

10 **Q** So would that be a maybe or is that a yes?

11 **A** That's a yes and a no.

12 **Q** Okay. Thank you.

13 So then I guess under that -- under your --  
14 under the logic of that statement, as your level of  
15 expenditure increases, you would have to get better  
16 results under the greater level of investment than you  
17 did under the -- you would have to get more optimum  
18 results for more -- if you were spending -- expending  
19 more dollars or any resource on something?

20 **A** I'm not sure I agree with that. I think our  
21 investments we're making on the circuits going forward  
22 will deliver, you know, the daily reliability benefits  
23 we're seeing and will make the grid more resilient on a  
24 per circuit basis.

25 **Q** In your direct testimony in the rate case

1 proceeding, the 16 -- excuse me, in the hardening  
2 proceeding, 160061, you're responsible for deploying the  
3 hardening plan and you, you know, you're the one  
4 demonstrating -- you're the primary witness  
5 demonstrating that the 2016 to 2018 plan meets all the  
6 requirements under the FAC and -- including the  
7 cost-effectiveness; isn't that correct? You're the  
8 primary witness for the plan?

9 **A** That's correct.

10 **Q** So you're generally familiar at least with  
11 previous plans at FPL?

12 **A** Yes.

13 **Q** Yes. Thank you.

14 **MR. SIQVELAND:** Madam Chair, I'd like to enter  
15 my first exhibit. It's -- it should be the first one on  
16 the list there.

17 **CHAIRMAN BROWN:** FPL response to OPC  
18 interrogatory No. 120?

19 **MR. SIQVELAND:** Yes, please.

20 **CHAIRMAN BROWN:** All right. We'll mark that  
21 as 613.

22 (Exhibit 613 marked for identification.)

23 **MR. SIQVELAND:** Thank you, Madam Chair.

24 **CHAIRMAN BROWN:** Mr. Miranda, do you have a  
25 copy of that in front of you?

1           **THE WITNESS:** Yes.

2           **CHAIRMAN BROWN:** Okay. Please proceed.

3           **MR. SIQVELAND:** Thank you.

4           **BY MR. SIQVELAND:**

5           **Q** Mr. Miranda, if you could, I guess you've  
6 probably already done it, but review that table there.  
7 It has that line item for FPSC hardening. And FPSC, I  
8 assume, stands for the Florida Public Service  
9 Commission; correct?

10          **A** That's correct.

11          **Q** So you would agree that that table shows that  
12 FPL's investments on hardening increase from  
13 .30 billion -- \$300 million in 2014 to .87 billion in  
14 2018?

15          **A** That's correct.

16          **Q** Now if we could turn to page 6 of your  
17 hardening, your testimony on the hardening proceeding,  
18 specifically line 17, that paragraph beginning there --  
19 excuse me. I'm sorry. Page 7, lines 8 through 9,  
20 "Additionally," beginning -- that paragraph beginning  
21 with the word, "Additionally."

22          **A** Yes.

23          **Q** And I believe you talked to Mr. Moyle about  
24 the fact that in 2018, FPL will begin hardening the  
25 lateral portion of its system?

1           **A**     Mr. Moyle did not ask me that question.

2           **Q**     He did not?  Okay.

3                     So on this -- in your testimony here, you say  
4     that FPL will initiate its lateral hardening initiative  
5     in 2018; is that correct?

6           **A**     That's correct.  I'd be happy to share with  
7     you the background for it.  So as we begin to -- you  
8     know, at the end of 2016, we will be completed with all  
9     our critical infrastructure feeders and community  
10    feeders.  And the plan that we have before the  
11    Commission today starts to move us into the next phase  
12    of hardening.  In other words, how do we prioritize the  
13    remaining part of our feeder backbone?

14                    And if you recall in the original filing when  
15    I was here back in 2006 and 2007 after the '04 and  
16    '05 hurricane season, we laid out a roadmap by which we  
17    would harden our entire grid.  I'm very proud to say  
18    we're still on pace to complete that.

19                    And so what we identified was how do we begin  
20    to prioritize the next phase?  So what we said is we  
21    want to start prioritizing by the wind zone feeders.  
22    These are the feeders that have the largest gap between  
23    our current standard and the largest potential of  
24    exposure they have.  So these would be the feeders in  
25    the 145 wind zone.  But we also said, you know, we

1 wanted to make sure that every community had at least  
2 one feeder hardened, and those are the geographical  
3 feeders. So we wanted to make sure that at least every  
4 part of our service territory in the short term would  
5 have some circuits hardened.

6 But our goal then was we started to say -- you  
7 know, we do have some laterals, Counselor, that are very  
8 challenging for us. So what you're seeing in our  
9 proposed 2018 plan is what I call a "toe in the water."  
10 It's to begin looking at some laterals that have an  
11 extensive number of customers. So some laterals on  
12 average have 35 customers, but we do have some laterals  
13 that are very difficult to restore following a  
14 hurricane. They might be an intercoastal crossing, so  
15 you would have to deal with cranes and barges and stuff  
16 like that to restore. So we're saying are there some  
17 laterals that it would be really prudent for us to start  
18 taking a look at from either the number of customer  
19 count -- we have some laterals with 4-, 5-,  
20 600 customers, we have some laterals that are difficult  
21 with intercoastal waterways, some laterals that make it  
22 very difficult. So that's why we said let's put our toe  
23 in the water and start looking at some of those.

24 Q Thank you for that. But, I mean, those would  
25 probably generally be outlier cases. I mean, in the

1 vast -- you're turning to laterals as a wholesale matter  
2 in 2018; correct?

3 **A** That's not correct. So if you look at our  
4 laterals, what we're proposing, we have about 80,000  
5 overhead laterals in our system. What we're proposing  
6 to harden in 2018 is about 850 to 950 laterals that we  
7 have targeted to say they are kind of the outliers. And  
8 we wanted to start taking a look at them and see if we  
9 can take some prudent steps to mitigate the amount of  
10 damage and to mitigate the impact that they would have  
11 on those customers. Our customers don't know if they're  
12 served from a lateral or a feeder. All they know is  
13 they're out of service. And we want to make sure that  
14 they -- we can restore them safely and quickly.

15 **Q** So on page 12 of your testimony in the rate  
16 proceeding in 160021 --

17 **A** I'm sorry. You said the rate --

18 **Q** Yeah, in the -- thank you. Yes.

19 **A** Page 12?

20 **Q** Yes. Page 12, yes. Sorry. I'm jumping  
21 around here.

22 **A** Okay.

23 **Q** Let me know when you're there.

24 **A** I'm there.

25 **Q** You're there. Okay.

1           On line -- well, I guess on line 9 you begin  
2 discussing previous hardening plans and that 45 to  
3 70 percent improvement in restoration cost savings. And  
4 you note that, as it was -- as it was in previous  
5 hardening plans, you're estimating a 45 to 70 percent  
6 increase -- or decrease -- reduction in restoration  
7 costs; is that correct?

8           **A**     That's correct. Depending on the frequency of  
9 storms that impact our territory.

10          **Q**     Right. So then -- I mean, if you're  
11 increasing your investment from 300 to, you know,  
12 approximately \$870 million, do you think it's -- well,  
13 let me put it this way. Then I guess based on what you  
14 said in that proceeding, in that docket, FPL would be  
15 getting -- it estimates that it will get the same amount  
16 of cost savings per mile even though it's increasing its  
17 investment almost threefold.

18          **A**     Our -- I'm sorry.

19          **Q**     Is that correct, sir?

20          **A**     The answer is yes. And if you look at the  
21 economic analysis, it's based on hardening the entire  
22 grid.

23          **Q**     Right. Mr. Moyle also very briefly asked you  
24 about that, your testimony about, you know, storm  
25 hardening also providing everyday reliability benefits.



1 I believe 40 percent was the figure. I think Mr. Silagy  
2 testified to it earlier in this proceeding. But you  
3 stated -- you, in your testimony, said that hardened  
4 feeders, based on your analysis, perform approximately  
5 40 percent better than the non-hardened feeder; is that  
6 correct?

7 **A** That's correct.

8 **MR. SIQVELAND:** Madam Chair, I'd like to enter  
9 another exhibit. It's --

10 **CHAIRMAN BROWN:** We'll mark another exhibit.

11 **MR. SIQVELAND:** Thank you.

12 **CHAIRMAN BROWN:** 614, and which one? Is it  
13 the --

14 **MR. SIQVELAND:** It is the -- it's the FPL  
15 response to SFHHA POD No. 101, the third in the pile.

16 **CHAIRMAN BROWN:** Okay. So we'll mark that as  
17 614.

18 (Exhibit 614 marked for identification.)

19 Mr. Miranda, do you have a copy of that in  
20 front of you?

21 **THE WITNESS:** I believe I do.

22 **CHAIRMAN BROWN:** Okay. Please mark it as 614.

23 You may proceed.

24 **MR. SIQVELAND:** Thank you.

25 **BY MR. SIQVELAND:**

1           **Q**     Mr. Miranda, did you accurately respond to  
2 request for production of documents No. 101?

3           **A**     Hold on.

4           **Q**     Sorry.

5           **A**     Yes. Yes.

6           **Q**     Thank you. So then the only responsive  
7 document that you identified is page 16 of your direct  
8 testimony backup docs, as you phrase them?

9           **A**     That would be correct.

10           **MR. SIQVELAND:** I'd like to have another -- my  
11 final exhibit marked, please.

12           **CHAIRMAN BROWN:** Okay. And that will be 615.  
13 And which one was that?

14           **MR. SIQVELAND:** That is the FPL response to  
15 OPC request for documents No. 2.

16           **CHAIRMAN BROWN:** Okay. We will mark that as  
17 615. It says a little bit at the top "EXHE," for those  
18 of you that have it. At least my copy does.

19                   (Exhibit 615 marked for identification.)

20           Mr. Miranda, do you have a copy of it in front  
21 of you?

22           **THE WITNESS:** I do.

23           **CHAIRMAN BROWN:** Okay. You may proceed.

24           **MR. SIQVELAND:** Thank you.

25           **BY MR. SIQVELAND:**

1           **Q**     So just so I'm clear, this is the only  
2 document that -- the only responsive document that you  
3 offered to substantiate the proposition that FPL's  
4 hardened feeders experience service interruptions  
5 40 percent less than non-hardened feeders?

6           **A**     That's correct.

7           **Q**     That's correct.

8           **MR. SIQVELAND:** I have nothing further. Thank  
9 you.

10          **CHAIRMAN BROWN:** Thank you.

11                    On to Retail Federation. Mr. Wright.

12          **MR. WRIGHT:** Thank you, Madam Chairman. I  
13 just have a few questions for Mr. Miranda.

14   **EXAMINATION**

15          **BY MR. WRIGHT:**

16           **Q**     Good morning, Mr. Miranda. Good to see you  
17 again.

18           **A**     Good morning, Mr. Wright. Nice to see you  
19 too.

20           **Q**     Thanks. As a general theme, I understand your  
21 testimony to be that you, your department, your  
22 employees within your department, and Florida Power &  
23 Light are taking all steps possible to make FPL's system  
24 resilient -- transmission and distribution system  
25 resilient against all threats to -- threats including

1 storms, terrorism, cyber attack, and other threats to  
2 the best of your ability. Is that accurate?

3 **A** That would be correct.

4 **Q** Thank you. And so is it correspondingly fair  
5 to say that you plan improvements to your system to make  
6 FPL's network as reliable as possible to protect against  
7 all such threats?

8 **A** We take different measures against the  
9 different threats. So depending on if we're trying to  
10 prevent a physical threat versus a storm threat, we  
11 would take different engineering approaches, if you  
12 will, in some cases. So they're not -- it's not a one  
13 size fits all.

14 **Q** Sure. But --

15 **A** The answer is yes.

16 **Q** Oh, good deal. Thanks. And similarly,  
17 wouldn't it be fair to say that FPL operates and  
18 maintains this system so as to protect against all such  
19 threats to the best of your ability?

20 **A** Yes.

21 **Q** Thank you. Is it fair to say that you and  
22 your departments -- is it one department or two  
23 departments?

24 **A** Well, since last time I was here we went from  
25 two departments to one.

1 Q Okay.

2 A So in the spirit of efficiency, we went from  
3 two to one.

4 Q Okay. Is your commitment to do your best  
5 dependent on whether FPL gets an ROE adder in this case?

6 A No. We will absolutely do our very best each  
7 and every day, but the ROE adder is an important factor.  
8 You know, it's our culture and our -- and who we are is  
9 to do the very best in reliability. We work every day  
10 to provide the best service, and we will continue to do  
11 so. You know, we believe the incentive and the ROE  
12 adder will add value and will incent us in the long term  
13 to do even better, but we will continuously do our very  
14 best.

15 Q You've been at this probably about as long as  
16 I have; is that fair?

17 A Thirty-four years.

18 Q Right on top of it. I've been doing this for  
19 36 years.

20 You're familiar that the PSC has set ROEs at  
21 different levels over that time period for FPL and other  
22 utilities in Florida; correct?

23 **MR. GUYTON:** Objection. That's beyond the  
24 scope of this witness's testimony.

25 **CHAIRMAN BROWN:** Objection sustained. Please

1 proceed.

2 **MR. WRIGHT:** It was a predicate question,  
3 Madam Chairman, but fair enough. And it follows on the  
4 question Mr. Miranda just answered with respect to the  
5 ROE adder, but I'll ask the question --

6 **CHAIRMAN BROWN:** And I was surprised there  
7 wasn't an objection about that question, but please  
8 proceed.

9 **BY MR. WRIGHT:**

10 **Q** Okay. Is it fair to say that you will do your  
11 job regardless what level FPL sets -- sorry -- what  
12 level the PSC sets rates at with respect to the allowed  
13 return on equity for FPL?

14 **MR. GUYTON:** Objection. Asked and answered.

15 **MR. WRIGHT:** It's not quite the question I  
16 asked. I asked about the ROE adder earlier. This is  
17 asking with respect to the level of ROE that the  
18 Commission authorizes to be used in setting FPL's rates,  
19 Madam Chair.

20 **CHAIRMAN BROWN:** Mr. Wright, could you direct  
21 me to the testimony where this is applicable in his  
22 direct or in the storm hardening?

23 **MR. WRIGHT:** Well, it's his general testimony  
24 in both testimonies that he's already averred is part of  
25 his testimony that they're going to do their best job.

1 I'm just asking him whether the ROE that the Commission  
2 sets has an impact on their commitment and his  
3 department's commitment to do their best job.

4 **CHAIRMAN BROWN:** Does he talk about ROE in his  
5 direct testimony?

6 **MR. WRIGHT:** I don't think so. I still  
7 believe that it's a completely fair question to ask  
8 what -- if it affects his commitment to which he has  
9 testified to do the best job possible.

10 **CHAIRMAN BROWN:** Objection sustained.

11 **MR. WRIGHT:** Thank you. That's all I have.

12 **CHAIRMAN BROWN:** Next is FEA, Mr. Jernigan.

13 **MR. JERNIGAN:** No questions, ma'am.

14 **CHAIRMAN BROWN:** Okay. Next is Sierra Club.

15 **MS. CSANK:** No questions.

16 **CHAIRMAN BROWN:** Wal-Mart.

17 **MS. ROBERTS:** No questions.

18 **CHAIRMAN BROWN:** AARP.

19 **MR. COFFMAN:** No questions, Your Honor.

20 **CHAIRMAN BROWN:** Larsons.

21 **MR. SKOP:** Thank you, Madam Chair. Just a few  
22 questions.

23 **EXAMINATION**

24 **BY MR. SKOP:**

25 **Q** Good morning, Mr. Miranda?

1           **A**     Good morning, Mr. Skop.

2           **Q**     Just a quick question.  If I could ask you to  
3     turn to page 8, line 1 through 16 of your testimony,  
4     please.

5           **A**     Page 8.

6           **CHAIRMAN BROWN:**  Mr. Skop, is that the direct  
7     testimony?

8           **MR. SKOP:**  Yes.

9           **CHAIRMAN BROWN:**  Thank you.

10          **THE WITNESS:**  Could you repeat what line?  
11     Sorry.

12          **BY MR. SKOP:**

13          **Q**     Yes.  It's generally lines 1 through 16.

14          **A**     Okay.  The whole section?

15          **Q**     Yes.  And you talked in that section about the  
16     challenges faced by Florida with storms and such and  
17     that -- I think generally in other aspects of your  
18     testimony you indicated part of T&D's function is  
19     restoration.

20                 So the Commission has always allowed the  
21     timely cost recovery for storm restoration costs;  
22     correct?

23          **A**     Yes.

24          **Q**     Okay.  And that cost recovery is currently  
25     accomplished through the storm charge on the customer



1 bills; correct?

2           **A**     That would be correct. I would, you know,  
3 refer that to Witness Ousdahl or Barrett better.  
4 They're more responsible -- their job is to get the  
5 lights on.

6           **Q**     Okay. Also in response to a question from one  
7 of the intervenors, I think you mentioned the hardening  
8 of the laterals. What is being done to address  
9 intermittent outages and power surges that cause  
10 interruption and/or, in some cases, property damages?

11           **A**     Mr. Skop, that's an absolutely great question.  
12 It's an area that, you know, when I look back at my  
13 career, as Mr. Wright pointed out, I've been here a long  
14 time, 34 years, and have been in operations the entire  
15 time, and when I started my career and even as recently  
16 as the last ten years, we really dealt with just  
17 outages, you know, sustained outages. And here in  
18 Florida, as you know, we categorize them any outage  
19 greater than one minute. And that really was our focus.

20                   In the last decade or so, because of homes'  
21 digital needs and the economy and the impact that we  
22 have due to these brief outages, momentaries, it's  
23 become very disruptive. And several years ago we began  
24 a big initiative to drive out what we call these  
25 momentaries.

1           And if you look at our performance, if you  
2 look at my exhibit, our momentary performance has made  
3 significant and steady improvement. It is still a  
4 challenge for us. The electric industry and the design  
5 of the electric infrastructure was designed to have  
6 these momentaries to prevent sustained outages. So we  
7 are now having to reapply and apply new technologies  
8 such as these automated lateral switches to mitigate the  
9 impact of these momentaries or brief outages that  
10 they're having on our customers. It's a significant  
11 challenge and one that I believe will be a more dominant  
12 issue in our industry going forward.

13           **Q**     Thank you. And with respect to laterals, the  
14 majority of the lateral, excuse me, lateral distribution  
15 equipment are wooden poles still; is that correct?

16           **A**     Our laterals typically are wooden poles, yes.

17           **Q**     Okay. And FPL is taking steps to replace aged  
18 poles to improve reliability and reduce outages?

19           **A**     So two separate issues. So the first issue of  
20 the pole itself, this Commission back -- again,  
21 following the '04 and '05 hurricane season, implemented  
22 the pole inspection program in which we inspect all our  
23 poles on an 8-year cycle. I'm very proud we completed  
24 the first cycle and we're currently in the third year of  
25 our pole inspection cycle. So we will maintain our

1 poles through our pole inspection programs.

2 As far as outages themselves, we have several  
3 initiatives to reduce and improve the reliability, the  
4 first of which is these automated lateral switches.  
5 It's a new technology. We have about 25 percent of our  
6 grid currently with this device. And we hope by the end  
7 of 2018, 100 percent of our overhead laterals will have  
8 this device, which will significantly improve the  
9 momentaries and the brief outages that we're  
10 experiencing.

11 Q Okay. And that will -- is that also being  
12 done in the Loxahatchee area?

13 A It's going to be done across the area, yes,  
14 sir.

15 Q All right. Thank you. And just one final  
16 question, Madam Chairman.

17 Mr. Miranda, with respect to the major outage  
18 that occurred yesterday as a result of the substation  
19 fire in Miami, does FPL have any root cause for what  
20 caused that outage or the substation fire at this time?

21 A I'll be happy to walk you through that. So  
22 yesterday, if you didn't recall, we had a power outage  
23 that occurred in Dade County. It was a -- what we call  
24 a substation transformer. So we have three different  
25 types of big transformers. We have what we call a --

1 maybe four types of transformers. So we have a  
2 generation step-up transformer, an autotransformer, then  
3 power transformers. These are the ones you see in  
4 substations.

5 Typically our power transformers just die  
6 gently and not so dramatic. Okay? So unfortunately  
7 this one caught fire. We have not had a transformer  
8 like that catch fire in many, many years. We -- when  
9 the transformer failed, it caused about 35,000 customers  
10 to be interrupted. Within five minutes we restored  
11 31,000 of those through either our technology and/or our  
12 ability to switch around. And the remaining customers,  
13 the majority were on within two hours, and all within  
14 three hours.

15 It was a 46-year-old transformer. We have  
16 very robust inspection programs on our transformers. As  
17 a matter of fact, if you look at our transmission SAIDI,  
18 last year our transmission SAIDI was two minutes -- by  
19 far the very best in the state, one of the very best in  
20 the country. Yesterday's event is an example of a power  
21 transformer failing. And we take very aggressive steps  
22 to mitigate those type of events from occurring. And  
23 we're very proud that, one, no one was hurt; we restored  
24 our customers quickly; and we were able to get back  
25 to -- by the end of today, we'll at least have our

1 mobile equipment onsite. And we communicated with all  
2 our customers, and today we'll be sending out apology  
3 letters to our customers.

4 **MR. SKOP:** Thank you. And just, Madam  
5 Chairman, just one final question.

6 **CHAIRMAN BROWN:** Sure.

7 **BY MR. SKOP:**

8 **Q** Again with transformers, my understanding is  
9 some of them have long lead to replace and high cost.  
10 Do we know what the expected replacement cost for this  
11 particular transformer would be to get the substation  
12 back up and running?

13 **A** Sure. We -- these transformers, the power  
14 transformers cost approximately about \$1 million.  
15 Again, this transformer was 46 years old. You know, we  
16 sample the oil -- you know, oil to a transformer is like  
17 our blood work for a human. We watch them very  
18 carefully. But we do have a spare, so we will be back  
19 to normal probably within the next seven to ten days.

20 But in the interim, just to make sure our  
21 customers have safe, reliable service, we have a mobile  
22 transformer fleet that we have as spares. This is part  
23 of our contingency planning for physical attacks,  
24 storms. And that mobile was rolled last night. It's  
25 onsite and is being hooked up, and by 9:00 p.m. tonight

1 that transformer will be energized.

2 **MR. SKOP:** Thank you, Mr. Miranda.

3 Madam Chair, no further questions.

4 **CHAIRMAN BROWN:** Thank you.

5 All right. Staff.

6 **MS. LEATHERS:** May I just have a moment, Madam  
7 Chair?

8 **CHAIRMAN BROWN:** Sure.

9 **MR. GUYTON:** Madam Chair, I understand that  
10 when we were authenticating staff's exhibits, that we  
11 had indicated there were some omissions, and staff would  
12 like a moment to communicate with us so that we can  
13 confirm whether or not they were truly omitted.

14 **CHAIRMAN BROWN:** You jumped the gun. I was  
15 just informed of the same, and I was going to suggest  
16 about a ten-minute break.

17 **MR. GUYTON:** Thank you very much.

18 **CHAIRMAN BROWN:** We'll reconvene at -- I can't  
19 see from here. Thank you. 10:30.

20 (Recess taken.)

21 **CHAIRMAN BROWN:** I want to make sure that the  
22 little snafu that staff has had to work with on  
23 authenticating the documents is completely good. We're  
24 going to address that at this time.

25 All right. Staff, please address.

1                   **MS. LEATHERS:** Thank you, Madam Chairman.

2   **EXAMINATION**

3                   **BY MS. LEATHERS:**

4                   **Q**     Mr. Miranda, earlier you indicated that there  
5                   was certain information that was not provided on the CD  
6                   that staff provided to you. Have you had another  
7                   opportunity to review that CD?

8                   **A**     Yes, we have.

9                   **Q**     And are those materials that you referenced in  
10                  references -- in reference, excuse me, to Exhibit Nos.  
11                  518, 520, and 523, in fact, present on the CD?

12                  **A**     Yes.

13                  **Q**     And was that information prepared by you or  
14                  prepared under your supervision?

15                  **A**     Yes, they were.

16                  **Q**     And are those -- is that information still  
17                  true or correct to the best of your knowledge?

18                  **A**     Yes, it is.

19                  **Q**     And would your responses be the same today as  
20                  when you prepared them?

21                  **A**     Yes, they would be.

22                  **Q**     And are any portions of those exhibits  
23                  confidential?

24                  **A**     No, they are not.

25                  **MS. LEATHERS:** And, Madam Chair, we would like

1 to note that in reference to Exhibit 500, staff did not  
2 provide the attachment to POD 26 because at the time we  
3 were not intending to enter that into the record. If  
4 the parties -- or present that. If the parties would  
5 like to address that now, we can provide them copies for  
6 us to include it.

7 **CHAIRMAN BROWN:** Would any --

8 **MR. GUYTON:** FPL has no objection.

9 **CHAIRMAN BROWN:** Mr. Moyle?

10 **MR. MOYLE:** Can I just get with staff on that  
11 later?

12 **CHAIRMAN BROWN:** Sure. Any other parties?

13 Ms. Christensen.

14 **MS. CHRISTENSEN:** Yes. If we could look at  
15 what they're proposing to put into the record. I mean,  
16 at this point I don't have the discovery numbers  
17 memorized as to what the documents are, so I need to  
18 look at that.

19 **CHAIRMAN BROWN:** I don't think anybody does.

20 **MR. MOYLE:** That was kind of my question as  
21 well.

22 **CHAIRMAN BROWN:** Yeah. Staff.

23 **MS. BROWNLESS:** Yes, ma'am. It's Exhibit  
24 No. 500, Patty. It's POD No. 26. We would be glad to  
25 provide that to you and allow everybody to review it,



1 and that might be a matter that we could discuss when we  
2 get to the very end with regard to the staff exhibits.  
3 You'd have an opportunity until then to review it and  
4 respond to it.

5 **CHAIRMAN BROWN:** That sounds good.

6 Staff, do you have any other questions of this  
7 witness?

8 **MS. LEATHERS:** Yes, we do, Madam Chair.

9 **CHAIRMAN BROWN:** Okay. Any other questions on  
10 this?

11 **MR. MOYLE:** Can I ask him one question about  
12 one of the documents he identified?

13 **CHAIRMAN BROWN:** Excuse me?

14 **MR. MOYLE:** Can I ask him one question about  
15 the stuff -- he said it's not there and now he said it  
16 is there?

17 **CHAIRMAN BROWN:** FPL.

18 **MR. MOYLE:** I just want to ask him about it.

19 **MR. GUYTON:** We have no objection. We are the  
20 source of some confusion. If it will clear the record,  
21 we'd be happy to answer questions.

22 **CHAIRMAN BROWN:** Okay, Mr. Moyle.

23 **MR. MOYLE:** And I appreciate staff. I mean,  
24 it's not easy trying to work your way through all the  
25 exhibits.

**EXAMINATION**

1  
2 **BY MR. MOYLE:**

3           **Q**     Sir, so I was over there looking over your  
4 shoulder when you were going through. One of the  
5 exhibits that you didn't identify at first, it was over  
6 100 pages; correct?

7           **A**     I believe so.

8           **MR. MOYLE:** Okay. Thank you.

9           **CHAIRMAN BROWN:** Okay. Staff.

10           **MS. LEATHERS:** Thank you, Madam Chair. I just  
11 wanted to note that we did provide Mr. Miranda with a  
12 courtesy copy of one of the responses to the  
13 interrogatories. It is staff's 27th set of  
14 interrogatories, No. 366. And I just wanted to note  
15 that for the record because we will be asking a question  
16 regarding that.

17           **CHAIRMAN BROWN:** Okay. Please proceed.

**EXAMINATION**

18  
19 **BY MS. LEATHERS:**

20           **Q**     Mr. Miranda, on page 12 of your direct  
21 testimony, lines 9 through 12, you stated that the  
22 30-year net present value analysis indicates a net  
23 present value restoration cost savings per mile of a  
24 hardened feeder could be approximately 45 to 70 percent  
25 of the cost to harden the same mile of feeder; correct?

1           **A**     That's correct.

2           **Q**     And given that statement, would it be accurate  
3 to say that the higher the percentage, the greater  
4 restoration cost savings?

5           **A**     That would be correct.

6           **Q**     Is the 70 percent value based on the  
7 assumption that a storm occurs once every three years?

8           **A**     That was correct at the time.

9           **Q**     And is the 45 percent value based on the  
10 assumption that a storm occurs once every five years?

11          **A**     That's correct.

12          **Q**     And would it be accurate to say that more  
13 frequent storm activity increases the net present value  
14 restoration cost savings per mile of a hardened feeder?

15          **A**     It would.

16          **Q**     And now I'm going to refer you to the response  
17 to interrogatory No. 366, and specifically -- and for  
18 reference, this is marked as Exhibit No. 424 on the  
19 Comprehensive Exhibit List.

20                   **CHAIRMAN BROWN:** Mr. Miranda, do you have a  
21 copy of that in front of you?

22                   **THE WITNESS:** I do.

23                   **CHAIRMAN BROWN:** Thank you.

24           **BY MS. LEATHERS:**

25           **Q**     And I'm going to specifically refer you to

1 Attachment No. 1, page 1 of 2.

2 **A** Yes.

3 **Q** And in response to that interrogatory, did FPL  
4 provide an updated net present value analysis that  
5 showed a restoration cost savings of 37 to 59 percent?

6 **A** That's correct.

7 **Q** So does the decrease in percentage indicate  
8 that the net present value restoration cost savings per  
9 mile of a hardened feeder is decreasing over time?

10 **A** The answer would be no. What we attempted to  
11 do was to go back and do the best estimate we could to  
12 update the analysis as was requested. It was very  
13 challenging to go back, because, as you can imagine, the  
14 storm personnel that were here during Hurricane Wilma in  
15 the '04 and '05 hurricane season, many of those  
16 contractors aren't here anymore. Many of the  
17 contractors that we use have different staffing levels.  
18 But we did attempt to update the model as best as we  
19 could utilizing the best information we have today. So  
20 we look at our hotel prices, our storm restoration. But  
21 with any storm, there is so many variables, so that's  
22 why we did the sensitivity analysis of 10 and 20 percent  
23 because our experience shows typically restoration costs  
24 run a little bit higher. So we attempted apples to  
25 apples, but it was more apples to oranges in many cases.

1 It was very hard to pinpoint it since we have not had a  
2 storm since 2005.

3 **MS. LEATHERS:** Thank you, Mr. Miranda.

4 Madam Chair, those are all of our questions.

5 **CHAIRMAN BROWN:** Thank you. And,  
6 Commissioners, any questions?

7 Commissioner Edgar.

8 **COMMISSIONER EDGAR:** Thank you, Madam  
9 Chairman.

10 Good morning.

11 **THE WITNESS:** Good morning, Commissioner.

12 **COMMISSIONER EDGAR:** From reading or going  
13 over much of the prefiled testimony, yours and others,  
14 it seems like there's a little confusion as to some of  
15 the amounts. And I think some of it might be that some  
16 of the different -- for me anyway, I don't know about  
17 for anybody else, but for me -- some of the backup  
18 information is in different time periods and is kind of  
19 apples to oranges in some instances. So that's my  
20 starting point.

21 So for me to try to better understand, is it  
22 correct that FPL in this docket is requesting an  
23 increase in the annual amount for storm hardening for  
24 2017 over 2016?

25 **THE WITNESS:** That would be correct.

1           **COMMISSIONER EDGAR:** Okay. Is the amount  
2 approximately 170 million? Is that a correct --

3           **THE WITNESS:** Yes. The hardening initiative  
4 would increase approximately 170 million.

5           **COMMISSIONER EDGAR:** Okay. And then for 2018,  
6 somewhere I think I have in one of these papers in front  
7 of me, an increase of 95 million; is that correct?

8           **THE WITNESS:** It's, for 2018, about -- from  
9 '17 to '18?

10          **COMMISSIONER EDGAR:** Yes.

11          **THE WITNESS:** It's more than that. It's about  
12 260 million.

13          **COMMISSIONER EDGAR:** Okay. So looking over  
14 your testimony, and if it's in here and I've missed it  
15 or forgotten it because I've read a lot of testimony, as  
16 have we all, there's discussion about the storm  
17 hardening efforts over the past years and into 2016, and  
18 it talks about beginning the lateral hardening  
19 initiative in 2018. Can you generally give me a better  
20 understanding than I have right now as to what that  
21 increase in 175 million for 2017 would be on top of the  
22 storm hardening plans that -- and efforts that have been  
23 going on through this year, before and through this  
24 year?

25          **THE WITNESS:** Let me back up. That original

1 number I gave you included the storm -- the lateral  
2 hardening component of it, which is about \$75 million in  
3 2018 embedded in that number.

4 **COMMISSIONER EDGAR:** Uh-huh. Okay. So for  
5 2017, that increase in 175 million, what is that  
6 going -- that incremental increase for 2017, what is  
7 that for and why 175 million as opposed to some other  
8 number?

9 **THE WITNESS:** Let me get you the exact  
10 hardening dollar amount. So from 2016, it's  
11 350 million; 2017 is 474 million; and then for 2018  
12 would be approximately, let me back off the laterals,  
13 about 650 million.

14 **MR. MOYLE:** Can he reference what he's reading  
15 so we can try to follow along?

16 **COMMISSIONER EDGAR:** I don't know. Can you?

17 **THE WITNESS:** It's within my overall budget  
18 and page 31 of my direct. It's a subcomponent within  
19 that category, Mr. Moyle, so I don't have that in front  
20 of me.

21 **COMMISSIONER EDGAR:** Hence my question. Thank  
22 you. So, again, that -- and from the number you just  
23 read from 350 to 470, I was using 175. From that  
24 number, that's 120. I just wanted to get some scale. I  
25 can go back and look at the numbers more precisely.

1 But, again, that delta increase from 2016 to 2017, I'm  
2 trying to understand what that delta increase is  
3 requested for.

4 **THE WITNESS:** So the increase is to -- in that  
5 particular category is strictly to harden our feeder  
6 backbones. So it's to go from the current 40 percent of  
7 our feeders to harden, you know, about 50 percent of our  
8 feeders at the end of 2017.

9 **COMMISSIONER EDGAR:** Okay. So what's the  
10 rationale or analysis or cost benefit or value  
11 proposition, whatever is the best way, as to why that  
12 particular amount increased for one year versus, say,  
13 continuing that effort at the same financial amount as  
14 the current year?

15 **THE WITNESS:** That's a great question.  
16 Because it's something we've been, you know, evaluating  
17 ourselves. So if you recall when we were here back in  
18 2007 --

19 **COMMISSIONER EDGAR:** I do.

20 **THE WITNESS:** I know. I remember. We  
21 committed to a 20-year plan, Commissioner. And when the  
22 recession hit in 2010, 2011, 2012, we obviously ramped  
23 down a little bit. So after Hurricane Sandy struck in  
24 the northeast -- or Tropical Storm Sandy and it just --  
25 you know, it reminded us to continue to ramp up and the



1 industry started to ramp up the hardening initiative as  
2 well. So we have gradually increased it. And if you go  
3 to my direct testimony and one of my exhibits -- let me  
4 give you that exhibit number. If you go to Exhibit  
5 No. MBM-2 within my --

6 **COMMISSIONER EDGAR:** Uh-huh. I have it.

7 **THE WITNESS:** You can see the ramping up of  
8 our feeder hardening. And what it does is it gets us  
9 back on pace to complete the hardening plan as we  
10 originally envisioned in 27. So at that point, you  
11 know, we'll start to get more of a steady state  
12 because -- and the reason we kind of get to that peak  
13 number is that's about the maximum we can execute at any  
14 given year at this point, given the complexities of  
15 hardening our grid. So -- and with this plan, you know,  
16 we want to be able to commit it within the 20-year time  
17 period that we committed to.

18 **COMMISSIONER EDGAR:** All right. That's very  
19 helpful.

20 **THE WITNESS:** That was the logic.

21 **COMMISSIONER EDGAR:** Great. That's very  
22 helpful. That answers my question.

23 **THE WITNESS:** And, as you know, it's just a  
24 matter of when we're going to get hit. So every year we  
25 get is an advantage for us.

1                   **COMMISSIONER EDGAR:** Okay. And I know that  
2 some of the intervenor witnesses have recommended  
3 adjustments perhaps, so I may have questions then, and  
4 then I may have questions for you on rebuttal. So, but  
5 you've answered my question. I appreciate it. Thank  
6 you.

7                   **THE WITNESS:** Thank you.

8                   **CHAIRMAN BROWN:** Thank you.

9 Commissioner Patronis.

10                   **COMMISSIONER PATRONIS:** Thank you, Madam  
11 Chair.

12                   In the case of system hardening, what's the  
13 greatest expense?

14                   **THE WITNESS:** Well, right now it's probably  
15 labor. We really have seen, Commissioner, an impact  
16 from really a lot of utilities across the nation  
17 starting to harden their grid after Superstorm Sandy in  
18 the northeast. You know, you had companies like Con Ed  
19 and Pepco and those companies really start their own  
20 hardening initiatives. So it's put pressure on our  
21 labor market at this point. Materials follows behind  
22 that.

23                   But what we're seeing also with some of the  
24 cost pressures is something that's a little bit new to  
25 us, is a lot of the local municipalities are requiring

1 us to do a lot of our work after hours. You know, when  
2 we do these hardening projects, as some of you may have  
3 seen, we're blocking roads, right, we've got big cranes,  
4 lots of equipment, and so we're being asked many times  
5 to work our hardening efforts after hours or on  
6 weekends, so that's added some incremental cost as well.  
7 So we've had cost pressures from several areas, but  
8 labor is the number one driver at this point.

9 **COMMISSIONER PATRONIS:** When it comes to end  
10 of life of some of this equipment that you're replacing,  
11 does that dovetail into your storm hardening? Do you  
12 try to forecast and project, you know, different  
13 elements of usefulness and then make that as the  
14 priority as of what's going to be replaced?

15 **THE WITNESS:** That's a great point. What we  
16 do is right before we harden a circuit, Commissioner, we  
17 will patrol and look at every device that's on there and  
18 we'll take a look at it. Because what we don't want to  
19 do is something that only has a year of life, we're  
20 already there, right, because a lot of the expense is  
21 driving to the site, setting up, and if we can replace  
22 it proactively in some cases, we will. But we try to be  
23 very prudent, you know, not to be excessive in the  
24 equipment we change, but we're very conscious to, you  
25 know, take care of the facilities that are there and

1 also apply the new technology. Right?

2 For example, we've been installing a lot of  
3 these automated feeder switches, our abilities to  
4 sectionalize. And as Mr. Skop pointed out that  
5 interruption we had yesterday, our ability -- our  
6 investments are making our ability to restore quickly  
7 and safely, and it's really the result of the  
8 infrastructure investments we've made, whether it's the  
9 automated feeder switches, the investments we've made in  
10 our system expansion. Those things enable us to get our  
11 customers on quickly and safely after one of those  
12 events.

13 **COMMISSIONER PATRONIS:** Just one last  
14 question, and this may not be -- with the improvements,  
15 have y'all been able to have a direct correlation of  
16 monitoring the improvements with fewer customer phone  
17 calls?

18 **THE WITNESS:** What we're seeing -- we're  
19 seeing it especially like in the logged complaints,  
20 we're seeing it, you know, in the reports we file to the  
21 Commission on complaints per 10,000 customers. Very  
22 proud that -- I haven't seen the 2015 numbers for the  
23 other utilities. But for us in 2014, you know, we  
24 actually were the very best among -- in the state as far  
25 as logged complaints related to service quality issues.

1 That's a big improvement for us, you know, over the  
2 years, again, directly attributed to our investments.  
3 And so it does result in less calls.

4 And our smart technology enables us, in many  
5 cases, to know an outage even occurred. And in my  
6 testimony I talk about we are now piloting the outage  
7 notification. So if you sign up with us, we will  
8 proactively send you a text or an email advising you of  
9 the outage status, when we will restore it, and, you  
10 know, and what the cause was afterwards.

11 **COMMISSIONER PATRONIS:** Thank you.

12 **CHAIRMAN BROWN:** Okay. Great.

13 Commissioner Brisé.

14 **COMMISSIONER BRISÉ:** Thank you, Madam Chair.

15 Mr. Miranda, thank you for your testimony thus  
16 far. Is it true that all the utilities in Florida have  
17 to maintain a storm hardening part of their business?

18 **THE WITNESS:** All utilities are required to  
19 present in front of the Public Service Commission their  
20 storm hardening initiatives every three years.

21 **COMMISSIONER BRISÉ:** Okay. So what makes FPL,  
22 in its mind, perform better than others?

23 **THE WITNESS:** Well, as you point out,  
24 everybody has access to the same people, the same  
25 technology. We're very proud of our culture of

1 continuous improvement. It's a relentless culture. You  
2 know, I can share. I've been here a long time. Our  
3 quality background is just breakthrough.

4 And I'll give you a great example. You know,  
5 every year we complete for our quality initiatives. And  
6 last year our power delivery group, I'm very proud to  
7 say we won, and we won for an innovation that is a  
8 utilization of technology we've never seen.

9 So what we were able to identify,  
10 Commissioner, is the Smart Meters send about two --  
11 about 300 different signals, you know, hourly. We were  
12 able to identify what some of those signals were. So in  
13 the last section of -- before service gets to your house  
14 is the service run. And we were able to identify a  
15 certain signature that predicts with 90 percent accuracy  
16 that within one to three days you're about to have a  
17 failure. And we -- every morning we knock on -- when  
18 about 20 to 25 tickets get generated, we literally knock  
19 on the customer's door and say, "We need to do  
20 maintenance on your house because you're about to have a  
21 power failure." And as a result of that -- many say --  
22 initially they were like, "No, I don't believe it," and  
23 we walk away and they failed.

24 And so today we have a very robust process by  
25 which we proactively address tickets in the morning. We

1 filed a patent for that. We have a patent applied.  
2 It's just been -- you know, it's provisional at this  
3 point. But it's that type of innovation and utilization  
4 of technology that I think separates us from many in the  
5 industry.

6 **COMMISSIONER BRISÉ:** Okay. That's all I have  
7 for now.

8 **THE WITNESS:** Thank you.

9 **CHAIRMAN BROWN:** Mr. Miranda, I have just a  
10 general question. On page 19 of your direct, you talk  
11 about the grid modernization, the smart grid, and some  
12 of the initiatives that FPL has deployed to develop a  
13 more modern, automated, self-healing system. In fact, I  
14 think you used -- yeah, you used the word "self-healing  
15 grid." And then in your Exhibit MBM-6, you actually  
16 quantify that in terms of how it's improved the  
17 reliability.

18 **THE WITNESS:** Yes.

19 **CHAIRMAN BROWN:** What other efforts has FPL  
20 deployed, because you talk about some initiatives to  
21 help advance the self-healing grid, and how has that  
22 enhanced the reliability?

23 **THE WITNESS:** Well, this is the area that's  
24 been really exciting. Probably the biggest  
25 breakthroughs, Commissioners, in the last few years has

1 been this automation and self-healing. So it starts  
2 with the smart meter investments that are really giving  
3 us insights to things we've never seen before and  
4 providing us information about the customer that -- many  
5 times before the customer even has notified us. And in  
6 some cases, we will do repairs before they even call us.

7           Then on the grid itself, we're installing --  
8 I'll start with the laterals, these automated lateral  
9 switches. In the past, you know, we have a fuse that  
10 just -- effectively if something happens on that line,  
11 Commissioner, and the fuse would drop out. You've seen  
12 these fuses drop, and we would have to send the  
13 restoration specialist.

14           Well, now we've put these automated lateral  
15 switches right on the devices. They operate -- they can  
16 actually open and close, open and close, and try to  
17 clear the temporary fault. 80 percent of the stuff that  
18 touches our lines is transient. It's a tree branch  
19 that's coming through, maybe an animal, right, maybe a  
20 lightning strike. Those things clear up. All we need  
21 to do is let them clear up. So these automated lateral  
22 switches are self-healing. They avoided close to  
23 50 percent of our truck rolls when we have some of these  
24 devices. Huge breakthrough.

25           These AFSs that you saw on my exhibit, they



1 are really self-healing. We place them strategically  
2 throughout our grid, and they literally will call each  
3 other and say, "I saw a fault, I saw a fault, I didn't  
4 see a fault," and they will automatically -- under one  
5 minute, because here in Florida an outage is one minute,  
6 the rest of the country is five minutes, and within one  
7 minute they will all call each other, decide which ones  
8 to open and close, and isolate the area that's been out  
9 of service. And what that does is it prevented the  
10 outage for those other customers, but then it narrows  
11 the area that we're going to go restore. So it really  
12 helps us even restore it even faster to those customers  
13 who are remaining.

14           So it's just great to see these technologies.  
15 And then we've put fault current indicators. We have  
16 close to 36,000 technology devices on our grid today.  
17 So we are seeing insights to our grid we've never, never  
18 seen before. And I will tell you, at least once a month  
19 or once every two months somebody is knocking at my door  
20 and saying, "Look what we just found." And it's just  
21 really encouraging to see the breakthroughs, and our  
22 customers are benefiting either by better reliability or  
23 driving down some of the cost.

24           **CHAIRMAN BROWN:** Very cool. Thank you.

25           Redirect.

**EXAMINATION**

1  
2 **BY MR. GUYTON:**

3 **Q** Mr. Miranda, I just have a couple of questions  
4 here.

5 You were asked by Mr. Wright about efforts  
6 that the company undertakes to protect against various  
7 threats, including storm and hurricanes. Do you recall  
8 that line of cross?

9 **A** Yes, I do.

10 **Q** And I believe there were some other threats as  
11 well, terrorism and -- forgive me -- but do you recall  
12 the line?

13 **A** Yes, I do.

14 **Q** All right. Is it possible for Florida Power &  
15 Light Company to provide absolute protection against all  
16 these types of threats?

17 **A** We will make attempts to, but it's not  
18 possible to stop all threats.

19 **Q** Okay. Staff asked you a question about an  
20 analysis you provided where you provided a comparison of  
21 storm hardening costs to storm restoration costs. Do  
22 you recall that line of questioning?

23 **A** Yes.

24 **Q** In that calculation, does that calculation  
25 address quantitatively all the benefits associated with

1 storm hardening?

2 **A** No. It's directly associated to the  
3 hardening. What it doesn't capture are things that  
4 we've talked about earlier. It's the daily reliability  
5 benefits that we're seeing with better reliability for  
6 our customers as well as improving in our restoration  
7 efforts and our cost of restoration, daily restoration.

8 **MR. GUYTON:** That's all we have?

9 **CHAIRMAN BROWN:** Thank you. On to exhibits.  
10 Mr. Guyton.

11 **MR. GUYTON:** Florida Power & Light Company  
12 would move Exhibits --

13 **CHAIRMAN BROWN:** 67 through 74?

14 **MR. GUYTON:** 67 through 74.

15 **CHAIRMAN BROWN:** Seeing no objections --

16 **MR. MOYLE:** MBM-5, as set forth on his  
17 testimony, we would object on hearsay grounds.

18 **CHAIRMAN BROWN:** Okay. That's noted. Thank  
19 you. Any other objections? We'll move in  
20 Exhibits 67 through 74 into the record at this time.

21 (Exhibits 67 through 74 admitted into the  
22 record.)

23 There are a few other exhibits, I believe.  
24 Let me see. 613, 614, 615 by Hospitals.

25 **MR. SIQVELAND:** Yeah. We would move those in,

1 please -- or request that they be moved in.

2 **CHAIRMAN BROWN:** Are there any objections?

3 FPL.

4 **MR. GUYTON:** Is it just 613 -- just the three?

5 **CHAIRMAN BROWN:** Yes.

6 **MR. SIQVELAND:** Yes.

7 **MR. GUYTON:** No, no objections.

8 **CHAIRMAN BROWN:** Any other party have  
9 objections? We're going to go ahead and move in 613,  
10 614, and 615 into the record at this time.

11 (Exhibits 613, 614, and 615 admitted into the  
12 record.)

13 Would you like to excuse your witness for the  
14 time so he can get back to --

15 **THE WITNESS:** To the storm.

16 **MR. GUYTON:** Back to the storm? Yes, very  
17 much. Thank you.

18 **THE WITNESS:** Thank you, Commissioner.

19 **CHAIRMAN BROWN:** Safe travels. Safe travels.  
20 We'll see you next week.

21 **THE WITNESS:** Thank you very much.

22 **CHAIRMAN BROWN:** Thank you.

23 FPL, please call your next witness.

24 **MR. BUTLER:** That would be Dr. Morley. Thank  
25 you.

1                   **CHAIRMAN BROWN:** Dr. Morley.

2                   Good morning, Dr. Morley. You're on.

3                   **THE WITNESS:** Good morning.

4                   **CHAIRMAN BROWN:** Dr. Morley, have you been  
5 sworn in?

6                   **THE WITNESS:** I have not.

7                   **CHAIRMAN BROWN:** Could you please stand with  
8 me and raise your right hand.

9                   Whereupon,

10   **ROSEMARY MORLEY**

11                   was called as a witness on behalf of Florida Power &  
12 Light Company and, having first been duly sworn,  
13 testified as follows:

14                   **CHAIRMAN BROWN:** Thank you. Please be seated.

15                   **MS. MONCADA:** May I proceed?

16                   **CHAIRMAN BROWN:** Yes.

17                   **MS. MONCADA:** Thank you.

18   **EXAMINATION**

19                   **BY MS. MONCADA:**

20                   **Q** Dr. Morley, could you please state your full  
21 name and your business address for the record?

22                   **A** Yes. Rosemary Morley, 700 Universe Boulevard,  
23 Juno Beach, Florida.

24                   **Q** Thank you. By whom are you employed and in  
25 what capacity?

1           **A**     I'm employed by Florida Power & Light as the  
2 director of resource assessment and planning.

3           **Q**     Have you prepared and caused to be filed  
4 52 pages of direct testimony in this proceeding?

5           **A**     Yes.

6           **Q**     On August 16th, 2016, FPL filed an errata  
7 sheet for your direct testimony. Beyond those filed  
8 errata, do you have any further changes or revisions to  
9 your prepared direct testimony?

10          **A**     No.

11          **Q**     With those changes and subject to the  
12 adjustments set forth in KO-19 and KO-20, if I asked you  
13 the same questions today, would your answers be the  
14 same?

15          **A**     Yes.

16                 **MS. MONCADA:** Madam Chair, I ask that  
17 Dr. Morley's prepared direct testimony be inserted into  
18 the record as though read.

19                 **CHAIRMAN BROWN:** We will do that at this time.  
20 Thank you.

**ERRATA SHEET****WITNESS: ROSEMARY MORLEY – DIRECT TESTIMONY**

<b><u>PAGE</u></b>	<b><u>LINE</u></b>	<b><u>CHANGE</u></b>
5	17	“compound” to “average”
5	17	“between 2011 and 2015” to “during the 2011 to 2015 period”
8	33	“are” to “are among”
10	20	“compound” to “average”
10	20	“between 2011 and 2015” to “during the 2011 to 2015 period”
20	19	“energy use” to “net energy for load”
36	17	“2011” to “2014”
36	20	“2011” to “2014”

**I. INTRODUCTION**

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**Q. Please state your name and business address.**

A. My name is Rosemary Morley, and 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 the Director of Resource Assessment and Planning.

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

A. I am responsible for overseeing the development of FPL’s peak demand, energy, customer and economic forecasts, as well as the Company’s integrated resource plan, including quantifying the need for future resource additions.

**Q. Please describe your educational background and professional experience.**

A. I hold a Bachelor of Arts (“B.A.”) degree with honors in economics from the University of Maryland and a Master of Arts (“M.A.”) degree in economics from Northwestern University. In 2005, I received a Doctorate in Business Administration (“D.B.A.”) from Nova Southeastern University. I began my career with FPL in 1983 as an Assistant Economist. I have since held a variety of positions in the forecasting, planning, and regulatory areas. I assumed the position of Director of Load Forecasting in 2007 and was promoted to my current position in 2015. I am a member of the National



1 Association for Business Economics and am certified as a Six Sigma Black  
2 Belt.

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

4 A. Yes. I am sponsoring the following exhibits:

- 5 • Exhibit RM-1 MFRs and Schedules Sponsored and Co-sponsored by
- 6 Rosemary Morley
- 7 • Exhibit RM-2 Weather-normalized Retail Delivered Sales per
- 8 Customer
- 9 • Exhibit RM-3 Summary of FPL's Historical and Forecasted Sales
- 10 • Exhibit RM-4 Change in Typical Bill vs. Other Consumer Costs

11 **Q. Are you sponsoring or co-sponsoring any Minimum Filing Requirements**  
12 **("MFRs") filed in this case?**

13 A. Yes. Exhibit RM-1 shows my sponsorship and co-sponsorship of MFRs.

14 **Q. What is the purpose of your testimony?**

15 A. The purpose of my testimony is to describe FPL's load forecasting process,  
16 identify the underlying methodologies and assumptions, and present the  
17 results of FPL's forecasts. These forecasts include net energy for load, retail  
18 delivered sales, peak demands, and customers and sales by revenue class.

19 **Q. Please summarize your testimony.**

20 A. My testimony begins by providing an overview of FPL's load forecast. The  
21 load forecast presented in this case is FPL's official forecast for all planning  
22 purposes, including resource planning. FPL's load forecasting process relies  
23 on statistically sound methods and inputs from leading industry experts.

1           Moreover, FPL has developed a record of providing accurate, reliable  
2           forecasts in recent rate cases. In fact, actual weather-normalized net energy  
3           for load for the 2013 test year was within 0.35% of FPL's forecasted net  
4           energy for load projected in the last rate case.

5  
6           My testimony then addresses the specifics of FPL's forecast of customers and  
7           sales. Overall, FPL's forecast shows moderate customer and sales growth.  
8           The number of customers is expected to grow at a compound annual rate of  
9           1.5% a year between 2015 and 2020, comparable to, but up slightly from the  
10          1.4% increase experienced in 2015. With this steady growth, significant  
11          cumulative increases in the number of customers are expected. By 2020, the  
12          cumulative increase in customers since 2013 is expected to reach more than  
13          one-half million.

14  
15          The forecasted growth rate in weather-normalized retail delivered sales is also  
16          consistent with recent trends. Weather-normalized retail delivered sales grew  
17          at a compound annual rate of 0.8% between 2011 and 2015. Weather-  
18          normalized retail delivered sales are forecasted to grow at a similar 0.7%  
19          compound annual rate between 2015 and 2017. The trend of positive sales  
20          growth is expected to continue through 2020, with a compound annual rate of  
21          0.7% projected between 2015 and 2020. The cumulative increase in retail  
22          delivered sales over time is expected to be significant. By 2020, the

1 cumulative increase in weather-normalized retail delivered sales since 2013 is  
2 expected to be close to 6,500 Gigawatt Hours (“GWh”).

3

4 My testimony next discusses the methodologies supporting FPL’s forecast of  
5 customers and sales by revenue class, along with FPL’s forecast of peak  
6 demands. These forecasts are consistent with the forecasts of total company  
7 sales and customers presented in this testimony. In addition, the forecasts of  
8 customers and sales by revenue class are based on sound statistical methods  
9 and inputs provided by industry experts. The same reliance on sound  
10 statistical methods and inputs provided by industry experts holds true for  
11 FPL’s forecast of peak demands. FPL’s forecasts of customers, sales, and  
12 peak demands rely on a consistent set of assumptions regarding weather, the  
13 economy, and other critical drivers.

14

15 My testimony concludes by presenting FPL’s inflation forecast. FPL relies on  
16 industry expert IHS Global Insight as the source for its inflation forecast. This  
17 forecast calls for moderate increases in the consumer price index (“CPI”).  
18 Between 2015 and 2020, CPI is projected to increase at a compound annual  
19 rate of 2.5% a year.

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## II. GENERAL OVERVIEW

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**Q. Please describe the objective of FPL's load forecasting process.**

A. The objective of FPL's load forecast is to project future levels of customer growth, sales, and peak demands.

**Q. Please clarify how customer growth, sales and peak demands are defined.**

A. Customer growth is based on the net change in the total number of active FPL accounts and reflects the net impact of new service installations combined with other factors, including changes in the number of inactive accounts. Net energy for load, a measure of sales, takes into account the Megawatt Hours ("MWh") FPL generates and the net flow of interchange sales into and out of the FPL system. Retail delivered sales, another measure of sales, removes the effect of losses and wholesale sales from net energy for load. Peak demands refers to the highest hourly integrated net energy for load in a given period, for example, a year or month.

**Q. What criteria have the Florida Public Service Commission ("FPSC" or "the Commission") used in evaluating utilities' load forecasts in recent years?**

A. In recent years, the FPSC has evaluated utilities' load forecasts based on the use of statistically sound forecasting methods and reasonable input assumptions (e.g., Order Nos. PSC-16-0032-FOF-EI, PSC-14-0590-FOF-EI, PSC-13-0505-PAA-EI, PSC-12-0179-FOF-EI, PSC-12-0187-FOF-EI, PSC-09-0283-FOF-EI and PSC-08-0518-FOF-EI). The FPSC has also considered

1           whether a load forecast is applied consistently; that is, whether a load forecast  
2           used for one purpose, such as a rate filing, is the same forecast used for other  
3           purposes, such as generation planning (Order No. PSC-09-0283-FOF-EI).  
4           Lastly, the FPSC has considered a utility's record in terms of forecasting  
5           accuracy when evaluating load forecasts (Order No. PSC-16-0032-FOF-EI).

6   **Q.   Does FPL's load forecast rely on statistically sound methods?**

7   A.   Yes, FPL's load forecast was developed using statistically sound methods.  
8           FPL relies on econometrics as the primary tool for forecasting customer  
9           growth, net energy for load, and peak demands. An econometric model is a  
10          numerical representation, obtained through statistical estimation techniques,  
11          of the degree of relationship between a dependent variable, e.g., the level of  
12          net energy for load, and the independent (explanatory) variables. A change in  
13          any of the independent variables will result in a corresponding change in the  
14          dependent variable. On an historical basis, econometric models have proven  
15          to be highly effective in explaining changes in the level of customer or load  
16          growth. FPL has consistently relied on econometric models for various  
17          forecasting purposes, and the modeling results have been reviewed and  
18          accepted by this Commission in past proceedings.

19   **Q.   Does FPL's load forecast incorporate reasonable input assumptions?**

20   A.   Yes, FPL's load forecast incorporates reasonable input assumptions. FPL has  
21          found that population growth, weather, the economy, and energy efficiency  
22          codes and standards are the primary drivers of future electricity needs.  
23          Accordingly, the models used to forecast customer growth, net energy for

1 load, and peak demand rely on independent variables representing these  
2 various drivers. FPL relies on leading industry experts for projections of these  
3 independent variables. Demographic and economic projections are from IHS  
4 Global Insight, a leading economic forecasting firm. The impact from energy  
5 efficiency codes and standards is provided by ITRON, a leading consultant on  
6 energy issues.

7 **Q. Is reliance on leading industry experts for specific inputs into the load  
8 forecast an accepted industry practice within your field?**

9 A. Yes.

10 **Q. Is the load forecast supported in this proceeding FPL's official load  
11 forecast for all business purposes?**

12 A. Yes. The load forecast supported in this proceeding is the Company's official  
13 forecast for all planning and budgeting purposes. Consequently, it is the same  
14 forecast utilized for generation planning purposes. More specifically, the load  
15 forecasting models supported in this proceeding are the same models used to  
16 develop an updated load forecast for the Company's most recent need  
17 determination filing (Order No. PSC-16-0032-FOF-EI at p. 23) as an updated  
18 assumption.

19 **Q. Please explain how the load forecasting models supported in this  
20 proceeding were utilized in the Company's most recent need  
21 determination.**

22 A. In filing for the Okeechobee Need Determination, the Company relied on the  
23 2015 Ten Year Site Plan load forecast, which was the Company's official load

1 forecast at the time the filing was made. However, in responding to  
2 discovery in November 2015, the Company relied on the more recent October  
3 2015 load forecast. The evidence presented to the Commission in the  
4 Okeechobee Need Determination docket was updated to reflect this October  
5 2015 load forecast.

6 **Q. Are there any differences between the load forecast supported in this**  
7 **proceeding and the October 2015 load forecast utilized in the Okeechobee**  
8 **Need Determination proceeding?**

9 A. With the exception of a new price of electricity projection, which I discuss  
10 later in my testimony, the models and assumptions incorporated into the  
11 October 2015 load forecast are identical to those utilized in the load forecast  
12 supported in the current proceeding.

13 **Q. How does FPL's load forecast compare with recent trends?**

14 A. Consistent with recent trends, FPL's load forecast shows moderate customer  
15 and sales growth over the 2015 to 2020 time period. The number of  
16 customers is expected to grow at a compound annual rate of 1.5% a year  
17 between 2015 and 2020, comparable to, but up slightly from the 1.4%  
18 increase experienced in 2015. While there were some year-to-year  
19 fluctuations, weather-normalized retail-delivered sales grew at a 0.8%  
20 compound annual rate between 2011 and 2015. Weather-normalized retail-  
21 delivered sales are forecasted to grow at a similar 0.7% compound annual rate  
22 between 2015 and 2020.

1 **Q. Does FPL have a record of providing accurate, reliable load forecasts in**  
2 **recent rate cases?**

3 A. Yes. FPL has established a record of providing accurate, reliable forecasts in  
4 recent rate cases. In the last rate case, FPL forecasted net energy for load of  
5 112,201 GWh for the year 2013. The actual weather-normalized net energy  
6 for load in 2013 was 111,806 GWh. Thus, FPL's projection in the last rate  
7 case was within 0.35% of the actual weather-normalized net energy for load  
8 for the year. This represents a high degree of forecasting accuracy and  
9 supports FPL's forecasting methodology. As discussed later in my testimony,  
10 FPL's methodology for forecasting net energy for load in the last rate case is  
11 fundamentally the same methodology used in this proceeding.

12 **Q. Are actual weather-normalized sales the appropriate gauge of forecasting**  
13 **accuracy?**

14 A. Yes. Actual weather-normalized sales are a better reflection of trends in  
15 electricity usage than the unadjusted level of actual sales, which may be  
16 influenced by erratic and unpredictable weather fluctuations. Quite simply,  
17 actual weather-normalized sales are based on the average weather conditions  
18 experienced for a given month based on historical data. Likewise, forecasted  
19 electricity sales are based on the assumption of normal weather conditions;  
20 that is, the weather conditions that have occurred on average historically. A  
21 variance analysis comparing actual weather-normalized sales with forecasted  
22 sales creates an "apples to apples" comparison. As a result, it is standard  
23 industry practice to use actual weather-normalized sales in determining



1 forecasting accuracy. For example, electric utilities in Florida have routinely  
2 relied on weather-normalized sales variances in their rate filings consistent  
3 with the FPSC's policy that rates be based on weather-normalized sales  
4 (Order No. PSC-11-0103-FOF-EI).

5 **Q. How did actual weather conditions in 2013 compare with normal weather**  
6 **conditions?**

7 A. While cooling degree hours in 2013 were very close to the historical averages  
8 used to determine normal weather, heating degree days were substantially  
9 below the historical averages used to determine normal weather. Taking into  
10 account both cooling degree hours and heating degree days, actual weather  
11 conditions in 2013 were mild relative to normal weather conditions. Due to  
12 milder than normal weather conditions, the unadjusted actual level of 2013 net  
13 energy for load was lower than the weather-normalized actual net energy for  
14 load for that year. The unadjusted actual level of net energy for load in 2013  
15 was 111,655 GWh versus the weather-normalized actual net energy for load  
16 of 111,806 GWh for that year.

17 **Q. Is FPL's method of computing weather-normalized actual sales consistent**  
18 **with standard industry practice?**

19 A. Yes. FPL relies on a 20-year history in order to determine normal weather  
20 patterns. This is the same time period utilized by Gulf Power and Tampa  
21 Electric Company in their most recent rate proceedings. It should also be  
22 noted that the 20-year horizon is also the same period utilized to determine  
23 weather conditions in FPL's load forecast. Thus, the method of computing

1 weather-normalized actual sales is consistent with the weather outlook  
2 assumed in the load forecast.

3 **Q. Has the Commission approved FPL's load forecast in other recent cases?**

4 A. Yes. The Commission approved FPL's load forecast in Order Nos. PSC-16-  
5 0032-FOF-EI, PSC-13-0505-PAA-EI, PSC-11-0293-FOF-EU and PSC-12-  
6 0187-FOF-EI. While FPL's load-forecasting process continues to reflect  
7 refinements over time, the load forecast in those prior proceedings reflects the  
8 same general methodology and drivers incorporated into the current load  
9 forecast.

10 **Q. How was FPL's 2013 load forecast used in the last rate case?**

11 A. The Commission-approved settlement in the last rate case implemented a  
12 change in rates based on the test year billing determinants derived from FPL's  
13 load forecast.

14

### 15 III. CUSTOMER GROWTH FORECAST

16

17 **Q. How many customers receive their electric service from FPL?**

18 A. FPL currently serves about 4.8 million customers. This represents a  
19 population of almost ten million Floridians. FPL's service area extends from  
20 St. Johns County in the north to Miami-Dade in the south, and westward to  
21 Manatee County. Thirty-five counties across the state are served wholly or  
22 partially by FPL.

23

1 **Q. What are the primary drivers of FPL's customer growth?**

2 A. FPL serves about one-half of the state's population. Thus, Florida's  
3 population growth is the primary driver of FPL's customer growth.

4 **Q. Have any other factors influenced FPL's customer growth in recent  
5 years?**

6 A. Yes. In recent years, FPL conducted a program utilizing smart grid  
7 technology to reduce the number of unknown usage ("UKU") premises. A  
8 UKU premise is a location where electricity is being consumed, but no active  
9 customer account exists. Under this program, FPL notified the occupants of  
10 these UKU premises that electric service would be terminated unless a valid  
11 customer account was opened for the premise at issue. In order to maintain  
12 electric service, many of the occupants of these UKU premises elected to open  
13 a customer account. The program began addressing the majority of UKU  
14 premises in the last half of 2013. The new customer accounts associated with  
15 UKU premises produced a one-time year-over-year increase in customer  
16 growth beginning in late 2013 and extending into 2014.

17 **Q. What has FPL's customer growth been in recent years?**

18 A. FPL's number of customers increased by 1.1% in 2013 and 1.8% in 2014,  
19 driven, in part, by the impact of smart grid technology described above. In  
20 2015, FPL's rate of customer growth returned to a more sustainable 1.4%.

21 **Q. Please explain the development of FPL's customer growth forecast.**

22 A. The growth of customers in FPL's service territory is forecasted using an  
23 econometric model. This econometric model uses Florida's population and an

1 indicator variable for the UKU program described above as explanatory  
2 variables. Florida's projected population growth is provided by IHS Global  
3 Insight.

4 **Q. Is the customer forecast based on an econometric model with excellent**  
5 **diagnostic statistics?**

6 A. Yes. One of the most important diagnostic statistics is a model's "goodness of  
7 fit." Goodness of fit refers to how closely the predicted values of a model  
8 match the actual observed values. The model used to forecast FPL's total  
9 number of customers has a strong goodness of fit as demonstrated by the  
10 model's adjusted R-squared of 99.98%. This means that 99.98% of the  
11 variability in the number of customers is explained by the model. In addition,  
12 the coefficients for all of the variables have the expected sign (+/-) and are  
13 statistically significant. This indicates that the variables influencing customer  
14 growth have been properly identified and their predicted impact is statistically  
15 sound. Finally, the model has a Durbin-Watson statistic of 2.015, which  
16 indicates the absence of significant autocorrelation. The absence of  
17 significant autocorrelation is a desirable quality in a well-constructed model.  
18 Overall, the model has excellent diagnostic statistics.

19 **Q. Does IHS Global Insight have a record of providing accurate population**  
20 **projections for Florida?**

21 A. Yes. Since 2010, IHS Global Insight's Florida population forecasts have  
22 averaged a forecasting variance of approximately 0.2%. This represents an  
23 excellent level of forecasting accuracy.

1 **Q. Could FPL's customer forecast be improved in any significant way by**  
2 **using a population forecast by county versus the state of Florida as a**  
3 **whole?**

4 A. No. As just discussed, FPL's customer model has an adjusted R-squared of  
5 99.98%. In other words, 99.98% of the variation in total customers is  
6 explained by FPL's customer model. This suggests that the variables  
7 incorporated into the current model, including population for the state of  
8 Florida as a whole, are appropriate.

9 **Q. Are there any other factors favoring the use of a statewide population**  
10 **forecast as opposed to a population forecast by county?**

11 A. Yes. In the aggregate, the projected growth rates for the 35 counties served  
12 wholly or partially by FPL mirror the statewide projections. Actual statewide  
13 population figures, on the other hand, are available on a timelier basis relative  
14 to county-specific figures. It is also important to point out that in some cases  
15 FPL only serves a small portion of a county's population. Finally, the use of  
16 statewide population figures ensures consistency with the statewide economic  
17 projections that are incorporated into the sales forecast.

18 **Q. What rate of population growth is IHS Global Insight projecting?**

19 A. IHS Global Insight is projecting a 1.4% average annual increase in Florida's  
20 population between 2015 and 2020. This projected rate of growth is  
21 consistent with the 1.4% actual average annual growth experienced between  
22 2012 and 2015.

23

1 **Q. What is FPL's forecasted customer growth?**

2 A. FPL's number of customers is expected to grow by approximately 70,000 or  
3 1.5% in 2016 and 72,000 or 1.5% in 2017. In 2018, the number of customers  
4 is forecasted to grow by approximately 73,000 or 1.5%. With a steady rate of  
5 population growth, annual customer growth is also projected to average 1.5%  
6 between 2015 and 2020. Significant cumulative increases in the number of  
7 customers are expected. By 2017, the cumulative increase in customers from  
8 2013 is expected to reach more than 290,000, an increase of 6.3%. By 2019,  
9 the number of FPL customers is projected to surpass the five million mark,  
10 and by 2020, the cumulative increase in customers since 2013 is expected to  
11 reach over one-half million.

12 **Q. How do FPL's projected customer growth rates compare with the growth  
13 rates experienced in recent years?**

14 A. FPL's projected customer-growth rates are comparable to the growth rates  
15 experienced since 2012. Between 2012 and 2015, average annual customer  
16 growth was 1.4%, while the projected average annual growth between 2015  
17 and 2020 is comparable at 1.5%.

18 **Q. Is FPL's projected customer growth reasonable?**

19 A. Yes. FPL's projected customer growth incorporates population projections  
20 from IHS Global Insight, a leading economic forecasting firm with a strong  
21 record of reliable population projections. FPL's projected customer growth  
22 also relies on the forecasting methods previously reviewed and accepted by

1 the Commission, and is consistent with recent historical trends in customer  
2 growth.

3 **Q. What is FPL's forecast of new service accounts?**

4 A. FPL is projecting 57,000 new service accounts ("NSAs") in 2016 and 67,000  
5 NSAs in 2017. This represents an increase relative to the 48,000 NSAs  
6 recorded in 2015. The cumulative number of NSAs since 2013 is projected to  
7 be close to 220,000 by 2017. In 2018, NSAs are projected to reach 74,000.  
8 By 2020, the cumulative number of NSAs since 2013 is expected to reach  
9 more than 450,000. FPL's forecast of NSAs takes into account projected  
10 trends in construction activity and recent actuals.

11 **Q. Is FPL's forecast of NSAs consistent with its forecasted customer growth?**

12 A. Yes. FPL is projecting average annual customer growth of 72,000 between  
13 2015 and 2020 and average annual NSAs of 71,000 during the same period.  
14 This indicates that the forecasts of NSAs and customer growth are consistent  
15 over this time period.

16

#### 17 **IV. FORECAST OF NET ENERGY FOR LOAD**

18

19 **Q. What are the primary determinants of net energy for load?**

20 A. In addition to customer growth, the primary determinants of net energy for  
21 load include the economy, weather, and energy efficiency codes and  
22 standards. Accordingly, FPL forecasts net energy for load per customer using  
23 an econometric model with explanatory variables representing these factors.

1 **Q. How are weather conditions incorporated into the net energy for load per**  
2 **customer model?**

3 A. The weather variables included in the net energy for load per customer model  
4 are cooling degree hours using a base of 72 degrees and winter heating degree  
5 days using a base of 66 degrees. In addition, a second measure of heating  
6 degree days is included using a base of 45 degrees in order to capture the  
7 additional heating load resulting from sustained periods of unusually cold  
8 weather. As previously discussed, the forecast assumes normal weather  
9 conditions based on the historical average of the last twenty years.

10 **Q. Why is the net energy for load forecast based on normal weather**  
11 **conditions using the 20-year historical average?**

12 A. Normal weather conditions are assumed in the net energy for load forecast in  
13 order to reflect the most likely weather conditions based on twenty years of  
14 historical data. In addition, the 20-year period for determining normal  
15 weather is also utilized in the annual summer and winter peak forecasts. As a  
16 result, using the 20-year historical average to estimate normal weather  
17 conditions for net energy for load forecast ensures consistency with the  
18 weather assumptions utilized in the long-term peak forecasts that help  
19 determine future resource needs. Accordingly, FPL has consistently relied on  
20 a twenty-year weather outlook in the last two rate cases and in its last five  
21 need determination filings.

22

23



1 **Q. Please describe economic conditions in Florida in recent years.**

2 A. While the most recent recession, often referred to as the Great Recession, took  
3 an especially heavy toll on the state, Florida's economy has been consistently  
4 expanding for the last five years. This is most clearly illustrated in terms of  
5 job growth. Between 2007 and 2010, Florida lost more than 900,000 jobs,  
6 equivalent to a cumulative reduction of over 10%. Positive year-over-year job  
7 growth did not return until mid-2010, and the recovery in employment then  
8 gradually accelerated in 2011. The pace of job growth has since been on  
9 firmer footing, with progressively stronger employment growth experienced  
10 in 2012, 2013, and 2014. By April 2015, Florida had recovered all of the  
11 more than 900,000 jobs lost during the Great Recession. Indeed, the rate of  
12 job growth in 2015 was the state's highest since 2005.

13 **Q. Has Florida's economic expansion lagged in any respects?**

14 A. Yes. The state's labor force participation rate, defined as the percent of the  
15 population in the workforce, has been declining and, as of late 2015, was at its  
16 lowest rate in decades. In addition, there is concern that some of the  
17 employment growth in Florida has been concentrated in lower-paying  
18 industries. Both factors could hamper the state's long-term growth potential.

19 **Q. What economic outlook is assumed in FPL's energy use per customer  
20 model?**

21 A. FPL's economic assumptions are provided by leading economic forecasting  
22 firm, IHS Global Insight. Although IHS Global Insight's forecast shows  
23 positive gains in income and employment, some deceleration in the pace of

1 growth is evident in its projections. After expanding by 3.2% in 2014 and  
2 3.3% in 2015, the number of jobs in Florida is expected to grow by 2.6% in  
3 2016 and 2.0% in 2017. The lower rates of growth continue through 2020,  
4 with employment expected to increase at a compound annual rate of 1.8%  
5 between 2015 and 2020. A similar pattern is found in IHS Global Insight's  
6 forecast of real per capita income. After increasing at an estimated rate of  
7 3.2% in 2015, the state's real per capita income is expected to increase at a  
8 compound annual rate of 2.4% between 2015 and 2017. Between 2015 and  
9 2020, real per capita income is expected to increase at a compound annual rate  
10 of 2.1%.

11 **Q. What accounts for the forecasted deceleration in employment and income**  
12 **growth in Florida?**

13 A. According to IHS Global Insight, some deceleration in growth may be  
14 expected as the economic recovery matures. To an extent, the economic  
15 growth rates projected for the next few years represent a return to more  
16 normal rates of growth. In particular, the forecasted growth in real per capita  
17 income between 2015 and 2020 is comparable to the average growth rates  
18 experienced from the early 1990s through 2004.

19 **Q. How are economic conditions incorporated into the net energy for load**  
20 **per customer model?**

21 A. The impact of the economy is captured through a composite variable based on  
22 Florida's real per capita income and the percent of the state's population that  
23 is employed. Thus, this composite economic variable encompasses two of the

1 primary drivers of the economy: employment and income levels. Florida's  
2 real per capita income and employment levels are provided by IHS Global  
3 Insight. This composite economic variable increased by 3.9% in 2014 and  
4 5.1% in 2015. Solid, but more modest increases of 3.2% and 3.0% are  
5 forecasted for 2016 and 2017, respectively. The composite economic variable  
6 is forecasted to increase at a compound annual rate of 2.4% between 2015 and  
7 2020.

8 **Q. How does FPL capture the impact that prices have on electricity**  
9 **consumption?**

10 A. FPL uses two variables for the impact that prices have on electricity  
11 consumption. One variable is based on increases in the real price of electricity  
12 over time while another variable is based on decreases in the real price of  
13 electricity over time. By using two different price variables, the net energy  
14 for load per customer model reflects the fact that consumers may have a  
15 proportionately different response to price increases than they do to price  
16 decreases.

17 **Q. What assumptions regarding clause adjustment factors are incorporated**  
18 **into FPL's price of electricity projections?**

19 A. FPL's price of electricity projections are based on the Company's fuel  
20 projections developed in January 2016. These are the same fuel projections  
21 incorporated into the mid-course correction filed in February 2016 and  
22 approved on March 1, 2016.

1 **Q. How does FPL capture the impact from energy efficiency codes and**  
2 **standards in its forecast?**

3 A. Estimates of savings from energy efficiency codes and standards are  
4 developed by ITRON, a leading expert in this field. These estimates include  
5 savings from federal and state energy efficiency codes and standards,  
6 including the 2005 National Energy Policy Act, the 2007 Energy  
7 Independence and Security Act, and the savings resulting from the use of  
8 compact fluorescent bulbs and light-emitting diodes (“LEDs”). The input  
9 from ITRON represents the savings from energy efficiency codes and  
10 standards based strictly on an engineering analysis of the equipment at issue.  
11 The net impact on usage, including any behavioral changes, is captured by  
12 applying the model coefficient to the input from ITRON. It should be noted  
13 that the impact from energy efficiency codes and standards as discussed here  
14 does not include the prospective impact from utility-sponsored demand-side  
15 management (“DSM”) programs. The impact of that incremental DSM is  
16 discussed later in my testimony.

17 **Q. Are any other variables included in the net energy for load per customer**  
18 **model?**

19 A. Yes. The net energy for load per customer model includes an indicator  
20 variable for leap year. The leap-year variable captures the fact that the extra  
21 day associated with leap year results in a higher level of net energy for load  
22 than would otherwise be the case.

1 **Q. How is the output from the net energy for load per customer model**  
2 **incorporated into the net energy for load forecast?**

3 A. The output from the net energy for load use per customer model is multiplied  
4 by the forecasted number of customers. The result is a preliminary estimate of  
5 net energy for load. Adjustments are then made to this preliminary estimate  
6 of the forecasted net energy for load in order to reflect factors not otherwise  
7 reflected in FPL's historical load level, but which are expected to affect future  
8 levels of net energy for load. These adjustments are made for changes in net  
9 energy for load resulting from wholesale sales, plug-in electric vehicles,  
10 distributed solar generation, DSM, and FPL's economic development tariffs.

11 **Q. Why are adjustments to FPL's net energy for load forecast made for**  
12 **wholesale requirements sales?**

13 A. FPL's net energy for load forecast is adjusted for wholesale loads served  
14 under full and partial requirements contracts that provide other utilities all or a  
15 portion of their load requirements at a level of service equivalent to the  
16 Company's own native load customers. Individual contracts to sell wholesale  
17 requirements sales may be initiated, terminated, modified, or expanded over  
18 time. As a result, the net energy for load forecast is adjusted for wholesale  
19 requirements sales in order to reflect changes in load not otherwise captured in  
20 FPL's historical load levels. Specific forecasts are developed for wholesale  
21 requirements customers and then used as adjustments to the net energy for  
22 load forecast.

1 **Q. What contracts are included in the wholesale requirements sales**  
2 **forecast?**

3 A. The largest of these contracts provides full requirements service to the Lee  
4 County Electric Cooperative (“LCEC”), a not-for-profit electric distribution  
5 cooperative serving a five-county area in Southwest Florida. FPL served  
6 LCEC as a partial requirements customer in 2010 through 2013. Since 2014,  
7 FPL has served LCEC as a full-requirements customer under a multi-decade  
8 contract. FPL has also made a 200-MW requirements sale to Seminole  
9 Electric Cooperative since June 2014. In addition, effective May 2011, FPL  
10 began serving the Florida Keys Electric Cooperative (“FKEC”) as a full-  
11 requirements customer. The wholesale sales forecast also includes a number  
12 of smaller contracts including service to Blountstown, Wauchula, New  
13 Smyrna Beach, Winter Park, Quincy, and Homestead. FPL only includes  
14 executed and approved wholesale contracts in its sales forecast.

15 **Q. How is the forecast of wholesale requirements sales developed?**

16 A. LCEC and FKEC, the largest contracts served by FPL, each provide their own  
17 forecast of projected wholesale requirements. The forecasted wholesale  
18 requirements sales for other contracts reflect customer-specific inputs and  
19 historical usage. Expected changes in service including the initiation and/or  
20 termination of a contract are also incorporated into the forecast, along with  
21 any known changes in the terms of service that would affect the projected  
22 amount of requirements sales.

23

1 **Q. What is the forecast for wholesale requirements sales?**

2 A. The net energy for load from wholesale requirements sales is projected to be  
3 6,536 GWh in 2016, a decline of about 2.9% from the 2015 level. The decline  
4 in wholesale requirements sales in 2016 is driven by decreases in projected  
5 sales provided by LCEC and FKEC. The net energy for load from wholesale  
6 requirements sales is projected to decline by another 9.0% in 2017 as a result  
7 of the terminations of the sales to Wauchula and Blountstown as well as  
8 modifications to other contracts. After 2017, the level of wholesale  
9 requirements sales is expected to increase modestly as a result of the steady  
10 increase in sales to LCEC and FKEC. Between 2017 and 2020, wholesale  
11 requirements sales are expected to increase at a compound annual rate of  
12 1.2%, reaching 6,162 GWh by 2020.

13 **Q. How does the forecast of wholesale requirements sales compare to recent  
14 actuals?**

15 A. Wholesale requirements sales are projected to decline at a compound annual  
16 rate of about 6.0% between 2015 and 2017, and then grow by about 1.2% a  
17 year between 2017 and 2020. By contrast, wholesale requirements sales in  
18 2014 and 2015 experienced unusually large increases. There were two  
19 contract changes that substantially increased the amount of wholesale  
20 requirements sales in 2014 and 2015. With the initiation of full requirements  
21 sales to LCEC in 2014, the level of wholesale sales increased from 2,152  
22 GWh in 2013 to 5,597 GWh in 2014, a 160% increase. Due to the inclusion of  
23 a full year of service under the new Seminole contract, the level of wholesale

1 requirements sales increased another 20% in 2015 to 6,730 GWh. While the  
2 forecast of wholesale requirements sales includes some recently executed  
3 contracts, these contracts are very small relative to the increase in sales  
4 resulting from LCEC or Seminole. Moreover, a number of contracts will be  
5 terminated or modified, resulting in a decline in wholesale requirements sales  
6 in 2016 and 2017.

7 **Q. Why is an adjustment to FPL's net energy for load forecast being made**  
8 **for plug-in electric vehicles?**

9 A. The net energy for load forecast is adjusted for plug-in electric vehicles in  
10 order to reflect additional load not otherwise captured in FPL's historical load  
11 levels. As of mid-2015, there were estimated to be over 9,000 plug-in electric  
12 vehicles in FPL's service area, adding approximately 40 GWh to FPL's net  
13 energy for load. By 2020, more than 70,000 additional plug-in vehicles are  
14 projected, resulting in an additional 333 GWh in net energy for load.

15 **Q. How is the load from plug-in electric vehicles projected?**

16 A. Projections of the U.S. market for plug-in electric vehicles were first  
17 developed based on a review of multiple forecasts from leading experts and  
18 discussions with knowledgeable professionals in the automotive industry.  
19 Florida's share of the U.S. market for plug-in electric vehicles was then  
20 estimated based on data from the Florida Department of Motor Vehicles for  
21 registered plug-in vehicles in the state. Using the same Department of Motor  
22 Vehicles data for counties served by FPL, FPL's share of plug-in vehicles was  
23 then estimated. The contribution to net energy for load from plug-in electric



1 vehicles was then derived from the vehicle forecast using an estimate of  
2 kilowatt-hours per vehicle.

3 **Q. Why is an adjustment to FPL's net energy for load forecast being made**  
4 **for FPL's economic development tariffs?**

5 A. The net energy for load forecast is adjusted for FPL's economic development  
6 tariffs in order to reflect additional load not otherwise captured in FPL's  
7 historical load levels. FPL's economic development tariffs consist of the  
8 Economic Development Rider, the Existing Facilities Economic Development  
9 Rider, and the Commercial/Industrial Service Rider. Under all three tariffs,  
10 customers are provided discounts for adding new or incremental load. To  
11 qualify for any of the tariffs, customers are required to verify that the  
12 availability of the rider was a significant factor in their location or expansion  
13 decision. Based on estimates developed by FPL's Economic Development  
14 group and in conjunction with the Customer Service and Regulatory Business  
15 Units, the Economic Development Rider, the Existing Facilities Economic  
16 Development Rider, and the Commercial/Industrial Service Rider are  
17 collectively projected to add about 279 GWh to net energy for load in 2017.  
18 This amount is expected to rise to 378 GWh in 2020.

19 **Q. Why is an adjustment to FPL's net energy for load forecast being made**  
20 **for the impact of new distributed solar generation?**

21 A. The net energy for load forecast is adjusted for new distributed solar  
22 generation in order to reflect the load impact not otherwise captured in FPL's  
23 historical load levels. The impact of new distributed solar generation is

1 estimated to reduce 2016 net energy for load by 38 GWh. The amount is  
2 expected to increase to 63 GWh in 2017 and to 218 GWh by 2020. For  
3 clarification, distributed solar generation in this context is refers to customer-  
4 owned or leased photovoltaics, such as rooftop solar.

5 **Q. How are the adjustments for new distributed solar generation**  
6 **determined?**

7 A. A forecast of installed distributed solar generation capacity for the state of  
8 Florida is obtained from Greentech Media (“GTM”) Research, one of the  
9 leading sources of market research and statistics on green technology. FPL’s  
10 share of the state forecast is determined based on actual year-end 2014 FPL  
11 data for residential and commercial distributed solar generation. These shares,  
12 along with GTM Research’s state forecast, are used to develop FPL’s installed  
13 capacity of distributed solar generation. Megawatt hours of distributed solar  
14 are derived using a capacity factor, and hourly MWh values are then  
15 developed using solar profiles. Only the impact of distributed solar generation  
16 installed after mid-2015 is included as an adjustment to the net energy for load  
17 forecast.

18 **Q. Why is an adjustment to FPL’s net energy for load forecast being made**  
19 **for the impact of incremental DSM?**

20 A. An adjustment is made for the impact of incremental DSM in order to reflect  
21 reductions in load not otherwise reflected in history. The effects of DSM  
22 energy efficiency programs that occurred through mid-2015 are assumed to be  
23 embedded in actual usage data for forecasting purposes. The impact of

1 incremental DSM that FPL plans to implement in the future is treated as a  
2 line-item reduction to the forecast. The impact of incremental DSM is  
3 consistent with the goals established by the Commission in Order No. PSC-  
4 14-0696-FOF-EU and incorporates estimated actuals through year-end 2015.  
5 The amount of incremental DSM is projected to increase by approximately 46  
6 GWh in 2016 and by another 48 GWh in 2017. Between 2015 and 2020, the  
7 level of incremental DSM is expected to increase by approximately 50 GWh  
8 per year.

9 **Q. Have the types of adjustments to the net energy for load forecast just**  
10 **described been incorporated into prior forecasts?**

11 A. Yes. The 2015 Ten Year Site Plan forecast incorporated adjustments for  
12 wholesale load, plug-in electric vehicles, economic development tariffs, and  
13 distributed solar generation. In addition, the resource planning process has  
14 treated incremental DSM as a line-item reduction to the sales forecast for  
15 several years.

16 **Q. What is FPL's forecasted net energy for load?**

17 A. FPL is forecasting net energy for load of 119,625 GWh in 2016, an increase of  
18 about 1.4% over weather-normalized actual 2015. A decline in 2017 is  
19 projected with net energy for load slipping to 118,832 GWh in 2017, a drop of  
20 0.7% from 2016. Nonetheless, the underlying trend remains one of positive  
21 growth, with the level of net energy for load in 2017 up by 7,026 GWh, or  
22 6.3% over its weather-normalized 2013 level. Moreover, weather-normalized  
23 net energy for load is projected to increase at a positive 0.4% compound

1 annual growth rate between 2015 and 2017. In 2018, net energy for load is  
2 forecasted to reach 119,563 GWh, a 0.6% increase over its projected 2017  
3 level. As shown in Exhibit RM-3, weather-normalized net energy for load is  
4 projected to grow at a 0.6% compound annual growth rate between 2015 and  
5 2020.

6 **Q. How do FPL's forecasted growth rates in net energy for load compare**  
7 **with recent actuals?**

8 A. Substantial increases in the volume of wholesale requirements sales in 2014  
9 and 2015 resulted in larger increases in net energy for load than would  
10 otherwise be the case. As a result, weather-normalized net energy for load  
11 increased at a compound annual rate of 2.7% between 2013 and 2015. Absent  
12 similarly large increases in wholesale requirements sales, the weather-  
13 normalized net energy for load between 2015 and 2017 is projected to  
14 increase at a compound annual rate of 0.4%. As I discuss later in my  
15 testimony, the forecasted growth in retail delivered sales, which excludes the  
16 fluctuations associated with wholesale requirements sales, is more consistent  
17 with recent trends.

18 **Q. Why is a decrease in weather-normalized net energy for load projected**  
19 **between 2016 and 2017?**

20 A. Consistent with the year-to-year fluctuations in net energy for load  
21 experienced historically, there are a number of factors that are projected to  
22 reduce the level of net energy for load in 2017 relative to the 2016 level.  
23 Wholesale requirements sales are projected to decline between 2016 and 2017

1 for the reasons discussed earlier in my testimony. In addition, the projected  
2 impact of energy efficiency codes and standards and incremental DSM are  
3 higher in 2017 relative to 2016. At the same time, the pace of the economic  
4 expansion is forecasted to moderate in 2017. The price of electricity is also  
5 projected to increase in 2017. Finally, the absence of the extra day of sales  
6 associated with leap year is projected to reduce net energy for load in 2017  
7 relative to 2016.

8 **Q. Is FPL's methodology for forecasting net energy for load the same**  
9 **methodology utilized by the Company in its last rate case?**

10 A. Fundamentally, yes. Both forecasts rely on econometric models and inputs  
11 representing the major factors influencing electric sales, including weather,  
12 the economy, energy efficiency codes and standards, and so forth. Some  
13 refinements have been made. The most significant of these include how  
14 energy prices and the housing market are treated. In the last rate case, CPI for  
15 energy was used to capture the impact of rising energy prices on electricity  
16 consumption. Many customers need to budget for their total energy  
17 purchases, not just electricity, particularly when rising energy prices, such as  
18 those for gasoline, exceed the overall cost of living. However, with the  
19 significant monthly fluctuations in the CPI for energy experienced in 2015,  
20 the linkage between the CPI for energy and short-term electricity consumption  
21 has weakened. Accordingly, the CPI for energy is no longer used in the  
22 current net energy for load per customer model.

23

1 **Q. How has FPL's methodology for forecasting net energy for load evolved**  
2 **in terms of the housing market?**

3 A. The increase in empty homes resulting from the housing crisis helped spur the  
4 state's economic decline during the Great Recession. To capture this impact,  
5 FPL's net energy for load per customer models began to include an  
6 adjustment for empty homes, effective with the Company's 2009 Ten Year  
7 Site Plan load forecast. A statistically supported variable for empty homes  
8 was incorporated into the 2012 Ten Year Site Plan forecast, the same forecast  
9 used in the Company's last rate case. The empty-homes variable remained a  
10 statistically significant variable in FPL's net energy for load per customer  
11 models up through the 2014 Ten Year Site Plan. However, as the housing  
12 market recovered and the number of empty homes fell, the statistical  
13 significance of the empty-homes variable waned. Apparently, the decline in  
14 the number of empty homes did not have the positive impact on electricity  
15 usage suggested by the negative impact of usage that had resulted from the  
16 rise in the number of empty homes during the Great Recession. Effective with  
17 its 2015 Ten Year Site Plan forecast, FPL does not include a variable for the  
18 number of empty homes in its net energy for load per customer model.

19 **Q. Is FPL's net energy for load forecast based on an econometric model with**  
20 **excellent diagnostic statistics?**

21 A. Yes. The energy use per customer model used to forecast FPL's net energy  
22 for load has a strong goodness of fit, as demonstrated by the model's adjusted  
23 R-squared of 99.4%. This means 99.4% of the variability in energy use per

1 customer is explained by the model. In addition, the coefficients for all of the  
2 variables have the expected sign (+/-) and are statistically significant. This  
3 indicates that the variables influencing net energy for load have been properly  
4 identified, and their predicted impact is statistically sound. Finally, the model  
5 has a Durbin-Watson statistic of 1.957, which indicates the absence of  
6 significant autocorrelation. The absence of significant autocorrelation is a  
7 desirable quality in a well-constructed model. Overall, the model has  
8 excellent diagnostic statistics.

9 **Q. Is FPL's net energy for load forecast reasonable?**

10 A. Yes. FPL's net energy for load forecast is based on assumptions developed by  
11 industry experts and relies on methodologies that have proven to be accurate  
12 based on actual weather-normalized net energy for load. FPL's net energy for  
13 load forecast is based on an econometric model with a strong goodness of fit  
14 and a high degree of statistical significance. FPL is confident the relationship  
15 that exists between the level of net energy for load and the economy, weather,  
16 customers, energy efficiency codes and standards, and other variables have  
17 been properly assessed and numerically quantified. FPL's net energy for load  
18 forecast should be approved.

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**V. DELIVERED AND BILLED SALES**

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**Q. How do delivered sales differ from billed sales?**

A. Because meters are read throughout the month, billed sales in any given month reflect a mix of usage from the current and prior month. Delivered sales, on the other hand, are based on customer usage in the current month. Delivered sales are derived from net energy for load less losses. Delivered sales are a component of billed sales, but billed sales also reflect the changes in unbilled sales (i.e., sales delivered in one month, but not billed until the following month).

**Q. How is FPL's forecast of delivered sales developed?**

A. Historical patterns in monthly losses are first examined. Based on recent actuals, monthly loss factors are then projected. The forecast of delivered sales was then developed by applying these projected monthly loss factors to the forecast of net energy for load.

**Q. How is FPL's forecast of billed sales developed?**

A. Billed sales are based on delivered sales plus the unbilled sales for the prior month minus the unbilled sales for the current month. Unbilled sales are estimated based on the historical pattern between unbilled sales and net energy for load by month.

**Q. What is FPL's forecast of retail delivered sales?**

A. Retail delivered sales are expected to reach 107,429 GWh in 2016, an increase of 1.6% from the level of weather-normalized retail delivered sales in 2015.



1 In 2017, retail delivered sales are projected to be 107,261 GWh, a minimal  
2 0.2% decline from the 2016 level. The minimal decline in 2017 relative to  
3 2016 reflects a number of factors including moderating economic growth,  
4 higher electricity prices, a higher level of incremental DSM, the continued  
5 impact from energy efficiency codes and standards, and the absence of the  
6 additional day of consumption associated with leap year. The projected 2015  
7 to 2017 growth provides a better indication of the underlying trend in retail  
8 delivered sales. Weather-normalized retail delivered sales are projected to  
9 grow at a compound annual rate of 0.7% between 2015 and 2017. Retail  
10 delivered sales are forecasted to grow by another 0.6% between 2017 and  
11 2018, reaching 107,888 GWh. Between 2015 and 2020, a 0.7% a compound  
12 annual growth rate is projected.

13 **Q. How does the forecasted growth in retail delivered sales compare with**  
14 **recent trends?**

15 A. The 0.7% compound annual rate of increase in weather-normalized retail  
16 delivered sales between 2015 and 2017 is similar to the 0.8% growth in  
17 weather-normalized retail delivered sales between 2011 and 2015. The 0.7%  
18 compound annual rate of growth in weather-normalized retail delivered sales  
19 between 2015 and 2020 is also comparable to the growth in weather-  
20 normalized retail delivered sales between 2011 and 2015.

21

22

1 **Q. What is the forecast for weather-normalized retail delivered sales per**  
2 **customer?**

3 A. Between 2015 and 2017, weather-normalized retail delivered sales per  
4 customer is projected to decline at a compound annual rate of 0.7%. The  
5 longer-term trend is similar. Between 2015 and 2020, weather-normalized  
6 retail delivered sales per customer is projected to decline at a compound  
7 annual rate of 0.7%.

8 **Q. Is the decline in weather-normalized retail delivered sales per customer a**  
9 **short-term anomaly?**

10 A. Not at all. As Exhibit RM-2 shows, the general trend in recent years has been  
11 one of declining weather-normalized retail delivered sales per customer.  
12 Declining weather-normalized retail delivered sales per customer have been  
13 experienced for nine out of eleven years since 2005. Moreover, a positive  
14 year-over-year increase in weather-normalized retail sales per customer has  
15 not been experienced since 2012.

16

## 17 **VI. CUSTOMERS AND SALES BY REVENUE CLASS**

18

19 **Q. How does FPL forecast customers by revenue class?**

20 A. Preliminary forecasts of customers for each revenue class are developed using  
21 econometric models and customer-specific information. Econometric models  
22 are developed to forecast customers in the residential, commercial, industrial,  
23 and street & highway lighting revenue classes. Customer forecasts for the

1 wholesale, railroads & railways, and other revenue classes are based on class-  
2 specific information. The sum of the preliminary forecasts of customers by  
3 revenue class is then compared with FPL's total customer forecast, described  
4 earlier in my testimony. The preliminary forecasts of residential and  
5 commercial customers are then adjusted for the difference between the sum of  
6 the revenue classes and FPL's total customer forecast. This adjustment is  
7 made to the residential and commercial customer forecast because these  
8 customers account for the vast majority of FPL's customers. By making this  
9 adjustment, consistency between the total customer forecast and customer by  
10 revenue class forecast is assured.

11 **Q. How does FPL forecast billed sales by revenue class?**

12 A. Preliminary forecasts of billed sales for each revenue class are developed  
13 using econometric models and customer-specific information. Separate  
14 econometric models are developed for the residential, commercial, and  
15 industrial revenue classes. Sales forecasts for the wholesale, street & highway  
16 lighting, railroads & railways, and other revenue classes are based on class-  
17 specific information. The sum of the preliminary forecasts of billed sales by  
18 revenue class is then compared with FPL's total billed-sales forecast derived  
19 from the net energy for load forecast described earlier in my testimony. The  
20 preliminary residential and commercial sales forecasts are then  
21 proportionately adjusted for the difference between the sum of the revenue  
22 classes and the overall billed sales derived from the total net energy for load  
23 forecast. This adjustment is made to the residential and commercial forecast

1           because residential and commercial customers account for over 96% of FPL's  
2           retail sales. This adjustment assures consistency within the forecast.

3   **Q.   Instead of adjusting residential and commercial sales, would it be**  
4           **appropriate to adjust total FPL sales to match the sum of the individual**  
5           **revenue class forecasts?**

6   A.   No. The econometric model supporting the net energy for load forecast is  
7           superior to the models supporting the individual revenue class forecasts in a  
8           number of respects. The net energy for load per customer model encompasses  
9           a richer array of variables relative to the individual revenue class models. For  
10          example, the net energy for load per customer model includes a variable for  
11          the impact of energy efficiency codes and standards. In addition, the net  
12          energy for load forecast includes adjustments for the impact of plug-in electric  
13          vehicles and distributed solar generation. Therefore, the impacts from energy  
14          efficiency codes and standards, plug-in electric vehicles, and distributed solar  
15          generation would not be included in the revenue class forecasts absent the  
16          adjustment to total billed sales resulting from FPL's net energy for load  
17          forecast. The net energy for load per customer model also has the advantage  
18          of reflecting monthly weather conditions without the potential distortions  
19          created by the billing cycle. Accordingly, the net energy for load per  
20          customer model has better statistical diagnostics relative to the revenue class  
21          models. For example, the residential sales per customer model and small  
22          commercial sales per customer model have adjusted R-squared values of  
23          93.7% and 94.8%, respectively. While each of these values represents a very

1 good statistical fit, the net energy for load per customer model is substantially  
2 better with an adjusted R-squared value of 99.4%.

3 **Q. Has FPL previously used this method of assuring consistency by**  
4 **adjusting residential and commercial sales so that the sum of the**  
5 **individual revenue classes matches total billed sales?**

6 A. Yes. Adjusting residential and commercial sales so that the sum of the  
7 individual revenue classes matches total billed sales has been used for a  
8 number of years, including FPL's last three rate cases. This method of  
9 assuring consistency has been reviewed and accepted by the Commission in  
10 multiple proceedings, including the proceeding concluded by Order No. PSC-  
11 10-0153-FOF-EI.

12 **Q. Are the assumptions incorporated into the individual sales and customer**  
13 **forecasts by revenue class consistent with those used in the total customer**  
14 **and total billed sales forecast?**

15 A. Yes. The specific assumptions regarding the weather, population growth, and  
16 the economy used in the individual sales and customer forecasts by revenue  
17 class are consistent with those used in the total customer and total billed sales  
18 forecast. As previously discussed, these assumptions are provided by leading  
19 industry experts.

20 **Q. Are the forecasted shares of weather-normalized sales by revenue class**  
21 **consistent with recent history?**

22 A. Yes. In 2015 residential sales accounted for approximately 53% of billed  
23 weather-normalized retail sales. For the forecasted 2016 to 2017 period,

1 residential sales are likewise projected to account for approximately 53% of  
2 weather-normalized billed retail sales. The pattern in terms of commercial  
3 sales is similar. In 2015, commercial sales accounted for about 43% of  
4 weather-normalized billed retail sales. For the forecasted 2016 to 2017  
5 period, commercial sales are projected to account for about 43% of weather-  
6 normalized billed retail sales. Consistent with historical patterns, other  
7 revenue classes (i.e., industrial, street & highway lighting, railroads &  
8 railways, and other) are expected to account for 4% or less of weather-  
9 normalized billed retail sales.

10 **Q. Are weather-normalized sales the appropriate measure to use in**  
11 **determining trends in sales by revenue class?**

12 A. Yes. Deviations from normal weather conditions can create significant  
13 variations in sales. Moreover, the impact of weather varies significantly by  
14 revenue class. Residential sales, for instance, tend to be more sensitive to  
15 weather conditions, particularly cold weather, relative to other revenue  
16 classes. As a result, billed sales by revenue class that have not been weather-  
17 normalized are subject to weather fluctuations that can distort underlying  
18 trends.

19 **Q. Is additional detail available on how the customer and sales forecasts by**  
20 **revenue class are developed?**

21 A. Yes. MFR F-5 provides additional detail on the forecasting models  
22 supporting the customer and sales forecasts by revenue class.

23

1 **Q. What is FPL's forecast of billed jurisdictional sales?**

2 A. Billed jurisdictional sales or billed retail sales are defined as total billed sales  
3 less wholesale billed sales. FPL is forecasting billed jurisdictional sales of  
4 107,374 GWh in 2016 and 107,246 GWh in 2017.

5 **Q. Is FPL's forecast of billed jurisdictional sales reasonable?**

6 A. Yes. The forecast is consistent with the forecasts of net energy for load and  
7 billed sales previously discussed. The forecast is based on sound statistical  
8 methods and inputs provided by industry experts. The forecast also  
9 incorporates recent trends in losses and billed and unbilled sales. FPL's  
10 forecast of billed jurisdictional sales should be approved.

11

## 12 **VII. MONTHLY PEAK FORECAST**

13

14 **Q. How does FPL forecast monthly peaks?**

15 A. Econometric models are developed to forecast the annual summer and winter  
16 peaks. The annual summer peak is assumed to occur in August because that  
17 month has historically accounted for the highest percentage of annual summer  
18 peak days. The annual winter peak is assumed to occur in January because  
19 that month has historically accounted for the highest percentage of annual  
20 winter peak days. The monthly peaks for other months are forecasted based  
21 on the historical relationship between the peaks in those months and the  
22 annual summer peak. The annual summer peak is used as the basis for  
23 projecting the monthly peaks in February through July and September through

1 December because the majority of the monthly peaks in those months are  
2 driven by warm weather.

3 **Q. How does FPL forecast the annual summer peak?**

4 A. FPL uses an econometric model to forecast summer peak per customer. This  
5 econometric model includes variables for the weather, energy prices, the  
6 economy, and energy efficiency codes and standards. The impact of the  
7 economy is captured through a real disposable income per household variable  
8 based on projections provide by IHS Global Insight. Energy prices are based  
9 on CPI for energy, also provided by IHS Global Insight. The impact of  
10 energy efficiency codes and standards is based on inputs provided by ITRON.  
11 The summer peak per customer model also incorporates two weather series:  
12 the maximum temperature on the day of the summer peak and the sum of the  
13 cooling degree hours two days prior to the peak day. A preliminary forecast  
14 of the annual summer peak is obtained by multiplying the forecasted summer  
15 peak per customer from this model by the total number of customers.

16 **Q. Are any adjustments made to the annual summer peak forecast?**

17 A. Yes. The annual summer peak forecast is adjusted for wholesale requirements  
18 load, distributed solar generation, new load resulting from plug-in electric  
19 vehicles, and incremental load resulting from the FPL's economic  
20 development tariffs.

21

22



1 **Q. Is the annual summer peak forecast consistent with the net energy for**  
2 **load forecast previously discussed?**

3 A. Yes. The annual summer peak forecast relies on inputs from the same leading  
4 industry experts utilized in the net energy for load forecast. Economic  
5 projections are provided by IHS Global Insight. The impact from energy  
6 efficiency codes and standards is based on estimates developed by ITRON,  
7 while projections from GTM Research are used to determine the impact from  
8 new distributed solar generation. The annual summer peak forecast also uses  
9 the same customer forecast incorporated into the net energy for load forecast.  
10 In addition, the annual summer peak forecast incorporates adjustments for  
11 factors also used as line item adjustments in the net energy for load forecast  
12 (i.e., wholesale requirements load, distributed solar generation, new load from  
13 plug-in electric vehicles, and incremental load resulting from FPL's economic  
14 development tariffs).

15 **Q. Is FPL's summer peak demand forecast based on an econometric model**  
16 **with a strong goodness of fit and a high degree of statistical significance?**

17 A. Yes. FPL's summer peak model has a strong goodness of fit as demonstrated  
18 by the model's adjusted R-squared of 98.3%. This means 98.3% of the  
19 variability in the summer peak per customer is explained by the model. In  
20 addition, the coefficients for all of the variables have the expected sign (+/-)  
21 and are statistically significant. This indicates the variables influencing the  
22 summer peak demand have been properly identified and their predicted impact  
23 is statistically sound. Finally, the model has a Durbin-Watson statistic of

1 1.980, indicating the absence of significant autocorrelation. The absence of  
2 significant autocorrelation is a desirable quality in a well-constructed model.  
3 Overall, the summer peak model has excellent diagnostic statistics.

4 **Q. How does FPL forecast the annual winter peak?**

5 A. Like the system summer peak model, the winter peak model is also an  
6 econometric model. The winter peak model is a per-customer model that  
7 includes two weather-related variables: the minimum temperature on the peak  
8 day and the square of heating degree hours from the prior day until 9:00 a.m.  
9 of the peak day. In addition, the model also includes a term for peaks  
10 occurring during the weekends as these tend to be lower than weekday peaks.  
11 The winter peak per customer model also includes an economic variable based  
12 on housing starts per capita. The projected winter peak load per customer  
13 value is multiplied by the total number of customers to derive a preliminary  
14 estimate of the forecasted winter peak.

15 **Q. Is the annual winter peak forecast consistent with the annual summer  
16 peak forecast and net energy for load forecast?**

17 A. Yes. The annual winter peak forecast relies on inputs from the same leading  
18 industry experts utilized in the annual summer peak forecast and net energy  
19 for load forecast. The annual winter peak forecast also uses the same  
20 customer forecast incorporated into the annual summer peak and net energy  
21 for load forecasts. In addition, the annual winter peak forecast incorporates  
22 adjustments for factors also used as line item adjustments in the annual  
23 summer peak and net energy for load forecast. The winter peak forecast is

1 adjusted for wholesale requirements loads, new load resulting from plug-in  
2 electric vehicles, incremental load resulting from FPL's economic  
3 development tariffs, and the impact from new distributed solar generation. In  
4 the case of the winter peak, the impact from new distributed solar is expected  
5 to be minimal due to the timing of the peak.

6 **Q. How are energy efficiency codes and standards treated in the winter peak**  
7 **forecast?**

8 A. ITRON developed estimates of the impact that energy efficiency codes and  
9 standards are likely to have on the winter peak, similar to the estimates  
10 developed for the summer peak. The historical levels of the winter peak are  
11 first increased to remove the historical impact of energy efficiency codes and  
12 standards. The winter peak per customer model is based on these adjusted  
13 historical levels. The future impact from energy efficiency codes and  
14 standards is then treated as a line item adjustment reducing the level of the  
15 winter peak forecast.

16 **Q. Is FPL's winter peak demand forecast based on an econometric model**  
17 **with a strong goodness of fit and a high degree of statistical significance?**

18 A. Yes. FPL's winter peak model has an adjusted R-squared of 95.6%, meaning  
19 that 95.6% of the variability in the winter peak per customer is explained by  
20 the model. This suggests a strong goodness of fit, particularly given that the  
21 winter peak tends to be highly volatile from year to year. In addition, the  
22 coefficients for all of the variables have the expected sign (+/-) and are  
23 statistically significant. This indicates that the variables influencing the

1 winter peak demand have been properly identified and their predicted impact  
2 is statistically sound. Finally, the model has a Durbin-Watson statistic of 2.02  
3 indicating the absence of significant autocorrelation. The absence of  
4 significant autocorrelation is a desirable quality in a well-constructed model.  
5 Overall, the winter peak model has excellent diagnostic statistics.

6 **Q. Are the assumptions incorporated into the annual summer and winter**  
7 **peak forecasts consistent with those used in the total customer and total**  
8 **billed sales forecast?**

9 A. Yes. The specific assumptions regarding the weather, population growth, and  
10 the economy used in the annual summer and winter peak forecasts are  
11 consistent with those used in the total customer and total billed sales forecasts.  
12 As previously discussed, these assumptions are provided by leading industry  
13 experts.

14 **Q. What are FPL's forecasted annual summer and winter peaks?**

15 A. The annual winter peak is projected to reach 20,252 MW in 2016, 21,140 MW  
16 in 2017, and 21,358 MW by 2018. The annual summer peak is projected to  
17 reach 24,170 MW in 2016, 24,336 MW in 2017, and 24,606 MW by 2018.

18 **Q. Are FPL's forecasted annual winter and summer peaks reasonable?**

19 A. Yes. FPL's forecasted annual summer and winter peaks are based on  
20 assumptions developed by industry experts and rely on the forecasting  
21 methods previously reviewed and accepted by the Commission. The models  
22 employed by FPL have a strong goodness of fit and a high degree of statistical  
23 significance. FPL is confident the relationships that exist among the levels of

1 peak demand, the weather, customers, energy efficiency codes and standards,  
2 and other variables have been properly assessed and numerically quantified.  
3 FPL's forecasted annual winter and summer peaks should be approved.

4

5

## VIII. INFLATION FORECAST

6

7 **Q. What measures of inflation does FPL utilize in its budgeting process?**

8 A. FPL utilizes a forecast of the CPI for all goods and services (or overall CPI) as  
9 part of the budgeting process. The same CPI forecast is also used in  
10 computing the Commission's O&M Benchmark.

11 **Q. What has been the cumulative impact of inflation over the last decade as  
12 measured by changes in the overall CPI?**

13 A. Between January 2006 and January 2016, the overall CPI experienced a  
14 cumulative increase of 19.5%. This indicates the level of prices on goods and  
15 services on average rose by 19.5% during this period.

16 **Q. Has the cumulative impact of inflation over the last decade varied by  
17 sector?**

18 A. Yes. Exhibit RM-4 shows that while the overall CPI increased by 19.5%  
19 between January 2006 and January 2016, there was substantial variability by  
20 sector. For example, the CPI for food increased by 28.2% between January  
21 2006 and January 2016. The CPI for medical care increased by 37.9%  
22 between January 2006 and January 2016, while the CPI for  
23 homeowners/renters insurance increased by 27.6% during the same period.

1 By way of comparison, as noted in FPL witness Cohen's testimony, FPL's  
2 typical 1,000-kWh residential customer bill declined by 14% between January  
3 2006 and January 2016.

4 **Q. What has been the trend in the overall CPI in recent years?**

5 A. For the most part, the overall CPI in recent years has increased at a fairly  
6 moderate pace. Between 2010 and 2014 the overall CPI increased at a  
7 compound annual rate of 2.1% a year. Moreover, the annual increases in the  
8 overall CPI during this time were fairly steady, fluctuating between 3.1% and  
9 1.5% a year.

10 **Q. Did the pattern of moderate annual increases in the overall CPI continue**  
11 **in 2015?**

12 A. No. The overall CPI in 2015 was virtually flat, with only a 0.1% increase from  
13 its 2014 level. This abrupt change in what had been a fairly steady rate of  
14 increase was driven by sharp declines in energy prices in 2015.

15 **Q. How did energy prices impact the overall CPI in 2015?**

16 A. The CPI for energy in 2015 was down nearly 17% from the prior year. This  
17 represents the largest decline in the CPI for energy since 2009. This  
18 substantial decline in energy prices helped limit any potential increase in the  
19 overall CPI in 2015.

20

21

1 **Q. Does the fact that the overall CPI in 2015 was virtually unchanged from**  
2 **the prior year suggest the absence of any inflationary pressures going**  
3 **forward?**

4 A. No. Data on the core CPI, which excludes the volatile energy and food  
5 sectors, indicate that inflationary pressures remain moderately positive.  
6 Because it excludes the volatile energy and food sectors, the core CPI is  
7 sometimes used as a measure of the underlying rate of inflation. The core CPI  
8 increased moderately in 2015 with a 1.8% gain compared to its 2014 level.  
9 The increase in the core CPI in 2015 is comparable to the increases  
10 experienced from 2011 to 2014. Moreover, the core CPI in January 2016 was  
11 up 2.2% from the prior year. Thus, the core CPI data continue to confirm a  
12 pattern of moderately positive inflationary pressures.

13 **Q. What is the basis for FPL's forecast for the overall CPI?**

14 A. FPL relies on industry expert IHS Global Insight as the source for its CPI  
15 forecast. In addition, FPL reviews the forecasts developed by other sources  
16 and considers historical trends in order to assess the reasonableness of IHS  
17 Global Insight's forecast.

18 **Q. Does IHS Global Insight anticipate a continuation of the large declines in**  
19 **energy prices experienced in 2015?**

20 A. No. IHS Global Insight is projecting that the CPI for energy will stabilize in  
21 2016 and that the longer-term trend between 2015 and 2020 is one of positive  
22 increase. This suggests that while energy prices will remain low relative to

1 their historical highs, an eventual increase in energy prices can be expected  
2 following their sharp declines in 2015.

3 **Q. What is FPL's forecast of the overall CPI for 2016 and 2017?**

4 A. Based on projections provided by IHS Global Insight, FPL is forecasting an  
5 increase in the overall CPI of 2.0% and 2.5% in 2016 and 2017, respectively.  
6 The forecasted increases in overall CPI are consistent with the consensus view  
7 that a moderately positive rate of inflation can be expected for the next few  
8 years. Contributing to this consensus view is the expectation that energy  
9 prices should eventually stabilize following their sharp declines in 2015.

10 **Q. What is FPL's longer term forecast of the overall CPI?**

11 A. Consistent with a forecast of relatively moderate inflation, FPL is projecting  
12 an average annual increase in the overall CPI of 2.5% between 2015 and  
13 2020. More specifically, FPL is forecasting a 2.6% increase in the overall  
14 CPI in 2018, followed by a 2.5% increase in 2019 and a 2.7% increase in  
15 2020.

16 **Q. What cumulative increase in the overall CPI is FPL forecasting?**

17 A. By 2017, FPL is projecting a cumulative 6.3% increase in the overall CPI  
18 relative to its 2013 level. By 2020, the cumulative increase in the overall CPI  
19 from 2013 is expected to rise to 14.9%.

20 **Q. How does FPL's forecast of the overall CPI compare with the historical  
21 rate of inflation?**

22 A. FPL's forecast of the overall CPI is comparable to the long-term average rate  
23 of inflation. The overall CPI is forecasted to increase at a compound annual



1 rate of 2.5% between 2015 and 2020, the same rate experienced on average  
2 since the 1990s and up modestly from the 2.1% compound annual rate  
3 averaged between 2010 and 2014.

4 **Q. How does FPL's forecast of the overall CPI compare with inflation  
5 projections developed by other experts?**

6 A. FPL's forecast of the overall CPI is consistent with the inflation projections  
7 developed by other experts, including the Philadelphia Federal Reserve Banks  
8 Survey of Professional Forecasters and the National Association for Business  
9 Economics.

10 **Q. Is FPL's forecast of the overall CPI reasonable?**

11 A. Yes. FPL's forecast of the overall CPI is based on forecasts developed by  
12 IHS Global Insight, a leading economic forecasting firm. FPL's CPI forecast  
13 is also consistent with projections developed by other professional forecasters.  
14 The projected increases in FPL's CPI forecast are reasonable given long-term  
15 historical trends, expectations regarding energy prices, and the underlying rate  
16 of inflation recently experienced.

17 **Q. Does this conclude your direct testimony?**

18 A. Yes.

1 **BY MS. MONCADA:**

2 Q Dr. Morley, did you also have exhibits  
3 attached to your testimony that were identified as  
4 RM-1 through RM-4.

5 A Yes.

6 Q Were these prepared under your direction or  
7 supervision?

8 A Yes.

9 **MS. MONCADA:** Madam Chair, those have been  
10 identified on staff's Comprehensive Exhibit List as  
11 Exhibits 79 -- I'm sorry -- 75 through 79.

12 **CHAIRMAN BROWN:** Noted for the record. Thank  
13 you. And at this time staff will attempt to  
14 authenticate certain exhibits -- have you authenticate.

15 **MS. HARPER:** Hi, yes. I'm sorry.

16 **EXAMINATION**

17 **BY MS. HARPER:**

18 Q Dr. Morley, have you reviewed staff Exhibit  
19 579?

20 A Yes.

21 Q Okay. At this time, I'd like to note that  
22 there was a scrivener's error on No. 480 under your list  
23 of exhibits. I'd like to correct that scrivener's error  
24 at this time. It should read, "Nos. 56, 59 through 60,  
25 74 through 80, 82, and 83."

1           **CHAIRMAN BROWN:** Okay.

2           **MS. HARPER:** Great. Other than that, we can  
3 move on.

4           **BY MS. HARPER:**

5           **Q** I just want to ask you if you prepared the  
6 exhibits listed under your name or were they prepared  
7 under your supervision.

8           **A** Yes.

9           **Q** Are these exhibits true and correct to the  
10 best of your knowledge and belief?

11          **A** Yes.

12          **Q** Would your responses be the same today as when  
13 you prepared them?

14          **A** Yes.

15          **Q** Are any portions of your exhibits listed  
16 confidential?

17          **A** No.

18          **MS. HARPER:** Thank you.

19          **CHAIRMAN BROWN:** Thank you.

20                   FPL.

21          **MS. MONCADA:** Thank you.

22                                   **EXAMINATION**

23          **BY MS. MONCADA:**

24           **Q** Dr. Morley, did you prepare an oral summary of  
25 your direct testimony?

1           **A**     I did.

2           **Q**     Please provide that to the Commission at this  
3 time.

4           **A**     Yes. Good morning, Commissioners, Madam  
5 Chairman.

6                     I'm testifying here today in support of the  
7 company's load forecast, which consists of forecast of  
8 sales, customers, and peak demands. More specifically,  
9 my forecast includes the forecast of customers and sales  
10 by revenue classes, which are the aggregate groupings of  
11 customers into categories such as residential,  
12 commercial, industrial, and so forth.

13                    Our load forecast meets all of the criteria  
14 the Commission has used in evaluating load forecast.  
15 And if I may, I'd like to take a few minutes and explain  
16 why that's so.

17                    One of the criteria the Commission has looked  
18 at is consistency. Our load forecast is the company's  
19 official load forecast for all purposes, including the  
20 resource plan incorporated into the 2016 Ten-Year Site  
21 Plan. Another criteria considered by the Commission is  
22 whether a forecast is backed by solid, statistical  
23 analysis. FPL's proposed load forecast relies on  
24 well-constructed econometric models with a high degree  
25 of statistical significance.

1           The Commission has also considered whether a  
2 load forecast incorporates reasonable assumptions.  
3 FPL's load forecast relies on reasonable assumptions  
4 from third-party experts, and these third-party experts  
5 include leading firms such as Global Insight, which is  
6 one of the most important economic forecasting firms in  
7 the country.

8           The reasonableness of our forecast is also  
9 demonstrated by the fact that we consider factors which  
10 could both increase or decrease the level of future  
11 sales. For example, our sales forecast includes the  
12 increases in sales that are likely to occur as a result  
13 of new plug-in electric vehicles, as well as our own  
14 economic development tariffs. By the same token, FPL's  
15 proposed sales forecast also incorporates the impact of  
16 private solar and our energy efficiency programs, which  
17 tend to decrease sales.

18           In addition to being balanced, reasonable,  
19 statistically supported, and consistent, FPL's load  
20 forecast meets another important characteristic, and  
21 that is accuracy. This is evident by the fact that  
22 FPL's forecast of sales for the 2013 test year in the  
23 last rate case was within 0.35 percent of weather  
24 normalized actuals for that year. This represents a  
25 high degree of forecasting accuracy and supports our

1 forecasting methodology.

2 Now the fact that I am reporting weather  
3 normalized variances is significant. Actual weather  
4 normalized variances are the appropriate gauge for  
5 evaluating forecasting accuracy. Not only is this  
6 standard industry practice, but it's consistent with the  
7 Commission's directive that sales forecasts used in rate  
8 cases should be based on the assumption of normal  
9 weather.

10 In summary, FPL's load forecast meets all of  
11 the criteria the Commission uses in evaluating and  
12 approving load forecasts. Our forecast should be  
13 approved for use in this case. This concludes my  
14 summary.

15 **CHAIRMAN BROWN:** Thank you, Dr. Morley.

16 **MS. MONCADA:** Dr. Morley is available for  
17 cross.

18 **CHAIRMAN BROWN:** Thank you.

19 Office of Public Counsel.

20 **MS. CHRISTENSEN:** Good morning. We have some  
21 exhibits to pass out.

22 **CHAIRMAN BROWN:** We'll be starting at 616.  
23 No, the --

24 **MS. CHRISTENSEN:** Okay.

25 **CHAIRMAN BROWN:** She looked at the clock.

1           **MS. CHRISTENSEN:** I was like, oh, okay. No,  
2 at 616 certainly.

3           **CHAIRMAN BROWN:** Would you like them marked?  
4 Would you like a certain one marked at this time?

5           **MS. CHRISTENSEN:** If we can mark them as we  
6 discuss them, that might be the more efficient way to do  
7 that.

8           **CHAIRMAN BROWN:** Yeah, that's fine. That'll  
9 work. Okay. You can proceed with cross.

10   **EXAMINATION**

11           **BY MS. CHRISTENSEN:**

12           **Q**    Good morning, Dr. Morley.

13           **A**    Good morning.

14           **Q**    Can I ask you to turn to page 10 of your  
15 direct testimony.

16           **A**    Yes, I'm there.

17           **Q**    Okay. Lines 1 through 5, you note that in  
18 responding to the November 2015 discovery in the  
19 Okeechobee need determination docket, FPL provided a, as  
20 you quote, more recent October 2015 load forecast. Do  
21 you see that testimony?

22           **A**    Yes.

23           **Q**    Okay. And before you is staff's  
24 interrogatory -- or FPL's response to staff  
25 interrogatory No. 62.

1           **MS. CHRISTENSEN:** If we could mark that as  
2 616.

3           **CHAIRMAN BROWN:** Okay. We will mark staff's  
4 third set of interrogatories number 62 as 616.

5           (Exhibit 616 marked for identification.)

6           Dr. Morley, do you have a copy of that in  
7 front of you?

8           **THE WITNESS:** I do.

9           **CHAIRMAN BROWN:** Okay.

10 **BY MS. CHRISTENSEN:**

11           **Q** And does this response look familiar to you?

12           **A** Could I take a moment, please?

13           Yes.

14           **Q** Okay. Great. Turning to the second page of  
15 the document, which is page 1 out of 3, do you see where  
16 there is the request by staff that the July 7th, 2015,  
17 fuel forecast be updated for essentially high, midrange,  
18 and low forecast? Do you see that as the request?

19           **A** Yes.

20           **Q** And then under subsection D of the request,  
21 can you tell me what staff had requested that FPL do?

22           **A** In part D? "Please provide CPVRR first stage  
23 analysis similar to that provided in Exhibit SRS-4 of  
24 FPL witness Dr. Sims' direct testimony based on FPL's  
25 7/27/2015 base case, high band, and low band natural gas



1 and light fuel oil price forecasts."

2           **Q**     Okay. Thank you. Now can you turn to page 2  
3 of that discovery response? And do you see at the top  
4 of page 2 where it says the updated analysis for this  
5 July 15th fuel cost forecast, the low, base, and high  
6 bands, that they did that; however, FPL also updated a  
7 number of other inputs to the analysis? Is that  
8 correct?

9           **A**     Yes. At that time we had a new approved load  
10 forecast, so we thought the right and appropriate thing  
11 to do was incorporate that into the analysis, and so  
12 that was noted here.

13           **Q**     And can you confirm that there are six bullet  
14 points listed as updates for the company's updated  
15 analysis, one of which being a new October 2015 load  
16 forecast; is that correct? I believe that's the first  
17 hatch mark.

18           **A**     That is correct. Of course, the first bullet  
19 listed is the new load forecast.

20           **Q**     Okay. And so this response was part of FPL's  
21 response to part D of interrogatory No. 62, and that  
22 this -- the November 2015 discovery you mentioned -- and  
23 this is the November 2015 discovery you mentioned in  
24 your direct testimony; is this correct?

25           **A**     I just wanted to make a clarification. I

1 think this is in response to D and E.

2 Q Okay. With that clarification, this is the  
3 response that you're referring to in your direct  
4 testimony on page 10; is that correct?

5 A Yes.

6 Q Having read previously staff's request under  
7 subsection D, would you agree that staff's request was  
8 for the company to update its prior analysis provided to  
9 the Commission in the need determination to account for  
10 the updated natural gas and fuel oil prices?

11 A Yes. And as I said, because we had a new load  
12 forecast, we thought that was appropriate to  
13 incorporate. Of course, we clearly identified that in  
14 the response, should staff want to have any followup on  
15 that.

16 Q Okay. But nowhere in the response -- or in  
17 the request from staff to FPL did it request an update  
18 to the load forecast; is that correct?

19 A No. We had an updated load forecast. And as  
20 I mentioned in my summary, consistency is very important  
21 to us. We use the same load forecast for budgeting --

22 **MS. CHRISTENSEN:** I'm going to object at this  
23 point since the witness is clearly going beyond what the  
24 question was. The question was whether or not the  
25 request actually asked for the updated load forecast,

1 and at this point she's going well beyond that in the  
2 explanation.

3 **MS. MONCADA:** I think she's allowed to provide  
4 a brief explanation.

5 **CHAIRMAN BROWN:** I will allow her to answer it  
6 succinctly. You can continue your response.

7 **THE WITNESS:** Thank you. Just succinctly, it  
8 is important to us to be consistent in our load  
9 forecast, to use the same load forecast for resource  
10 planning purposes and the same load forecast for rate  
11 cases or budgeting or whatever.

12 **BY MS. CHRISTENSEN:**

13 **Q** Okay. On page 2 of the response, FPL took it  
14 upon itself to update the 2015 load forecast within the  
15 fuel forecast analysis that was requested by staff. Is  
16 that -- that's correct, that's what we're discussing  
17 here today; correct?

18 **A** I just want to clarify. We didn't -- we had  
19 an updated load forecast, so we incorporated it into the  
20 analysis. We didn't update the load forecast because of  
21 this request.

22 **Q** But FPL was not requested to include an  
23 updated forecast. That was --

24 **MS. MONCADA:** Madam Chair, that's been asked  
25 two or three times.

1           **CHAIRMAN BROWN:** I don't know if it has.  
2           Ms. Christensen.

3           **MS. CHRISTENSEN:** I just want to make sure  
4           that we're clear that that was not part of the requested  
5           analysis in this discovery request.

6           **CHAIRMAN BROWN:** Okay. Let the witness  
7           answer.

8           **THE WITNESS:** Yes, I agree it was not  
9           explicitly asked for. But it was our official load  
10          forecast at that time, so we included it in the response  
11          and noted it as such.

12          **BY MS. CHRISTENSEN:**

13           **Q**     Okay. And you would agree that as part of the  
14           response to the analysis, FPL provided three scenario  
15           analysis; is that correct?

16           **A**     Yes. Three scenarios on natural gas prices.

17           **Q**     And all of the attachments that were indicated  
18           in the response provided the results of FPL's updated  
19           CPVRR first stage analyses; is that correct?

20           **A**     Yes.

21           **Q**     Let me refer you to the next document in front  
22           of you, and that would be the final order granting FPL's  
23           petition for the need determination.

24           **MS. CHRISTENSEN:** And we can mark that as, I  
25           think, 617; is that correct?

1           **CHAIRMAN BROWN:** We're at 617.

2           **MS. CHRISTENSEN:** Okay.

3                   (Exhibit 617 marked for identification.)

4           **BY MS. CHRISTENSEN:**

5           **Q**     Okay. Do you have a copy of that in front of  
6           you.

7           **A**     Just a moment, please.

8           **Q**     That is the final order granting FPL --  
9           Florida Power & Light's petition for need determination.  
10          And I believe that was part of the handouts that was  
11          provided to the witness.

12          **CHAIRMAN BROWN:** It was the second one in the  
13          stack that was distributed.

14          Dr. Morley, do you have it?

15          **THE WITNESS:** I do. Thank you.

16          **BY MS. CHRISTENSEN:**

17          **Q**     Okay. So you have the copy of the  
18          Commission's final order in Docket No. 150196-EI. Can  
19          you turn to page 4 of that order, please. And let me  
20          know when you're there.

21          **A**     I'm there.

22          **Q**     Okay. And do you see in the order where -- in  
23          the first paragraph under the indentation "A. Need for  
24          Electric System Reliability and Integrity," where it  
25          states, "We find that FPL demonstrates that a need for

1 additional generation beginning in 2019, in order to  
2 maintain electric system reliability and integrity based  
3 on a reasonable load forecast and a 20 percent reserve  
4 margin criterion as discussed below"? Do you see that  
5 language.

6 **A** I do.

7 **Q** Okay. And you would agree that, based on this  
8 passage, the Commission assessed the reasonableness of  
9 FPL's load forecast in the 150196 docket; is that  
10 correct?

11 **A** Yes.

12 **Q** Okay. Now let me turn your attention to page  
13 6 of that order. Are you there?

14 **A** Yes.

15 **Q** Okay. And can you read the first paragraph  
16 under subsection 1, "FPL's Load Forecast," for me  
17 into -- loud and into the record, please?

18 **A** "FPL's load forecast in this proceeding are  
19 the same forecasts FPL presented in its 2015 Ten-Year  
20 Site Plan."

21 **Q** Can you continue to the end of the paragraph,  
22 please?

23 **A** "These forecasts are generated using  
24 econometric models, including customer models, summer  
25 and winter peak demand per customer models, and a net

1 energy for load (NEL) per customer model. FPL asserts  
2 that we have consistently relied on these models for  
3 various forecasting purposes, and that the modeling  
4 results have been reviewed and accepted by us in past  
5 proceedings."

6 Q Okay. Thank you. Now can we turn to page  
7 7 of that order, please. Looking at the third paragraph  
8 --

9 A Yes.

10 Q -- do you see where it says that, "FPL  
11 presented both a summer peak demand base case forecast,  
12 which is 25,045 megawatts by 2019, and a winter peak  
13 demand forecast which is 21,792 megawatts by 2019"? Do  
14 you see that language?

15 A Yes.

16 Q Okay. Now I'm going to refer you to the next  
17 handout, and --

18 **CHAIRMAN BROWN:** Which will be marked as 618.

19 **MS. CHRISTENSEN:** Thank you.

20 (Exhibit 618 marked for identification.)

21 **CHAIRMAN BROWN:** That is --

22 **MS. CHRISTENSEN:** That is an excerpt of the  
23 2015 he Ten-Year Site Plan, pages 42 and 44 and 43.

24 **CHAIRMAN BROWN:** Okay. Dr. Morley, do you  
25 have a copy of that in front of you?

1                   **THE WITNESS:** I do.

2                   **BY MS. CHRISTENSEN:**

3                   **Q**     Okay. Now can I refer you to Schedule 3-1,  
4                   forecast of summer peak demand, specifically to the year  
5                   2019? Do you see that on the exhibit?

6                   **A**     Yes.

7                   **Q**     Okay. And would you agree that the total  
8                   forecasted value for 2019 is 25,045 megawatts; is that  
9                   correct?

10                  **A**     Yes. And that was the forecast that we used  
11                  in filing the Okeechobee need determination. It is not  
12                  the forecast we used in a refresh analysis using the  
13                  October 2015 forecast to confirm the cost-effectiveness  
14                  of the Okeechobee unit.

15                  **Q**     Well, let -- I think you might be getting  
16                  ahead of my questions. But let me -- let's walk through  
17                  this a little bit.

18                  Okay. Now looking at Schedule 3-2 under the  
19                  forecast of winter peak demand for 2019, do you see  
20                  where the winter peak demand forecast is -- for 2019 is  
21                  2,107 -- or 21,792 megawatts? Do you see that? Is that  
22                  correct?

23                  **A**     Yes.

24                  **Q**     Okay. Now you would -- let's turn to -- well,  
25                  let me ask you this question. Would you agree that



1 those values from the Ten-Year Site Plan match the  
2 values that we read on paragraph 3 of page 7 of the  
3 order?

4 **A** Yes.

5 **Q** Okay. Now can you turn to the last page of  
6 the order, page 8, please? Or, I'm sorry, not the last  
7 order page, but page 8 of that order. In the last  
8 paragraph on the page, which continues on to page 9, do  
9 you see where the Commission notes that FPL's net energy  
10 for load model projected a 1.2 percent annual growth  
11 rate in net energy for load resulting in a cumulative  
12 increase of 13,565 gigawatts by 2024; is that correct?

13 **A** Yes.

14 **Q** Okay. Now turning back to the 2015 Ten-Year  
15 Site Plan, Schedule 3.3, which is entitled Forecast of  
16 Annual Net Energy Load, do you see that?

17 **A** Yes.

18 **Q** Okay. Looking at the total forecasted net  
19 energy load without DSM, it is projected to be  
20 133,226 gigawatts for 2024; is that correct? Am I  
21 saying that correctly?

22 **A** I'm sorry. Could you repeat that?

23 **Q** Certainly. Looking at column 2 under Schedule  
24 3.3, the forecasted net energy for load without DSM is  
25 forecasted to be 333,276 (sic) gigawatts; is that

1 correct?

2 **A** 333?

3 **Q** Or, I mean, sorry, 133. I may be saying this  
4 wrong, so I want to make sure I'm saying it correctly.  
5 133,276 gigawatts. And if I'm saying it incorrectly,  
6 please correct me.

7 **A** I'm looking at Schedule 3.3 --

8 **Q** Under column 2?

9 **A** -- under column 2, forecasted energy per load  
10 without DSM, and it has for 2019?

11 **Q** No, 2024.

12 **A** Oh, 2024. I'm sorry. Yes. Approximately  
13 133,000 gigawatt hours.

14 **Q** Okay. And now I want to turn your attention  
15 to the projected load for 2015 under that same column,  
16 and that number is 119,713 gigawatts projected without  
17 DSM; is that correct?

18 **A** Yes.

19 **Q** Okay. And would you agree that if you  
20 subtract the 333,276 less the -- for 2024 less the  
21 119,713 gigawatts for 2015, that would result in a  
22 difference of 13,563; is that correct?

23 **A** That sounds right, yes.

24 **Q** Okay. And would you agree that that number  
25 matches the amount indicated on the top of page 9 in the

1 conclusion at the top of the paragraph on page 9?

2 **A** Yes.

3 **Q** Okay. So you would agree that these  
4 calculations and the numbers that were derived in the  
5 final order are based on numbers that were included in  
6 your 2015 Ten-Year Site Plan; is that correct?

7 **A** Yes, that's correct. I'd also note this is  
8 not the full final order. Later in the final order the  
9 fact that we updated the load forecast is acknowledged.

10 **Q** Okay. You would agree that the numbers we've  
11 discussed here today are based on the Ten-Year Site  
12 Plan; correct?

13 **A** The 2015 Ten-Year Site Plan.

14 **Q** Correct. Okay. Now looking at the first full  
15 paragraph on page 9 of the Commission's final order,  
16 could you read that paragraph into the record for me?

17 **A** Yes. "In summary, we analyzed FPL's load  
18 forecasting models and found the models to be  
19 appropriate for forecasting purposes in this instant  
20 proceeding. We have also reviewed the forecasting  
21 assumptions of anticipated economic and demographic  
22 conditions as well as the adjustments FPL made to its  
23 estimates produced by the forecasting models and found  
24 the assumptions and adjustments used by FPL appropriate.  
25 Finally, we note that none of the intervenors in this

1 proceeding proffered any forecasting model or forecast  
2 of FPL's customers, summer peak demand, and net energy  
3 for load. No intervenor challenged FPL's methodology,  
4 input data assumptions, or out-of-model adjustments used  
5 to project load. Therefore, based on the record, we  
6 find FPL's load forecast appropriate for consideration  
7 in this proceeding."

8 Q Okay. I'm going to turn your attention to a  
9 new line of questioning. Can we turn to page 12 of your  
10 direct testimony.

11 A Yes.

12 Q Okay. At lines 19 through 20, you note that  
13 FPL relies on 20-year historic weather normalized  
14 patterns; is that correct?

15 A Yes. And we have done so for some time now,  
16 consistent with most other Florida utilities.

17 Q Okay. And I think you mentioned that. You  
18 said that Gulf Power and Tampa Electric also use the  
19 same time period in their most recent rate case filings;  
20 is that correct?

21 A Yes.

22 Q Okay. Would you agree that by definition that  
23 shortening the period over which weather -- which normal  
24 weather is computed will increase the volatility  
25 associated with the determination of normal weather

1 parameters?

2 **A** Yes. That's one of the reasons we use a  
3 20-year period as opposed to ten-year or shorter period.

4 **Q** And would you also agree that it was your  
5 understanding that Duke Energy Florida in their most  
6 recent Ten-Year Site Plan used a 30-year period for  
7 computing normal weather parameters?

8 **A** Yes.

9 **Q** Okay. And are you aware of any Florida  
10 municipals that use anything other than a 20-year period  
11 to measure weather normal -- or normal weather? Excuse  
12 me.

13 **A** Yes. I believe FMPA uses 30. JEA also uses  
14 20. No Florida utility filing a 2016 Ten-Year Site Plan  
15 identified using a period shorter than a 20-year normal.

16 **Q** Okay. Let me turn your attention -- let me  
17 ask you this question then this way. Do you know  
18 whether many utilities outside of Florida use the  
19 National Oceanographic & Atmospheric Administration, or  
20 NOAA, as it's commonly referred to, data which is  
21 generally 30 years in term to define normal weather?

22 **A** Yes, I think some utilities do.

23 **Q** Okay. And you would agree that the NOAA  
24 calculations for the federal government are based on an  
25 average of 30 years, and those are published every ten

1 years; is that correct?

2 **A** Yes, that's my understanding.

3 **Q** Okay. So would you agree with the statement  
4 that it's fairly common, if not routine, within Florida  
5 and without for a utility to use a period that is at  
6 least 20 years in length to define normal weather?

7 **A** Yes.

8 **Q** Okay. Now please turn to page 8 of your  
9 direct testimony. And on lines 8 and 9 you note that  
10 FPL relies on econometric and primary tools for  
11 forecasting customer growth, net energy for load, and  
12 peak demands; is that correct?

13 **A** Yes.

14 **Q** Okay. And then at lines 9 through 12, you  
15 explain that an econometric model is a numeric  
16 representation obtained through statistical estimation  
17 techniques of the degree of relationship between the  
18 dependent variable and the independent explanatory  
19 variable. Do you see that?

20 **A** I do.

21 **Q** Okay. For a layperson, would you agree that  
22 the econometric model is a -- uses, excuse me, a  
23 historic data set such as a historic net energy for load  
24 and determines the relationship positive and negative  
25 movements in the data have with other related variables?

1           **A**     I'm not sure that was appropriate for a lay  
2 explanation, but I would not disagree with it.

3           **Q**     Okay. Well, about as lay explanation as you  
4 can get with load forecasting information.

5           **A**     Okay.

6           **Q**     Looking at lines 20 through 22, you mention  
7 that FPL has found that population growth, weather, the  
8 economy, and energy efficiency codes and standards are  
9 variables related to the positive and negative movements  
10 in FPL's historic or historical loads to be in summer,  
11 winter peak, or net energy for load; is that correct?

12          **A**     I'm going to ask you to repeat that one more  
13 time. I'm sorry.

14          **Q**     All right. Let me try it one more time, and  
15 we'll see if we can get there.

16                   In lines 20 through 22, you say that FPL has  
17 found that population growth, weather, the economy, and  
18 energy efficiency codes and standards are the primary  
19 drivers for future electricity needs; is that correct?

20          **A**     Yes.

21          **Q**     Okay. And these are variables related to the  
22 positive and negative movements in FPL's historic loads;  
23 correct?

24          **A**     Yes.

25          **Q**     Okay. And that you find that this will be

1 impactful in the summer peak, the winter peak, or in the  
2 net energy for load?

3 **A** Yes.

4 **Q** Okay. So let me unpack that question a little  
5 bit.

6 FPL then creates its load forecast by  
7 gathering projections of these independent variables and  
8 combining them with the historic relationships FPL has  
9 determined through its econometrics model. Is that the  
10 process that FPL uses?

11 **A** Yes, I think that's about it.

12 **Q** Okay. And then FPL uses outside projections  
13 of its independent variables in this process; correct?

14 **A** We use third-party experts, yes.

15 **Q** Okay. So, for example, you note on lines  
16 3 and 4 of page 9 of your direct testimony that FPL  
17 relies on demographic and economic projections from HIS  
18 (sic) Global Insights in creating the load energy  
19 forecast models; is that correct?

20 **A** Yes. IHS.

21 **Q** I'm sorry. Thank you for the correction.

22 And to determine the predictive power of the  
23 various load forecasts, you rely on diagnostic  
24 statistics that measure a model's goodness of fit; is  
25 that correct?



1           **A**    Yes, that's one of the things we look at. We  
2 also look at, of course, the actual weather normalized  
3 variances.

4           **Q**    Okay. But that would be one of the diagnostic  
5 statistics that you use; is that correct?

6           **A**    I think in a large sense it is.

7           **Q**    Okay. Would you agree that some diagnostic  
8 statistics you rely on to judge the predictive power of  
9 your models are a coefficient of determination, or  
10 R-squared statistic, a Durbin and Watson statistic, and  
11 a T -- and t-ratios for individual independent  
12 variables?

13          **A**    Yes.

14                   (Transcript continues in sequence with Volume  
15 11.)

1 STATE OF FLORIDA )  
2 COUNTY OF LEON ) : CERTIFICATE OF REPORTER

3  
4 I, LINDA BOLES, CRR, RPR, Official Commission  
5 Reporter, do hereby certify that the foregoing  
6 proceeding was heard at the time and place herein  
7 stated.

8 IT IS FURTHER CERTIFIED that I  
9 stenographically reported the said proceedings; that the  
10 same has been transcribed under my direct supervision;  
11 and that this transcript constitutes a true  
12 transcription of my notes of said proceedings.

13 I FURTHER CERTIFY that I am not a relative,  
14 employee, attorney or counsel of any of the parties, nor  
15 am I a relative or employee of any of the parties'  
16 attorney or counsel connected with the action, nor am I  
17 financially interested in the action.

18 DATED THIS 25th day of August, 2016.

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22  
23  
24  
25  


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