BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 150196-EI

PETITION FOR DETERMINATION OF NEED FOR OKEECHOBEE CLEAN ENERGY CENTER UNIT 1, BY FLORIDA POWER & LIGHT COMPANY.
_____/

VOLUME 2

PAGES 137-311

PROCEEDINGS: HEARING

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

DATE: Tuesday, December 1, 2015

TIME: Commenced: 12:00 p.m.
Concluded: 3:55 p.m.

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

REPORTED BY: Andrea Komaridis
Court Reporter

APPEARANCES: (As heretofore noted.)

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I N D E X

WITNESSES

EXHIBITS

NUMBER:	ID	ADMITTED
73 through 76		220
77		220

P R O C E E D I N G

(Transcript follows in sequence from Volume 1.)

CONTINUED EXAMINATION

BY MR. WHITLOCK:

Q Dr. Sim, do you know the last time that FPL did have a third party come in and do a generation reserve margin study? I think we've established certainly not since 1999.

A Let me ask a clarification. I believe you mentioned a generation reserve margin --

Q I apologize. I apologize about that.

A You mean a total reserve margin?

Q Total reserve margin. I apologize.

A I do not recall when that may have been done. And in large part, that is because we have been operating under the stipulation and -- of a 20-percent reserve margin that the Commission expects us, in my opinion, to follow in our resource planning and in all of our filings with the Commission.

Q So, you're relying on the stipulation rather than a comprehensive technical study?

A We have performed our own studies since that time which have convinced that 20 percent is the appropriate level. The answer is, no, we're not solely

relying on a stipulation. That was the starting point for it. And we've looked at our operating experience and our planning experience since then. And we're quite comfortable that 20 percent is needed to maintain system reliability.

Q You're not aware of any other jurisdictions that use the 20-percent reserve margin, are you?

A I have not conducted a survey of which regions have what reliability levels. I would point out that Florida is quite different than most other areas in it's a peninsula.

MR. WHITLOCK: Mr. Chairman, I'm going to ask that Dr. Sim respectfully answer my questions yes or no and limit the editorializing.

CHAIRMAN GRAHAM: Sure. Sure.

BY MR. WHITLOCK:

Q Do you want me to ask you the question again, Dr. Sim, or do you remember it?

A Ask again, please, sir.

Q Dr. Sim, you're not aware of any other jurisdictions that use a 20-percent reserve margin, are you?

A No, because I do not track that.

Q Thank you.

Now, the Florida Reliability Coordinating

Council, the FRCC, uses a 15-percent reserve margin, correct?

A Yes, recognizing that its minimum will be considerably higher than that.

Q I'm sorry? I didn't get the last part of that.

A Recognizing that its actual minimum reserve-margin level will be significantly higher than 15 percent.

Q Thank you. Thank you.

Dr. Sim, we'll switch gears a little bit and talk about the FPL-created generation-only reserve margin. Can you point to me where in your direct testimony you present evidence or analyses in support of this new criterion?

A In direct testimony, there is no discussion of how we created and justified the 10-percent GRM. That is in the rebuttal testimony.

Q So, FPL came into this proceeding knowing that the Commission was going to review this -- this FPL-created criterion for the first time, and you offered no support for in your direct testimony, but instead waited for your rebuttal testimony?

A In regard to testimony, yes. However, in regard to our annual ten-year site plans, we have laid

the ground work for it since 2011. And in 2014, we had an extensive explanation of what led to the use of our GRM, which was introduced in 2014.

Q But my question was, just in your direct testimony -- there is no evidence or analyses that support the use of the generation-only reserve margin in your direct testimony, is there?

A That is correct because we laid that groundwork in the site plans.

Q Did you file your 20 -- your site plans along with your direct testimony?

A Did not. The Commission already had that information.

Q Now, we touched on this a little bit earlier, but FPL planned using the commonly-accepted dual planning criteria of the reserve margin and the loss of load probability criteria for a long number of years, correct?

A Yes.

Q And during that time, FPL thought that these commonly-accepted dual planning criteria were sufficient to determine future resource needs, correct?

A Yes, given our experience up to approximately 2010, we thought that that was adequate. We no longer think that.

Q Now, you're not aware of any other utilities that have adopted a GRM planning criterion, are you?

A With the exception of TECO, which has a somewhat similar third criteria, the answer is no, I don't know of anyone else.

Q Does TECO's supply-side criterion -- does it deal with energy efficiency the way FPL's does?

A No, it is calculated differently.

Q So, it's really not an apples-to-apples comparison to compare those two criterion, is it?

A In part, yes; in part, no. The yes part is it's a third reliability criteria that seeks to maintain a balance, an appropriate balance for that utility, as GRM is for us, of generation resources and demand-side resources.

But my understanding from talking to TECO -- and this is the no part of the answer -- is that they were -- about ten years or so ago, when they introduced this, it was primarily designed over concerns that lingered from the late 1990s, where they were heavily dependent upon load management and they were concerned about overuse of load management.

Therefore, I believe theirs is more load-control oriented where ours looks at both load control and energy efficiency.

Q And you may have been asked this question earlier, Dr. Sim, and I apologize if you were, but you're not aware of any other commissions like this Commission, any other state commissions that have approved a GRM planning criterion, are you?

A I've -- I am not aware of any, but I have not canvassed every commission to find out. I just am not aware of anyone else who does it.

Q And you stated that FPL believed the dual, commonly-accepted planning criteria, reserve margin LOLP, were adequate up until 2010. And I believe you told me in your deposition there were two events in late 2009, 2010 that kind of changed FPL's mind in that regard; is that correct?

A That's correct. There were two occurrences which happened basically within two weeks of each other that caused us to take another look at our reliability and which ultimately led, several years later, to the introduction of the GRM third criterion.

Q And one of those events would have been the Commission's 2009 DSM-goals order?

A That was one --

Q Is that correct?

A One of the two, that's correct.

Q And then the other event would have been the

cold winter weather on January 11th, 2010?

A Yes.

Q Now, I think it makes more sense to talk about January 11th, 2010, during your rebuttal because you have some exhibits that pertain to that.

But in regards to the 2009 DSM goals, I believe you told me during your deposition that FPL viewed the goals that the Commission set in Docket No. 080407 as very high; is that correct?

A You gave a docket number -- is that the 2009 DSM-goals docket, sir?

Q By my notes here.

A Okay. Let's assume it is. And yes, the DSM goals that were set for all of the utilities, certainly, FPL, were significantly higher than DSM goals that had been set previously. And what that meant going forward was that FPL would be increasingly reliant upon -- or dependent upon DSM to meet its 20-percent reserve margin.

And our system reliability, therefore, was heavily dependent upon DSM; where before, we simply took a look at are we hitting the 20-percent reserve margin. We were now faced with a situation we really hadn't faced before in which we were questioning whether a resource plan that met 20 percent in large part with DSM

was as reliable as another resource plan that exactly met the 20 percent also, but was more balanced between generation and DSM. It's a --

Q Thank you, Dr. Sim.

So -- and you talk about what FPL was facing. FPL never actually implemented the goals set at the end of 2009, did it?

A We did not, but it had opened our eyes that a future in which we would be more heavily dependent upon DSM could be set by the Commission or could be set, perhaps, by the Federal Government.

Q Could be?

A Could be.

Q But it was never a reality, was it?

A The goals were a reality in 2009.

Q Implementation of the goals was never a reality, Dr. Sim, was it?

A Implementation is different than setting. I will agree with you that we were -- we were not ordered -- my words, not the Commission's -- to implement that high level of DSM. But those goals, I believe, remained on the books for the five years until we got to 2014.

Q But you never had to implement them, Dr. Sim.

A That is --

Q So, the fact they were on the books had no relevance to you, did it?

A I disagree. The relevance to us was it opened our eyes that a high dependence on DSM was a distinct possibility because of the decision that that Commission made at that time. This was something we had not faced. And we felt it was incumbent upon us to look at system reliability in such an occurrence and see are all resource plans that meet exactly 20 percent equal in terms of reliability. And our analysis has shown, no, that's not the case.

Q And the 2009 goals -- you talk about them being on the books. They are not on the books anymore, are they, Dr. Sim?

A That's correct.

Q They've been superseded by the 2014 goals, correct?

A Yes, sir.

Q Which are significantly lower than the 2009 goals, correct?

A Yes, sir.

Q So, these goals, which opened your eyes -- one, you never had to implement them and, two, they are not even on the books anymore, correct?

A They are not, but nothing is to say --

Q Okay. Thank you, Dr. Sim.

So, after you found out you weren't going to have to implement these goals, did you just -- did you take another look at the GRM criterion? Reformulate it?

A I'm sorry. I don't understand the question. Could you try me again, please?

Q Absolutely. You -- you -- you've told the Commission that after the Commission set these very high goals in 2009, FPL believed it had to take another look at things. And I believe it was 2000 and -- sometime in the 2000 -- August of 2011, FPL found out it was not going to have to implement those goals.

So, at that time -- at that point in time in 2011, did you start to reformulate your analysis in regards to the generation-only reserve margin?

A I'm just not clear as to what you mean, sir, regarding reformulate.

Q Well, you now knew you weren't going to have to meet the 2009 goals --

A We --

Q -- correct?

A -- knew that, but we did not know if that was a temporary reprieve or -- and we could be ordered, again, with another high level of DSM in 2014. We thought it was incumbent upon us and prudent to continue

the analysis to see what, if any, impact it would have on reliability.

Q Okay. So, same question for in 2014 when the Commission set significantly reduced goals as compared to 2009. Did you take another look at the GRM criterion at that point?

A No, because we think the basis for the GRM holds regardless of what your current DSM level is. It is -- it is a reliability threshold that we believe, in the best interest of our customers, we do not want to go over in terms of dependency on DSM.

Q Okay.

A And let me say that, in finishing that thought, the goals set in 2014 that were quite a bit lower than 2009, in large part, has reduced the GRM impact, certainly in this case, to where it is not a major factor. It is only a slight difference in megawatts of need between what was -- what is projected from our 20-percent reserve margin from our GRM.

If we had very high goals, there might have been a much larger difference between. That's not the case in this docket. GRM is a relatively minor player in this docket.

Q Let's switch gears, Dr. Sim, and talk a little bit about FPL's evaluation of reasonably-available

conservation measures.

Now, on Page -- I believe it's 13 of your testimony, you testified that FPL's new DSM goals were fully accounted for in the reliability analysis for the purposes of this docket, correct?

A Give me a moment to get there, please.

Q Okay.

A Yes, that's correct.

Q Okay. And then, I believe, also on Page 13, you state that FPL is not aware of any additional cost-effective DSM that is not accounted for in FPL's DSM goals, correct?

A That is correct.

Q Okay. And isn't it accurate that to come to that conclusion, you did nothing more than to check in with FPL's DSM department?

A No, that's not correct.

Q Okay.

A The DSM-goals docket was going on at the same time we were analyzing our next planned generating unit. All of the cost-effective work in the DSM-goals docket for the screening of DSM measures was set on, as circumstances turned out, to be an Okeechobee-based combined cycle that we were projecting at that time.

As we were looking at the next planned

generating units, I kept track as that process went through as to whether or not that combined cycle was becoming more expensive, less efficient -- in other words, worse than what we had compared DSM to as we went through the DSM-goals docket.

But exactly the opposite happened. The proxy we used --

MR. WHITLOCK: Okay. Mr. Chairman, he's not answering my question anymore. He's --

CHAIRMAN GRAHAM: Dr. Sim, let's keep it short.

THE WITNESS: I'll do my best, sir.

BY MR. WHITLOCK:

Q Dr. Sim, you have your deposition testimony in front of you. If you will, turn to Page 78, please.

A I'm there.

Q Okay. And if you see on Line 10, I asked you a question starting there at the end of Line 10, "Could you describe the process that FPL used to ensure that it had, in fact, accounted for all cost-effective DSM? Do you see that?

A Yes, I do.

Q And your answer starts on Line 13. And on Line 16, you say, "Checking with the DSM department before we filed the testimony indicated to me that they

were not aware of any major changes." Do you see that?

A Yes, I see that. And that was one factor in making the statement that we are not aware of any additional cost-effective DSM. They have -- the DSM department would be the one that I would check with to see if there was a difference in kW reduction, kWh reduction, administrative costs, et cetera, for all of the measures that we were going through in the DSM goals at that time.

My side of it was looking at the avoided cost for generation; were there changes there. So, while I was doing my parallel comparison of generating unit in one docket versus the other, I was touching base with them to see if on the DSM side there were significant or any changes in terms of kW, kWh reduction, et cetera, and there were none.

Q None whatsoever.

A Nothing significant that they reported back to me. In fact, the answer I got back is, we don't think anything has changed.

Q And who gave you that answer?

A I discussed it at various points with several people in that department, one of whom was Tom Koch, who is one of their directors, I believe.

Q And you said Mr. Koch or somebody there told

you we don't believe anything significant has changed?

A Yes.

Q Okay. Now, you're aware in the need docket, FPL is required to look at any add- -- is required to look at reasonably-available DSM above and beyond your DSM goals, correct?

A I'm sorry. Can you repeat the question, please?

Q You're aware that in a need determination, FPL is required to look at reasonably-available DSM above and beyond your DSM goals, correct?

A Yes.

MR. COX: Chairman Graham, I'm going to enter an objection. I think Counsel is mischaracterizing the statute. If he could just quote from the statute, I think Dr. Sim could answer then.

CHAIRMAN GRAHAM: If you have the statute in front of you...

MR. WHITLOCK: Mr. Chairman, I'm not going to read from the statute because I think I'm characterizing it right. And in fact, there was just an order issued by the Commission the other day on excluding the portion of SACE Witness Mims's testimony that came to the exact same conclusion that, in a need determination, a utility has to

look at additional, reasonably-available conservation measures above and beyond their DSM goals.

CHAIRMAN GRAHAM: You were characterizing the statute different than what Florida Power & Light felt comfortable with. So, if you do not want to read the statute and have him answer that question. Then move on, please.

MR. WHITLOCK: Okay.

BY MR. WHITLOCK:

Q Dr. Sim, in Section 403.519, one of the things it says -- one of the things it says in Section 3 is that the Commission shall take into account when making its determination is whether renewable energy sources and technologies as well as conservation measures are utilized to the extent reasonably available. Are you familiar with that?

A Generally speaking, yes.

Q Okay. So, I'm just trying to figure out what you did beyond talking to the folks in the DSM department to ensure that there were not any reasonably -- reasonably-available DSM measures that are not accounted for in FPL's DSM goals that you -- as you testified on Page 13 of your testimony.

A I would categorize it as three basic steps.

Q Go ahead.

A Step 1, I went to them and I said, beyond what is included in our goals, do you know of additional DSM measures that may be cost-effective, that have emerged since the DSM-goals docket. Their answer was no.

I, then, said for those DSM measures that are included in the goals-docket order, do you know of any changes in kW reduction, kWh reduction, lower admin costs, et cetera, that would allow more achievable potential DSM from those measures. And their answer was no.

Third step was what I discussed earlier. I looked at the generation side to see if generation was getting more expensive in our next planned generating unit analysis for the 2019 need compared to what we had compared DSM to. And in fact, just the opposite had occurred.

We see that the combined cycle unit that we compared DSM to is more costly, less efficient than the Okeechobee unit. So, if we had to redo the DSM-goals analysis, even less DSM would be cost-effective. So, it was a 180-degree turn from having an outcome that showed us that there was more additional cost-effective DSM. We think there would be less.

So, in that sense, we have probably

understated our cost-effective resource need there.

Q Dr. Sim, one last thing I wanted to ask you about was FPL's evaluation of reasonably-available renewable energy sources and solar, photovoltaic, or PV in particular. I believe that discussion starts on Page 17 of your testimony where you have the heading "FPL's evaluation of self-build generation options."

A I'm there, sir.

Q Okay. And I think on Lines 20 and 22, you state the two types of self-build generation options that were initially viewed as the most likely candidates for meeting the 2019 were gas-fired, combined cycles, and simple-cycle combustion turbines, correct?

A Yes, that's what it says.

Q And then you add that, in addition, PV facilities were also considered and evaluated, right?

A Yes, we looked at all three types of generating units.

Q Okay. But even before the first phase of this evaluation, gas-fired -- gas-fired options were considered to be the most likely candidates, correct?

A Correct. We looked in the first stage of the analysis at combustion turbines, combined cycles, and solar, and we decided at the end of the first stage that combined cycle was our most reliable, most certain, and

cost-effective self-build generating unit.

Q And in fact, if we flip through your testimony here, Pages 18 through 21, there is no disc- -- there is discussion about the specifics of potential gas-fired units, but no mention at all of solar PV, correct?

A Right. That comes -- that comes behind the discussion of the fossil-fuel units --

Q Okay.

A -- where we have a separate section where we discuss the results of the photovoltaic analysis.

Q It comes after the discussion of the gas-fired units, correct?

A Right. I could have discussed it before. I could have discussed it after. I could have discussed them altogether. I chose to separate them and picked one to go first.

Q And you discussed it after because it was a less-likely option, correct?

A I think at the time we started, I would say it was not a less-likely option. I would say it was one we were keenly interested in. And we would not have been disappointed if solar had turned out to be the self- -- the best self-build unit. But the reason it is ordered the way it is here is simply it was by choice. I had to put something first.

Q Do you want to correct your testimony on Page 17 where you state the two types of self-build generation options that were initially viewed as the most likely candidates for meeting the 2019 need were gas-fired combined cycles and simple-cycle combustion turbines?

A No. Reading the paragraph above it, we were -- I was initially talking about two non-renewable types that were quickly eliminated, coal and nuclear. In my mind, what I was discussing is the two types of non-renewable that were initially viewed as most likely candidates were CCs and CTs.

Q And Exhibits SRS-3, SRS-4, and SRS-5 all contain analysis and evaluations of different gas-fired units, but contain no analysis or reference to solar or PV, correct?

A That's correct.

Q Okay.

A Because as explained in my direct testimony, there were at least three major areas of uncertainty that led us to think that such a large resource need, either in part or fully, was not something we were willing to select solar for at this time. Just too many unknowns.

Q Then on Page 22, you talk about three solar PV

facilities that will be added by the end of 2016, correct?

A Yes.

Q Now, so it's clear, these were not -- these three facilities were not evaluated as a potential source of generation to meet the 20- -- 2019 need, correct?

A That's correct. We discussed these in order to give -- to answer what we thought was a likely question. If you can find PV cost-effective for 2016, well, then why not 2019. So, we explained why we chose PV for 2016, how unique circumstances led it to be essentially break even or cost-effective, and why those did not apply for 2019.

Q And the reasons they didn't apply to 2019 -- I think you cite those on Page 23, is that correct, or starting on Page 23?

A Yes, there were three major areas of uncertainty that are discussed beginning on Page 23.

Q And the first of those, I think, are what you characterize on Line 14 of Page 23 as likely higher land costs; is that correct?

A Yes, in the context of if we were to continue to evaluate and if we were to select combined cycle as our best self-build, we would need to have a good handle

on land costs in less than a year, and these would be a very large amount of land.

And costs would likely be higher, in our opinion, if we rushed to secure land rather than have more time, more years in which to put together these land parcels.

Q And can you give the Commission an example of a piece of land that FPL looked at and the price of that piece of land to justify this concern?

A I cannot. I was not -- have not been involved in that aspect of our looking forward.

Q Okay. And then on Page 18 of Line 23, you talk about your second concern being the costs of PV equipment. You say there is uncertainty regarding what PV costs will be in the future, correct?

A That's correct.

Q Okay. Well, there is uncertainty about what natural gas prices will be in the future, isn't there?

A That is true.

Q Okay. You also note the costs are projected to decline, correct?

A Right. And the analyses that we provided in exhibits in the deposition pointed out what the break-even cost of photovoltaics would have to be in order to break even with an early look at what the next planned

generating unit was. And it would have required a substantial dollars-per-kW reduction, which, that gap would have gotten even greater as we continued to refine the Okeechobee combined cycle, and it got more and more cost-effective.

Q Just a few quick follow-up questions to some of the questions that counsel had asked you previously.

I believe you testified that FPL had added about 330 megawatts of solar since 1999; is that correct?

A Yes.

Q Okay. And I'm just curious, how many -- how much of that is -- are the two -- do the 2016 additions constitute?

A I think the 2016 are roughly 223 megawatts out of the roughly 330.

Q So, between 1999 and 2016, there was only -- FPL only had implemented about a hundred megawatts of solar?

A About 110. And the reason for that was solar simply was not cost-effective. It has just gotten to the point where it can be cost-effective given certain circumstances. And it's expected, and we hope, it will get more cost-effective in the years to come.

Q Dr. Sim, I had a question for you. This is

going back -- this was in the exhibit ECOSWF used for you. It was not marked. It's an excerpt of Staff Exhibit 64. FPL response to ECOSWF Interrogatory No. 1, LOLP without the 10-percent generation-only reserve margin.

A If you will give me a moment, I will try to find it. And this is not numbered, you said?

Q Well, the exhibit is not numbered, no. I just -- because it was an excerpt of Staff Exhibit 64. It is the FPL response to ECOSWF Interrogatory No. 1.

A I believe I have it.

Q Okay. And looking at that table, Mr. Marshall had asked you some questions about 2015 and 2018 and had projected out those LOLP values. And I think you had responded, well, yeah, those are the values, but we're not projecting resource needs in those years. Do you recall that?

A Yes, I do.

Q Okay. Well, looking at this table, you are projecting a resource need in 2019, correct?

A We are.

Q Okay. And this shows an LOLP of .002467 in 2019, correct?

A It does.

Q Okay. And does that equate to about once

every 400 years? Is that right? One day every 400 years?

A Ballpark.

Q Okay. And so, I guess I was just trying to understand -- you were stating that, sure, these LOLP values are low and don't -- don't suggest any problems with reliability, but we don't have resource needs in those years.

You do, in 2019, yet, we still have a very, very favorable LOLP value in 2019, correct?

A That's correct. In 2019, we're failing two of the three reliability criteria. We're not failing LOLP.

Q And not by a long shot, correct?

A No, again, the -- this is an older version of the LOLP projection without the 2019 unit. We're at .05, which again, in LOLP terms, that's knocking on the door of violating that criteria.

Q But as Mr. Marshall asked you, it's not violating the criteria, correct?

A Nope. Missing by a short margin, but not violating.

MR. WHITLOCK: Mr. Chairman, if I could have one minute.

CHAIRMAN GRAHAM: Sure.

MR. WHITLOCK: I believe I'm very close, if

not finished (examining document).

Those will be all of my questions. Thank you, Mr. Chairman.

Thank you, Dr. Sim.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: It looks like a good time to break for lunch by that clock in the back of the room. So, let's be back in an hour. That's 20 'til 2:00 by that clock.

(Brief recess from 12:38 p.m. to 1:44 p.m.)

CHAIRMAN GRAHAM: So, I've got a quorum.

Mr. Moyle, you have the floor, sir.

MR. MOYLE: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. MOYLE:

Q Good afternoon, Dr. Sim.

A Good afternoon.

Q In trying to estimate -- estimate the time I would need, I advised your counsel that if you would answer all my questions yes or no, I would need less time than if you would answer them in a narrative fashion. So, you'll do your best to try to answer my questions with a yes or no, won't you?

A I've properly been incentivized, yes.

Q Okay. See, I was hoping you would say --

would have said yes.

A Yes.

(Laughter.)

Q All right. So, I want to talk about the bid rule. You were here for my opening statement, correct?

A Yes.

Q And you're familiar with the bid rule, aren't you?

A Yes.

Q Okay. If you feel like you need a copy, I can give you a copy. But I just wanted to confirm that it's your understanding that Bid Rule 25-22.082, Selection of Generation Capacity, under the first paragraph, Scope and Intent, provides that, quote, the use of a request-for-proposal process is an appropriate means to ensure that a public utility's selection of a proposed generation addition is the most cost-effective alternative available.

Are we on the same page with respect to that?

A Yes, that's what it says.

Q Okay. And you don't disagree with that, correct?

A No.

Q No. And FPL's belief is that, yes, the RFP process is appropriate and should be used as a way of

seeing if there are less-expensive viable alternatives that can be considered, correct?

A Yes. I think the intent is to come up with the most cost-effective selection for our customers.

Q Okay. And how many people expressed -- how many people -- how many entities expressed interest in responding to your RFP initially?

A I'm not sure at any point there was a -- we asked for or got a number of interested in responding. There were 46 parties who requested the RFP document.

Q Okay. So, when -- when you request it, I assume it shows some level of interest, at least to find out more information, correct?

A Yes, it definitely shows interest.

Q So, 46 asked for the RFP. And then, you sent it to them; is that right?

A That's correct.

Q And is that what's attached to your testimony, your direct testimony, the RFP?

A Yes.

Q Okay. And you're familiar with that RFP. So, if I ask you questions about it, you'll be comfortable answering?

A I'll do my best, sir.

Q Okay. How many responses did you ultimately

receive in response to your RFP?

A We received one submission that was very incomplete.

Q So, did you even consider that one that you received?

A We considered it to the point of how meaningful an analysis would be. And both the independent evaluator and FPL came to the conclusion there was so much missing information in it or contradictory information, that, to evaluate it would come up with results that were, at best, highly -- well, let's just say next to meaningless.

Q So, I take that as you didn't undertake to do a substantive analysis, in effect, correct?

A We did a substantive analysis to ensure what data we had and how meaningful it would be to conduct an economic analysis.

Q Did you contact --

A Our conclusion was we did not do an economic analysis for a variety of reasons.

Q Did you contact them and say, hey, y'all are short on a few things, you need to submit additional information?

A We contacted them immediately upon opening the package that they had submitted in seeing that they had

not submitted a bid-evaluation fee, which was a minimum requirement. And we gave them -- this was on Friday afternoon when we opened the bids. We gave them until Tuesday to get back to us with a bid-evaluation fee.

Q And how much -- how much is that -- that's $25,000?

A That's correct.

Q Do you think that that potentially serves as a disincentive to folks to pay 25 grand to have you look at their proposal?

A No, I don't.

Q Have you talked to anybody about the -- any third parties about the bid-evaluation fee?

A We've talked to third parties, including our independent evaluator, who does -- who puts together RFPs and evaluates RFPs all over the country.

Q Yeah. And in your testimony, you -- you say, well, I think the reason that we didn't get a bunch of bidders is because our project is the best, the least cost alternative, that nobody could beat us. Is that essentially the message that you're sending in your testimony?

A At least in part, yes.

Q Okay. And that requires you to do a little bit of assuming or speculating with respect to why

people didn't respond, correct? I mean, you didn't talk to any people from the 46 and follow-up and go, you know, I saw you asked for the RFP, I'm curious you didn't respond, you're a well-known entity, and why didn't you respond. You didn't have a conversation like that, did you?

A Not after the fact, no. I did discuss --

Q That's -- that's all I need. Thank you.

The judge of the RFP is the utility, correct -- is you, FPL -- you all judge the submissions.

A In part, yes. It's FPL. The independent evaluator performs his or her own separate analyses.

Q And is there anyone in the Commission that looks at the submissions that are received or the RFP?

A Certainly the Commission looks at the RFP document itself. We provide it to them at the same time we issue it.

Q That's probably not a good question.

Are they actively involved in the analysis process that you undertake, assuming you receive submissions? Is the Commission made aware, we got five responses, we got ten responses? Do you realtime update the Commission or -- or no?

A Not in the last couple of RFPs. In the

beginning of the process, the Commission staff took a more direct role because this was the initial time that the current bid rule was in effect.

Q So, at what point in time was the Commission staff more involved? The bid rule has been on the books for 21 years, right?

A I don't recall the exact number of years, but the first RFP that we issued, I believe, was in 2001.

Q 2001?

A Under the current bid rule, yes.

MR. MOYLE: Can I just --

CHAIRMAN GRAHAM: Sure.

MR. MOYLE: -- give him a copy of the bid rule real quick?

BY MR. MOYLE:

Q I don't think this will take --

A I have a copy --

Q Oh, you do?

A -- in front of me, sir.

Q Okay. Let me just direct you to the back of the bid rule, at the very end where it says rule-making authority 350.127. Are you there?

A I don't see that passage, sir.

MR. MOYLE: Maybe I will use --

CHAIRMAN GRAHAM: Sure.

BY MR. MOYLE:

Q So, I've shown you a copy of the bid rule. The version I showed you has some highlights on it, but just referring you to the back, doesn't it say that the rule was new as of 1/10/1994?

A Yes, that's what it says, and then it was amended in '03.

Q So, when you were answering my questions about the staff's involvement, you said it was kind of when the rule was first put in place; is that right?

A To my recollection, yes, I was referring to the first RFP that we issued. Since the year -- certainly from 2000 on -- the first time we issued an RFP under the bid rule --

Q When was the first time you issued an RFP?

A Prior to 2001?

Q Any -- at any point in time?

A I -- I do not recall.

Q Okay.

A My involvement with the bid rule and the RFP started with that 2001 RFP.

Q So, you were still with FPL; you just weren't involved with the bid-rule process prior to 2001?

A That's correct.

Q So, in 2001 -- tell me the RFPs you've issued

since 2001. I'll tell you what, do it this way: Tell me the need determinations that you've sought and then whether you issued an RFP or not.

A All right. Subject to check, my recollection is as follows. We issued an RFP for the pair of units, one at Martin, one at Manatee. And that was subject to an RFP.

We next submitted an RFP for the Turkey Point 5 unit. We had an RFP for -- I believe the next one up was West County 1 and 2. And we have an RFP, obviously for the Okeechobee unit. There might have been one in between there that I have forgotten at the moment.

We had a couple of modernizations at Cape Canaveral, Riviera, and Port Everglades for which a waiver was sought and granted by the Commission for special circumstances.

Q So, when you say the waivers were granted, those were plants that had to be certified under the Power Plant Siting Act and for which you needed a new need determination from this Commission?

A Yes.

Q And you did not issue RFPs on those?

A We sought a waiver and it was granted by the Commission. So, the answer is we did not issue an RFP.

Q Okay. Thank you.

And with respect to -- since this rule -- this bid rule has been in place, I said in my opening that no one has ever been successful in responding to an RFP other -- other than FPL; is that correct?

A I would say no. I think our customers have been --

Q Has --

A -- very well served by the RFP process.

Q That's not my question. Has any third party who responded to an RFP been awarded a contract and said, yes, go for it and build this power plant?

A Certainly not in the four or five RFPs issued by FPL.

Q Are you aware of any utility in Florida awarding --

A I don't recall any, but I don't have total recollection of all of the RFPs that have been issued in the state.

Q Okay. But you can answer with respect to Florida Power & Light. And that answer is no, pursuant to the bid rule, no entity that's submitted a bid has ever been awarded a contract, correct?

A No third party has been awarded, yes.

Q Okay. And with respect to the earnings, FPL earns money on its capital that's invested, correct?

A Yes.

Q And for purchase power agreements, there's no earnings on that because it's just a straight passthrough. Whatever the purchase power agreement provides with respect to capacity payments and energy payments, those are passed through with no earnings on that; is that correct?

A Basically, yes.

Q Okay. I also mentioned solar and I want to -- I want to see if I'm reading your testimony correctly with respect to solar. I had suggested that I thought you were saying solar is cost-effective today. And I got that from Line 16 on Page 22 of your testimony.

And you were referencing the three solar projects, I think, that FPL is moving forward with. And specifically, you say, quote, the combination of those advantages for the three specific sites resulted in a projection that PV at those specific sites by the end of 2016 would be cost-effective, but only by a slight margin. Did I get that right?

A Yes, sir. That's what it says.

Q Okay. And when you say cost-effective, but only by a slight margin, I read that that you did some analysis where you were looking at the most cost-effective unit; is that right?

A We were looking to see if the resource plan was more cost-effective with those PV facilities added in 2016 versus not adding them in 2016.

Q And you reached a conclusion that they were cost-effective, correct?

A Or break-even, yes. It was a very tight margin.

Q Okay. Well, when you had said by a slight margin, I understood that to mean, yeah, they're -- they are in the money, if you will. They hunt. I didn't -- you didn't say anything about break even in your testimony, did you?

A No, I said by a slight margin. If you would like clarification, I could give you that.

Q Well, let's just talk about -- you've used the phrase about on the LOLP that it's close, but it's still under there. I mean, when you do analysis and there is a bright line, you know, there is not a corollary about, well, it's close, so therefore we'll take another position. I mean, what's the number on the slight margin?

A Let me explain it this way: Similar to what we did -- do each year in nuclear analysis, we looked at a number of scenarios of different fuel costs and different environmental costs. So, I think we had nine

such scenarios we looked at.

PV essentially broke even, dead cost equal benefits for one of the scenarios. And in the other eight, PV was up to a $50 million CPVRR winner in those four, and was down to a $50 million CPVRR loser in the other four.

So, taking all nine scenarios, it was essentially a break-even analysis.

Q So, this is -- what you're describing is what we sometimes call the nine-box analysis; is that right?

A You could call it that, yes.

Q Yeah. And so, you're saying four of them showed they were in the money. They were the best, most cost-effective things for ratepayers; four of them said, well, maybe not with a certain set of assumptions; and one of them was dead even; is that right?

A Essentially, yes.

Q Did you -- did you do an analysis of PV for meeting the need in this case?

A For 2019?

Q Right.

A Yes, we did break-even analysis to try to look at what the cost of PV would have to be, total costs, including land in order for it to break even with what was, in the Stage One analysis, an early version of the

Okeechobee unit.

Q What did you assume about the Federal investment tax credits in your analysis? Would they -- would they still be there or would they go away?

A We assumed that the rule held, and by the end of 2016, the 30-percent Federal investment tax credit would drop to 10 percent.

Q And why did you make that assumption?

A Because that's what the rule says.

Q The rule -- what rule are you talking about?

A The rule that says that at the end of 2016, the 30-percent tax credit drops to 10 percent. I don't have a specific rule name or number.

Q Okay. So, my understanding of Federal tax credits is Congress is the one that says, here is what we're going to do on Federal tax credits. Is that your understanding?

A Rephrase again, please?

Q Federal production tax credits or investment tax credits -- my understanding is that's the bailiwick or something that Congress handles. Do you have that understanding or a different understanding?

A Let me just say I understand it can change, but the -- our current reading of the status of the tax credit is it drops to 10 percent at the end of next

year.

Q Okay. But to drill down a little bit, you're not sure whether that's a statute or a rule?

A I'm not. I don't get into that.

Q Okay. For planning purposes, you treated -- I'm going to use the phrase, nameplate rating. But essentially for planning purposes, you felt comfortable relying on half of the nameplate PV rating for -- to count as firm for planning purposes for solar; is that right?

A For which PV, sir; the 2016 or the 2019?

Q Both. I mean, if there is a difference, tell me, but for 2016 -- why don't you start with that?

A All right. 2016, we -- our methodology was projecting about -- at the time, about 52 percent of the nameplate rating would count as firm capacity. So, if the nameplate was 100 megawatts, we counted 52 megawatts as firm capacity in our reserve-margin planning and our LOLP.

For 2019, the break-even analysis looked at a variety of firm-capacity ratings that would go up zero to 20 to 40 to -- and so forth. So, we looked at a variety of those.

Q Explain to me why -- why the difference. If you looked at it and said 52 is where we're comfortable

on a hundred megawatts, why in 2019 would you say, well, that's going to be different now?

A Because for the 2016, we had specific sites and a specific technology where we could be more certain of what the output would be month by month. We didn't have specific land sites for 2019.

And the firm capacity is based -- value that we assign is based in large part on specific locations, specific technology, et cetera. So, we could not be that certain as to what the firm capacity value would be for as-yet un-sited PV for 2019.

Q So, are you telling the Commission that there is a difference in value of PV as to whether you're located in Palm Beach County as compared to Dade County? Like the sun is different in Palm Beach as compared to Dade; so, therefore, you give a different firm value to it?

A I'm not specifically saying Palm Beach or Dade. I'm saying that different cloud cover in different areas of the state will provide different results.

Q But you're making a geographic distinction, right? So, Dade versus Okeechobee or -- or Dade versus Volusia County, you -- that's what you're saying prompts the basis for a differential in firm -- in counting firm

for --

A In part, yes.

Q What else is there?

A The type of technology you select, whether it's fixed or whether it is tracking.

Q The three units that you're constructing -- is it fixed or tracking?

A I think they are all fixed.

Q Do you get more capacity out of a tracking unit as compared to a fixed? I assume you do because it's tracking the sun more closely, correct?

A I would say, all else equal, you get more annual energy out of a tracking, not necessarily more capacity at the peak hour.

Q Which would have a higher firm rating in your -- in your opinion?

A I -- all else equal, I would probably give the nod to a tracking. I think you have a better chance of getting a higher firm-capacity rating, but it comes at more expense.

Q All right. So, let me flip you to an exhibit in your testimony. You have your testimony in front of you, right?

A Yes, sir.

Q So, this is on -- this is your Exhibit 1,

Page 71 of 309. Just whenever you get there, tell me.

A Is this part of our 2014 site plan? Because I have --

Q No, I have that --

A -- separately.

Q -- as your request for proposals.

A Okay.

Q I mean, that's attached to your testimony. It says Florida Power & Light at the bottom, Page 19. Up at the top, it says "FPL's 2015 capacity request for proposals. Exhibit SRS-1, Page 71 of 309."

A And what was the page number, please?

Q Well, there are two page numbers. The --

A What's the page number at the bottom, please?

Q The bottom is 19. It may be part of your site plan. I was confused because I thought you had answered a question from another lawyer that you didn't include your ten-year site plan as part of your direct testimony.

A We -- I was mistaken at the time. We did include the 2014 site plan as part of SRS-1. I just do not have a -- a complete copy of SRS-1 in front of me. It's in pieces.

Q Okay. Do you have Page 19?

A I have a Page 19 from the 2014 site plan that

consists of two tables. Is that what you're looking at?

Q Does the first table say "firm-capacity purchases" and the second one says "non-firm energy purchases"?

A Yes, sir.

Q Okay. I think we're on the same page.

So, what's the difference between the first table and the second table?

A The first table is labeled "firm-capacity purchases," and those are PPAs in which the party has committed to providing us firm capacity.

The second table is "non-firm energy purchases," and it's essentially as-available energy agreements between FPL and the third party.

Q And then -- and then under firm capacity and then the top table, there is a little Roman numeral two. What does that signify?

A In the top table, I is purchases from QFs; II are purchases from utilities.

Q Okay. And for planning purposes, do you make a distinction between the two resources, firm capacity versus non-firm energy purchases?

A Yes, only firm-capacity purchases are accounted for in our reliability analyses.

Q Okay. So, if you wanted to count something,

like the Okeelanta facility, do you see that, known as Florida Crystals and New Hope Power Partners that is in the non-firm energy purchases category?

A That is correct.

Q If -- if you wanted to count that toward meeting your reserve margin, you could enter into a long-term contract with them; is that correct?

A Assuming both parties were agreeable to that, yes.

Q As part of your analysis, did you all reach out to non-firm energy purchases, the folks that are listed here on this chart, and inquire as to whether they were interested in entering into a long-term purchase power agreement?

A What was the question part of that? Could we have?

Q Did you call anybody and say, hey, we're trying to meet a thousand-megawatt need, I know you're selling us as-available energy, would you be interested in selling us firm energy? Did those conversations take place?

A No, they did not. We had those discussions originally when --

Q I --

A -- the original contract was signed.

Q Yeah. And sometimes they were 20 years ago, correct?

A That's correct. And those parties could have come to us at any time and said, we would like to switch over to a firm-capacity contract.

Q Right.

A And when and if they do, we're glad to entertain that.

Q Do you know how many megawatts Okeelanta has?

A I do not.

Q More than a hundred, isn't it?

A I do not know.

Q Can you -- can you figure it out based on the energy delivered to FPL in 2013?

A No, because it could be a variety of answers depending upon how much -- how often they operated.

Q Do you know how many megawatts any of these projects listed on this exhibit have?

A Off the top of my head, no, because they have been and remain as non-firm energy purchases. And we do not seek to -- the information regarding capacity megawatts because they are not accounted for in any reliability analysis.

Q Right. Right. All right. So, none of those entities you called up and said, hey, we're trying to

meet the need, we're trying to do it the most cost-effective way. Would you be interested in doing a firm contract?

A And none of them contacted us upon public announcement that we had an RFP and said, we would like to be play and be firm capacity.

Q All right. And let me draw your attention to the category where it says "customer-owned PV and wind." Do you see that?

A Yes.

Q Do you know what that is?

A Renewable energy sources that are customer owned that are located throughout our service territory.

Q And how do you know how many -- how much energy that that is?

A Typically, under metering arrangements, we collect that information, which allows us to say how much energy was delivered to FPL, which is how we come up with the value in the right-most column.

Q Did you have any discussions with any of those folks about, hey, would you like to sign a long-term contract?

A No. They did not contact us either, but in any case, the actual energy provided in 2013 was essentially a thousand megawatt hours. So, their --

their capacity contribution would have been negligible.

Q So, if somebody in that category said, yeah, I'll do a firm contract with you, would you -- you would be able to consider that and count it just like you would one of your other resources?

A We certainly would if both parties found the contract to be agreeable.

Q When you were making assumptions to figure out whether solar might work for you in lieu of the Okeechobee project, did you hire any realtors or any land people to see what you might be able to get land for out near Okeechobee or anywhere?

A I do not know if that was done. What I do know is we would have needed approximately 21,000 acres at that point. And certainly, only a small -- relatively small percentage of that could be covered by land that FPL already owned.

Q Have you ever been to Okeechobee County?

A Yes.

Q You're familiar with it. It has a lot of pastureland, a lot of cattle out there. It's rural, agricultural.

A Yes.

Q Generally.

A I'm aware of that.

Q Yeah. Do you know if any conversations were -- you talk about owning the land, but you could also lease the land, right?

A Presumably, yes, that would be an option.

Q Okay. Do you think that leasing it might be better for ratepayers as compared to owning it?

A I've never done such an analysis, so I don't know the answer to that question.

Q Okay. As you go forward with other need determinations, do you think maybe as you're looking to see, okay, will solar potentially work, that that might be a question to look into?

A I'm certain there are parties in our company who will be addressing that as we go forward.

Q All right. But you just didn't address it in this case, right?

A We didn't address it because of the uncertainties mentioned in my direct testimony.

Q Okay. And what are those uncertainties? You don't know the land cost, right?

A We don't know the land cost. And a corollary to that, in order to grab that many acres or even close to it would have put us in a poor negotiating situation. And we believe we would have ended up paying a lot more for the land than if we had taken more time.

Q But -- but you didn't talk to anybody. You didn't know -- you just assumed this in your own mind, correct? You didn't talk to Lykes Brothers. You didn't talk to big landowners in South Central Florida who have a lot of acres.

A I did not. I --

Q You or the company.

A I do not know what inquiries might have been made at that point. But we realize that this was a huge amount of land with a very short time to make a decision on. And we felt like it was not in the best interest of our customers from a land-cost perspective. And as we mentioned, there were two other major areas of uncertainty.

Q One was the tax credits. We've talked about that, right, the availability of the tax credits?

A Only indirectly. It was what was the cost of solar facilities, of which the tax credit would have been a piece of.

Q All right. And isn't it true that the cost of solar facilities are projected to come down as time goes forward?

A That is the projection. How much and how fast is one of the big unknowns.

Q Okay. And then what was the third variable

that you thought was a problem?

A Reliability. We have a methodology -- we were discussing it earlier -- where we were assigning a certain percentage of the nameplate value of the solar as firm capacity. All it is at this point is a methodology. We do not have an extensive history with solar in order to judge whether or not that methodology is giving us an accurate answer.

Q It's -- I mean, I don't want to get into some of these other, you know, generation-only stuff, but it's a methodology just like something like that, right? I mean, it's your best thinking as we sit here today about, you know, how to run your system and how to evaluate things, correct?

A It is a methodology that we are using. We want to test it in the field for a few more years before we will have complete or better confidence level in it.

Q Right. But you didn't kind of make it up. I mean, you spent some time thinking about it and analyzing it and coming up with a basis for it; am I correct?

A That is correct.

Q And you're comfortable with it today. That's what you're testifying to the Commission about, correct?

A I'm saying it is our best thinking. But as to

how it works out in actual practice, we would like a few more years in order -- before we attempt to meet a very large reliability need with something that does not have a track record in the field for how much firm capacity is provided.

Q Okay. Back on this chart, this purchase from Southern Company for 928 megawatts -- you see that?

A Yes.

Q Okay. Did you talk to them about extending that purchase?

A Yes. We have talked to them at several points regarding extending it and, in fact, it was extended once. I believe it was originally scheduled to end in 2010 and was extended to 2015.

Q So, my understanding is the Southern Company is a little long in their energy resources as a -- as a system. Do you have that understanding? And when I say long, they have more generation to meet their needs than they may otherwise need.

A My understanding is the last time we discussed this with them, they said no, we do not want to continue to sell this to you because we -- we need it.

Q Okay. So, my question was: Do you have an understanding about how Southern Company -- whether they are long or short with respect to their steel in the

ground?

A I have not -- the answer is no, I do not know.

Q You don't know one way or the other.

A I do not. I have not looked at their resource plans recently.

Q That would be important information, I would think, to know if you were negotiating something with somebody as to whether they needed it or not, correct?

A It would be. And it's also the flip side is that if Southern thought they could give up that capacity and extend this contract, they are not shy. They would have -- I believe, definitely have come to us.

Q Did you have that conversation with them?

A No. Other parties in our company have those conversations regarding power purchase contracts.

Q So, how did you get the information that you're testifying to? Through conversations with other people in your company?

A Yes.

Q And who? Who would that be?

A My primary contact is a gentleman by the name of Tom Hartman.

Q So, if later on we depose Mr. Hartman and say, did you talk to Southern, he would say, yes, I talked to

Southern and they said they didn't -- they had a need for that capacity. You think that's how that would go?

A I do. That's my understanding of the situation.

Q All right. Let me -- let me move on to a couple of areas. I talked a little bit about diversity. I think you testified on Page 10, Line 6 that you don't believe putting another 1620 megawatts in of gas, quote, will not significantly increase FPL's reliance on natural gas; is that right?

A That's correct.

Q Okay. How many -- what's the total megawatts on FPL's system? Generation.

A Capacity?

Q Yes.

A Ballpark, 26,000.

Q So, do simple math for me. What percent does 1620 represent of 26,000? Roughly. I'm not going to hold you to the exact number.

CHAIRMAN GRAHAM: There is a calculator to your right.

BY MR. MOYLE:

Q You got a math degree, right? Aren't you -- didn't you get a mathematics degree from UM?

A That was a long time ago.

Q Yeah, I know. You're better able to do the calculation than I am. So, if you would do it, please, I would appreciate it.

A 1600 divided by 26,000 is roughly 6 percent.

Q So, if this Commission grants your need determination, what will that take your natural gas number to fleet-wide?

A You're talking now energy, not capacity?

Q Give it to me both ways.

A I can give it to you energy-wise. It would take some time to figure out -- for me to figure out what it would be capacity-wise.

Q Okay. Well, give it to me energy-wise and then tell me why it would take time for capacity and what your best estimate would be on capacity.

A Okay. (Examining document.)

And you're speaking about 2019?

Q Right.

A Okay. The projection with Okeechobee being added in 2019 is natural gas would supply 69.5 percent of our -- of our energy.

Q So, as we sit here today, can I just subtract six to get what you're supplying presently with natural gas?

A In 2014, the number was 68.2 as opposed to the

69.5. Next year, it's projected to be 69.2 versus 69.5.

Q And what are you looking at?

A I'm looking at our 2015 site plan, Page 92.

Q And tell me your understanding of significant -- significance. I mean, that's the word that you used in your testimony; that you don't think it will be a significant increase. 6 percent of your generation fleet is not significant in your mind?

A You're mixing capacity and energy. To me, fuel diversity is an energy aspect. If in 2014 we were at 68.2 of our energy was being supplied by natural gas, and in 2019, if 69.5 percent is projected to be produced by natural gas, I don't view that as significant.

And I'm using the word "significant" as -- I guess to put it in context, when we look at the addition of nuclear capacity, we go from the low 70 percent down to about 57 percent, 58 percent. That, to me, is a significant change in your fuel mix and what you're relying on.

The change of a percentage point or two over a span of five or six years, to me, is -- I don't call significant.

Q Okay. And then the follow-up question was with respect to capacity. Tell me how you think it would impact capacity.

A This will take a bit longer. Bear with me. And I'm referring to Page 17 of our 2015 site plan.

Q 17?

A Yes. And to simplify matters, I'm looking at combined cycle units as a percentage of our total capacity. And I'm rounding off. It's about 59 percent of our capacity as the end of 2014. Now, if I could do the math -- (examining document). Let me check that one. That looks to be a shade over 61 percent. So, it would jump from roughly 59 percent to roughly 61 to 62 percent.

Q I thought you said 52 percent, no?

A No.

Q 59?

A I think it was 59. If you would like, I will double-check.

(Examining document.) I get 58.9 percent. So, call it 59 percent.

Q Okay. So, it jumps from 59 percent to --

A -- 61 or 62.

Q Okay. As a planner, do you ever have conversations to say, you know, we're getting pretty heavy on gas, FPL, as a generation fleet; we need to really focus on other -- other ways to generate electricity? Have you ever been part of those

conversations in the last four or five years?

A Yes, a number of times.

Q Okay. And then, here we are with another gas unit. What's your next need after this?

A Probably in the '22, '23 -- 2020, 2023 --

Q What's your best guess at this point as to what you're going to propose? In your ten-year site plan, did you fill it with a gas unit or unidentified?

A Too early to tell. I would guess it would be -- I think your question is based on generation addition. So, let's restrict it to that. I would say it would be within -- between three options. It would be between combustion turbines, combined cycles, and PV.

Q Have you given any consideration to going out with an RFP for solar, not the whole need; say, split it in half and say we're going to do half of solar, put an RFP out, and we'll do the other half with, you know, two-on-one or one-on-one combined cycle? Did you guys think about that or talk about that?

A Well, we actually did that in our analyses leading up to the next planned generating unit in this docket. We looked at filling the need partially with PV and partially with either small-scale combined cycle or a reduced number of combustion turbines.

Q And it didn't -- didn't hunt?

A It didn't hunt. It was worse than if we went out and tried to fill the entire need with PV.

Q All right. I have a few more questions -- little -- little technical, but I only get to see you once every few years when you're here.

So, tell me what duct firing is.

A Duct firing is essentially where you're firing more gas in the HRSG, the Heat Recovery Steam Generator.

Q And that's a way of increasing in the capacity of a unit, correct?

A Yes.

Q And here, you're saying, well, we're not going to do duct firing; we're going to do something called peak firing and wet compression. Do I have that right?

A Yes, sir.

Q And that gets you more megawatts than you would get with duct firing, as I understand it, is that right?

A Not necessarily more megawatts. I think it varies as to how you set it up. But it has an impact on the capacity you get, summer versus winter, as well as they have impact on heat rates. We looked at a number of combinations of that before determining that the peak firing and the wet compression would be the better selection for this unit. It would result in the lowest

CPVRR costs for our customers.

Q Do other units have peak firing and wet compression or would this be your first unit, assuming it gets approved, with those features?

A I don't recall which units may have that on it. So, I can't answer that question at this moment.

Q And can you tell me, like, how much additional megawatts, roughly, you get with the peak firing and the wet compression? Just as a percentage of the --

A Ballpark number for a 1600-megawatt unit, a hundred or slightly more megawatts --

Q Okay.

A -- would be a ballpark figure.

Q And when you're doing your planning and looking at, okay, peak load, do you assume that that extra hundred megawatts will be there? Or do you not assume that?

A Yes, if it -- we assume it would be there if it's applicable for that applicable season. For example, wet compression works for summer conditions; doesn't work for winter conditions. So, we account for the extra megawatts in our summer reliability analyses, but appropriately do not for the winter reliability analyses.

Q Okay. A few other questions. And you all

like to have power plants close to your load center, as I understand it; is that right?

A All else equal, yes.

Q Okay. And where is your load center today?

A The load center is in the southeastern portion of the state, primarily in the Dade, Broward, and a portion of Palm Beach County.

Q So, you can't pinpoint it that specifically? It's kind of in those three counties, generally speaking?

A In my discussions of it, we have just sought a general regional area. And it would be within those three counties or including all or portions of those counties.

Q Did you consider that when selecting the Okeechobee site over your Putnam site or your Hendry County site?

A Yes. None of them are within the load center.

Q So, were they all a wash on that criteria when you were doing your self-evaluations?

A Not exactly because part of the reason you like to site generating units close to the load center is to minimize transmission losses. The further energy must flow over transmission lines, the greater the losses. And Putnam is a much further distance away from

our load center than is -- than is Okeechobee.

Q Are those the three sites that you currently have for future power plants, Okeechobee, Putnam, and Hendry?

A I think it's safe to say Putnam is definitely a site. Okeechobee is certainly a site. Hendry is a bit iffy at this point because -- and that was one reason why it was dropped out fairly early in these analyses is we do not have a needed change in the comprehensive land use in Hendry County that would allow it to be designated as a power plant site. We have high hopes that that will be resolved soon.

Q Are there any other properties that FPL owns that it could put a 1600-megawatt combined cycle on besides the ones we've talked about?

A I'm probably not aware of all of the land that we own. Those are certainly the most prominent ones. And I would say, all else equal, those would be the first up to bat for a large-scale generation addition.

Q How long have you owned Okeechobee?

A I'm sorry?

Q How long have you owned Okeechobee?

A I do not know the date of that.

Q Yeah. You guys have eminent-domain powers, don't you?

A I'm familiar with the term, but I don't know how I would be able to accurately answer that question. I've not been involved in any such designations or actions regarding eminent domain.

Q So, are you part of these land discussions? I mean, my understanding -- if you buy land and you rate-base it, then you earn a return on land; is that right?

A I don't deal with land acquisitions nor am I involved in calculations that discuss recovery of those costs.

Q Any of your witnesses to follow you knowledgeable about that?

A I don't believe so.

Q The FR- -- Florida Reliability Coordinating Council -- FRCC, right?

A Yes.

Q They reviewed your interconnection in this case; is that right?

A That's my understanding.

Q And tell me why that's your understanding and why you -- is that a role that they play; to review interconnection studies of utilities?

A I think the more appropriate witness for this would be Ms. Kingston.

Q Okay. I'll ask her, but I also -- I think you

reference it, but just tell me -- tell me -- I was always under the impression that interconnection was a FERC issue; not a Florida Reliability Coordinating Council issue. Did I get that wrong?

A First, let me correct you. I don't believe I reference that FRCC interconnection. I am almost certain that is part of Ms. Kingston's testimony. And I would suggest she would be the more appropriate witness.

Q Do you have any knowledge about --

CHAIRMAN GRAHAM: Mr. Moyle, let's move on. He's already stated this is something that would be better answered by somebody else.

BY MR. MOYLE:

Q The Woodford Project, you have that -- you reference that in your testimony, right?

A Yes.

Q Okay. But to be clear, the Woodford Project is costing ratepayers money as we sit here today, correct?

A I don't have direct knowledge of that.

Q Then why did you put that in your testimony?

A Because I put it in my testimony as an example of actions FPL is taking to try to minimize the volatility of the cost of gas.

Q And that's just fixing something, right?

Reducing volatility is you just pay a price for it; you know, I paid this price; I know what I have now, right? That reduces volatility?

A I wouldn't characterize it quite that way. I would say you're trying to minimize the variation in the cost.

MR. MOYLE: You're a mathematician. I'm a history major. We sometimes say things differently and view things differently, but I appreciate your time. And I don't have any further questions.

CHAIRMAN GRAHAM: Thank you.

Staff?

CROSS EXAMINATION

BY MS. CORBARI:

Q Good afternoon, Dr. Sim.

A Good afternoon.

Q Thank you for being here. I'll try to keep it short.

Staff has two handouts which we'll go ahead and pass out now. One is a courtesy copy of your errata sheet and the other one is Staff Exhibit 59, excerpt.

A Has 59 been handed out previously today?

Q I do not believe so. I believe it was a different portion of Staff's Composite Exhibit 59.

A Okay. Thank you.

Okay. I have them.

Q Okay. First, I'm going to refer you to the errata sheet to your prefiled direct and rebuttal testimonies dated November 13th.

A Yes, I have it.

Q So, on November 13th, FPL filed the errata sheet containing corrections to your direct and rebuttal testimonies; that's correct?

A Yes.

Q To your knowledge, are there any other corrections that need to be made today to either your prefiled, direct, or rebuttal testimony or exhibits?

A None that I am aware of. The testimony references those analyses that were performed up to the time that we decided on the Okeechobee unit as our next planned generating unit.

Q So, the -- is that -- the updated analyses are the reasons -- the explanations for the corrections, to your direct testimony?

A Yes, we have submitted an -- updated analyses that are not incorporated in my direct testimony.

Q Okay. And when did you become aware that the corrections outlined in the errata sheet were necessary? About the time frame -- like, after intervenor testimony, during the discovery process?

A It was probably during the discovery -- in fact, it was during the discovery process. At some point, we were asked questions and we sent the analysts back to look at those. And they, in going through it, said that there were small discrepancies in the numbers that had been previously provided to me while drafting testimony.

Q Okay. What is the overall effect, if any, the corrections outlined in the errata sheet have on your prefiled direct testimony?

A They basically say that from the prior set of numbers before correction, the Okeechobee unit is more cost-effective than it was originally projected to be.

Q Okay. Thank you.

So, you've already discussed the three reliability criteria FPL utilizes in planning for future capacity additions. So, I won't go -- rehash that with you.

However, is it your testimony that even if FPL did not utilize a 10-percent minimum generation-only reserve margin, FPL would still have a reliability need for the proposed unit in 2019?

A Yes, a significant resource need even if we had not been using the GRM.

Q Based on --

A Based on total reserve margin. And my direct testimony, it would have been 988 megawatts just based on the 20 percent total reserve-margin criteria.

Q Okay. Thank you.

Could you please turn to Exhibit SRS-4 to your prefiled direct testimony?

A I'm there.

Q It's Exhibit 5 on the composite exhibit list.

A Exhibit 4 or 5, please?

Q It's SRS-4, which is Exhibit 5 on the composite exhibit list, but it's --

A Okay.

Q It's confusing. My apologies.

So, Exhibit SRS-4 to your testimony is FPL's first stage of an analysis evaluating FPL's self-build options at two sites; the proposed Okeechobee site and a site in Putnam County; is that correct?

A Yes.

Q And this evaluation is an economic analysis, correct?

A Yes, having already determined what our projected resource needs were, this is an economic evaluation of those options that they could meet the then projected resource need.

Q So, based on the economic evaluation presented

in this exhibit of FPL's first stage of analysis, is it accurate to say that the proposed Okeechobee Clean Energy Center Unit 1 self-build option was 259 million more cost-effective than a self-build option with six combustion turbines?

A Yes, at that stage of the analysis, that was the projected differential between the two.

Q Okay. I am -- if you could, now, refer to Staff's Composite Exhibit 59. That was the second handout. It's FPL's corrected response to staff's Interrogatory No. 62, Parts D and E. It's Bates Nos. 00138 through 141.

A Yes, I have that in front of me.

Q Okay. In FPL's corrected response to Parts D and E of staff's interrogatory dated November 10th, FPL provided an updated analysis of FPL's self-build options; is that correct?

A Yes.

Q And this updated analysis included new updated forecasts for fuel and load; is that correct?

A Yes. That, among other things were updated.

Q And based on the updated analysis provided in the response, is it accurate to say that FPL's proposed Okeechobee Clean Energy Center Unit 1 self-build option is now 72 million more cost-effective than a self-build

option with six combustion turbines?

A Yes, that's correct.

Q Assuming a low-fuel band, is it correct to say that the proposed unit self-build option would only be eight million more cost-effective than a self-build option than six combustion turbines?

A That's correct. The gap has shrunk, but the combined cycle at Okeechobee still emerges as the winner.

Q So, at the bottom of the table of the interrogatory, the fourth note down, fourth hash starts with "the CC unit."

A Yes.

Q States the CC unit in the first row of each table represents an enhanced design, 1,633-megawatt version of the proposed unit; is that correct?

A Yes.

Q Okay. I'm going to have you turn to Page 36 of your direct testimony.

A I'm there.

Q Okay. Beginning at Line 5, FPL requests that, should the Commission make a determination of need in this proceeding, the Commission not base its determination on FPL selecting a particular design or model for the proposed unit powertrain components or

other related equipment; is that correct?

A Yes.

Q And beginning at Line 12, you state that FPL would select an enhanced design or model for the proposed unit powertrain components or other related equipment only if the enhanced design or model results in lower -- in a lower projected system cumulative present value of revenue requirement costs to FPL customers, correct?

A Yes.

Q If future analyses were to demonstrate that the combustion turbines -- combustion turbine self-build option resulted in a lower projected system CPVRR costs to FPL customers, do you believe it would be prudent for FPL to select a combustion turbine self-build option?

A Yes, and I wouldn't restrict it just to combustion turbines. If, for example, we found out that photovoltaics price was such that it not only was now the most economic option for 2019, and we had resolved our reliability concerns, I think we might come back to the Commission and say, we're building solar instead. It's all part of our ongoing resource-planning effort.

Q Thank you.

And is it your testimony that FPL intends to

inform the Commission if it were to select such enhancements for the proposed unit should the Commission make a determination of need in this proceeding?

A Yes, and I believe to this date, our introduction of the 1633-megawatt version of Okeechobee combined cycle as opposed to the earlier, in our direct testimony, 1622-megawatt is one such -- in informing the Commission that we have found a better, more efficient, lower CPVRR cost combined cycle option. And we will continue to look. If we find yet another enhancement, we would bring that before the Commission as well.

Q Do you know how soon after FPL were to select any further enhancements FPL would inform the Commission of the selected enhancements?

A I'm sorry. Can you repeat the question, please?

Q Sure. Do you have -- do you know how soon after FPL selected any additional enhancements that FPL would inform the Commission of such enhancements?

A On a going-forward basis?

Q Yes.

A I would say as soon as we had satisfied ourself that the analysis was definitive, we would inform the Commission as shortly thereafter as we could.

Q Okay. I'm going to have you flip to Page 10

now, your direct testimony, and beginning at Line 4, you testified that the proposed unit would not improve FPL's fuel diversity and that FPL is actively pursuing other approaches in an effort to improve and diversify its energy resources such as pursuing nuclear and solar energy, correct?

A Yes.

Q With respect to solar energy, has FPL identified solar as a firm resource in any of its prior need proceedings?

A No, this would be the first need-determination filing in which we had developed a methodology and used it to project a firm capacity component of the nameplate rating.

MS. CORBARI: Okay. Thank you, Dr. Sim.

Staff has no more questions.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Commissioners?

Redirect?

MR. COX: Thank you, Chairman Graham. I just have a few redirect questions for Dr. Sim.

REDIRECT EXAMINATION

BY MR. COX:

Q Dr. Sim, do you recall earlier today when you were discussing with the Office of the Public Counsel

Commission's Rule 25-6.025, adequacy of resources?

A Yes.

Q Do you have a copy of that rule with you?

A I do.

Q Okay. Bear with me just one moment. My copy is escaping me at the moment, but I think I can speak to you about it.

There was a line that read in there about a 15-percent requirement?

A Yes.

Q And Dr. Sim, you've been a resource planner for how many years?

A A lot.

Q A lot? At least 20, 24 years? Somewhere in that neighborhood?

A Yes, since 1991.

Q Okay. And based on your expertise as a resource planner, could you -- first of all, could you read the line that starts right after that where it mentions the 15-percent plan reserve margin?

A Okay. The line reads, "The planned and operating reserve margin standards established herein are intended to maintain an equitable sharing of energy reserves, not to set a prudent level of reserves for a long-term planning or reliability purposes."

Q Okay. So, that second part that began, "Not to set a prudent level of reserves for long-term planning and reliability purposes" -- as a resource planner, what does that mean to you?

MR. MOYLE: Object. It calls for a legal conclusion. I mean, it's a rule. You all interpret your rules. I don't think it's relevant. He's not a lawyer.

CHAIRMAN GRAHAM: We've --

MR. MOYLE: Counsel --

CHAIRMAN GRAHAM: We've allowed him before to answer on his -- the best of his knowledge. So, he doesn't have to give us a legal conclusion, but to the best of his knowledge, I'll allow the answer.

THE WITNESS: As a resource planner, my understanding of that passage, which I believe was added in 2001, was to clarify the direction that the utility should take in their resource planning and that the 20-percent reserve margin that was agreed to in the stipulation should be used for long-term planning and for reliability analyses.

BY MR. COX:

Q Thank you, Dr. Sim.

I would like to turn to a line of questioning that I think you encountered from both -- actually, all

of SACE, OPC, and ECOSWF regarding a loss of load probability reliability criterion. Do you recall those questions?

A Yes.

Q And there were also some questions regarding the historic LOLP values. Do you recall those questions as well?

A Yes.

Q Now, in addition to the LOLP criterion, does FPL use other reliability criteria?

A Yes, we use two other reliability criteria; the 20-percent total reserve margin and the 10-percent GRM.

Q Could you explain why FPL uses those other two criteria in addition to the LOLP criteria?

A Yes, because they take different perspectives of the utility system. If one only had one perspective, you would not get nearly as complete a picture of the utility's projected reliability as you do with either two or three reliability criteria.

No one criteria is infallible. Certainly, the LOLP criteria is not infallible. In fact, I will use one of the responses to an ECOSWF interrogatory to try to demonstrate that. In ECO- -- in their Interrogatory No. 5, they asked for as many projections going forward

of LOLP as we could lay our hands on.

And on Page 3 of 7 of that response, we were looking at our 2009 ten-year site plan and supplemental data requests to staff. In the 2009, LOLP projection of what the loss of load probability was for January of 2010, the LOLP projection was -- it only went out six decimal points. And it was 0-point followed by six zeroes.

So, it was essentially a non-existent probability that we could lose firm load in January of 2010. Yet, on Jan- -- less than a year later, on January 11th, 2010, we came very, very close to having to black-out customers, something that just points out the fact that none of these criteria are infallible, certainly not the LOLP criteria.

Q Thank you, Dr. Sim.

I think Mr. Moyle just raised this fact to your attention that your petition -- I'm sorry -- your testimony -- your testimony -- the exhibit to your testimony, SRS-1, did include, in fact, the 2014 ten-year site plan as part of the attachment?

A Yes, and that 2014 site plan was, therefore, part of my direct testimony. And it contained an extensive writeup and explanation as to what led us to the 10-percent GRM criteria and how it was developed.

Q And so, the GRM was, in fact, discussed in that ten-year site plan?

A Extensively.

Q Could you identify the page where that's discussed?

A Yes. Give me a moment, please.

Q Thank you.

A (Examining document.) The 2014 ten-year site plan -- we began to discuss our reliability criteria on Page 52. And we discussed beginning on Page 53 the rationale and the approach that we took in developing the need for the GRM and what its criterion value was. And that extends from Page 53 over into Page 54.

Q Okay. Thank you, Dr. Sim.

Just a couple more questions. Do you recall discussion with SACE's counsel regarding the 2009 DSM goals?

A Yes.

Q At one point, you were discussing that with them, and the question came to mind in terms of -- I guess I'll just ask you point blank: Why did FPL not implement the 2009 DSM goals?

A My recollection is that we were directed to continue -- by the Commission, we were directed to continue at the current level of DSM because the 2009

goals would -- projected to have too high of an electric rate impact when that information was presented to the Commission as part of the DSM plan filing.

Q So, was there -- was there a concern expressed regarding impact on customer rates and customer bills?

A Yes. It was primarily an electric rate and bill impact projection that led the Commission to -- I'll paraphrase: Don't implement the 2009 goals, but stick with the current levels of DSM that you are implementing at that point in time.

Q Thank you.

Just one last question for you. A question you received from counsel for FIPUG -- you started to answer the question and he moved on to another. So, I don't think you got to finish your answer.

You were speaking to the bid rule and how FPL's customers, in your opinion, have been well served by the bid rule. Could you broaden the answer as to why you believe the bid rule has well served FPL's customers?

A Yes. I think the bid rule has worked in the manner it was intended to do. I think the bid rule was trying to identify the most cost-effective generation options with which to serve a utility's customers.

And at least speaking for FPL, I know it has

led us to sharpen our pencils extensively to try to come up with the most cost-effective next-planned generating unit, something that we have continued to do even after we've issued the RFP as witnessed by our updated combined cycle moving from 1622 megawatts to 1633 with a fairly significant drop in CPVRR costs.

So, it has led to the -- the bid rule has led to the most competitive offering by the utility to ensure that it was putting its best offer forward and inviting or soliciting bids from other parties to attempt to compete with it.

So, I think it has done its -- or met its overall objective of trying to ensure that only the most cost-effective generation is put in place for a utility's customers.

MR. COX: Thank you, Dr. Sim.

Chairman Graham, I have no further redirect questions for Dr. Sim.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. MARSHALL: ECOSWF would like to move into the record Exhibit 73 through 76.

CHAIRMAN GRAHAM: Let's start with Florida Power & Light's exhibits first.

MR. MARSHALL: Sorry.

CHAIRMAN GRAHAM: That's all right.

MR. COX: Florida Power & Light would like to move in, I believe it's Exhibits 2 through 6.

CHAIRMAN GRAHAM: Two, three, four, five, six. Is that it?

MR. COX: Yes, that's it. Thank you.

(Exhibit Nos. 2 through 6 admitted into the record in Volume 1.)

CHAIRMAN GRAHAM: Okay. ECOSWF?

MR. MARSHALL: ECOSWF would like to move in Exhibits 73 through 76.

CHAIRMAN GRAHAM: Are there any objections to Exhibits 73 through 76? Seeing none, we'll enter those four into the record.

(Exhibit Nos. 73 through 76 admitted into the record.)

MR. WHITLOCK: Mr. Chairman, SACE would respectfully request that Exhibit No. 77 be entered into the record.

CHAIRMAN GRAHAM: If there is no objection for 77, we'll enter Exhibit 77 into the record.

(Exhibit No. 77 admitted into the record.)

CHAIRMAN GRAHAM: Is that all of the exhibits we had for this witness?

MR. COX: That is all for FPL. Thank you.

CHAIRMAN GRAHAM: Okay. All right.

MR. MOYLE: Mr. Chairman, could I ask for a point of clarification? I may have an objection I need to make.

CHAIRMAN GRAHAM: Okay.

MR. MOYLE: But before I make the objection, I would like to maybe ask FPL's counsel a question, if I could.

CHAIRMAN GRAHAM: Sure.

MR. MOYLE: During the examination by staff, they asked your witness some questions about -- I think it was Page 35 and 36 of his testimony, which I read to say we want to have the flexibility not to get locked in on a specific technology or vendor because it will hurt us with negotiations if we have to buy a GE Unit X or Y.

And you were asking the Commission for the latitude to make an updated filing with respect to technology, as I read -- read the testimony, 35, Line 14: Will FPL continue to evaluate OCEC unit one. And it goes over to 36.

MR. COX: Yes, I'm there.

MR. MOYLE: The witness -- I think the witness in response to the question said yes, we would like to be able to update this, but then also, we're going to continue to evaluate, and we might even

have a new generation technology in PV to put forward.

And if that's -- if that's the intent, then -- I mean, I've objected historically to late-filed exhibits, this would be the mother-lode of all late-filed exhibits if an informational filing comes in and says, oh, we're not going to do a combined cycle; we're going to do PV with no chance to ask questions about it or -- I mean, it affects our due-process rights.

So, I'm just trying to understand what -- what is happening with respect to that issue. And if Counsel can inform me -- I don't have an objection if they are going to update the information and it's a contest between vendors of combustion turbine or HRSG. And I understand the competitive -- the desire to have competitive issues, but if it's going to be an informational filing that completely changes the generation -- that's another kettle of fish.

So, thanks for the opportunity to better understand that.

MR. COX: May I respond? This is speaking specifically to a combined cycle Okeechobee unit and enhancements to that design. It is not

speaking to the other questions that you went into in terms of other generation alternatives.

If you look at recent need-determination orders from the Commission, it instructs the utilities before, during, and after construction of the unit to -- that the utility should be looking at other alternatives. If there is a better alternative, we should consider that or move forward on that.

If that were to happen, we would have to come forward with a new filing. There's -- there is no doubt in my mind that this applies simply to enhancements to design of the combined cycle unit we propose for Okeechobee.

MR. MOYLE: Okay. So, I -- if you look at it and say, you know, I think PV is the new way to go, it would be a new filing; it won't be an informational filing.

MR. COX: Yeah, I don't think that would fit within the bill of this information filing. If you look at our last determination for Port Everglades, we had a similar thing with regard to the CT design for that unit.

MR. MOYLE: Okay. We don't object, given that clarification.

CHAIRMAN GRAHAM: Okay.

MR. WHITLOCK: Mr. Chairman, could I just briefly ask for one more clarification?

CHAIRMAN GRAHAM: Sure.

MR. WHITLOCK: Thank you.

As part of the same questioning that Mr. Moyle was just referencing, staff's questioning of Dr. Sim, I believe -- did he testify there has already been an enhancement to the technology of the Okeechobee unit, itself, and it's now no longer a 1622-megawatt unit, but it's now a 1633-megawatt unit?

MR. COX: Yeah, the latest improvement that we were working on. And Witness Kingston can speak to that.

MR. WHITLOCK: Okay. And is that -- is that something there's been a filing on that -- or is --

MR. COX: It's been provided through the discovery of the staff questions.

MR. WHITLOCK: Okay. Okay.

MR. COX: That's where we provided that information.

MR. WHITLOCK: Okay. Thank you.

CHAIRMAN GRAHAM: Now, Dr. Sim, thank you very

much.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: Florida Power & Light, your next witness.

MR. GUYTON: Florida Power & Light calls Richard Feldman to the stand.

DIRECT EXAMINATION

BY MR. GUYTON:

Q Mr. Feldman, have you previously been sworn?

A Yes, I have.

Q Please state your name and business address.

A My name is Richard Feldman. I work at -- my address is 700 Universe Boulevard, Juno Beach, Florida.

Q Who is your employer?

A My employer is Florida Power and Light Company.

Q What's your position with Florida Power and Light Company?

A I'm a production analysis lead.

Q And did Florida Power & Light file as part of its direct case your direct testimony consisting of 29 pages?

A Yes.

Q And did FPL also file an errata to your direct testimony?

A That's correct.

Q And if I were to ask you today the same questions that appear in your prefiled direct testimony, would your answers be the same as corrected by your errata?

A Yes, they would.

MR. GUYTON: Chairman Graham, we request that Mr. Feldman's direct testimony as corrected by his errata be inserted into the record.

CHAIRMAN GRAHAM: We will insert Mr. Feldman's direct testimony as corrected into the record as though read.

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

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for determination of need for Okeechobee Clean Energy Center Unit 1, by Florida Power & Light Company	DOCKET NO. 150196-EI FILED: November 13, 2015

ERRATA SHEET OF RICHARD FELDMAN

September 3, 2015 Direct Testimony

PAGE #	LINE #	CORRECTION
15	4	"FPL's" should read "Florida's"

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Richard Feldman, 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 a Production Analysis Lead in the Resource Assessment and Planning (RAP) department.

Q. Please describe your duties and responsibilities as a Production Analysis Lead.

A. I am responsible for developing the models and analysis supporting FPL's official peak demand, energy, and customer forecasts that are used in FPL's Ten Year Site Plans (TYSP) and long-term planning. I also develop risk adjusted forecasts for select forecasts which are used in various planning processes within the company. I produce reports for management on a regular basis and provide variance analysis on these forecasts. I also oversee the work of more junior analysts.

Q. Please describe your educational background and professional experience.

A. I hold a bachelor's degree (B.B.A.) in economics from the University of Miami, and I completed my coursework and thesis towards a master's degree in economics from the University of Miami along with additional graduate

course work in statistics. I am also a certified Six Sigma Black Belt. As a Six Sigma Black Belt, I am trained in the use of statistical tools and techniques to document and improve existing processes. I am also tasked with assisting others in improving their processes through the use of Six Sigma methodologies and tools.

I began my career with FPL in 1982 as a Load Research Analyst. I have since held a variety of positions in the areas of market research and economics and forecasting. I spent ten-and-a-half years working for FPL Energy Services where I conducted tariff analysis and developed an electric pricing model for the Northeast U.S. I also managed an FPL real-time electric pricing program, and was the product manager for FPL Energy Services' insurance products and retail natural gas business, where I developed a retail natural gas pricing model and had profit and loss responsibility for the natural gas business. I assumed my current position in 2009.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibits RF-1 through RF-8, which are attached to my direct testimony.

Exhibit RF-1	Florida Population
Exhibit RF-2	Total Average Customers
Exhibit RF-3	Real Disposable Income per Household
Exhibit RF-4	Real Price of Gasoline Lagged
Exhibit RF-5	Summer Peak Load (MW)

Exhibit RF-6	Risk-Adjusted Summer Peak Forecast (MW)
Exhibit RF-7	Winter Peak Load (MW)
Exhibit RF-8	Calendar Net Energy for Load (GWh)

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe FPL's load forecasting process, identify the underlying methodologies and assumptions, and review the results of FPL's most current forecasts. These long-term forecasts include base case projections of customers, peak demands, and net energy for load. These base case forecasts are the same forecasts presented in FPL's 2015 TYSP, which was filed on April 1, 2015. My testimony expands upon the methodologies described in the 2015 TYSP filing. In addition, FPL's long-term forecasts include risk-adjusted projections of summer peak demands. FPL's risk-adjusted projections are designed to reflect the higher levels of summer peak demands that could occur in the future given the uncertainties inherent in the forecasting process. These uncertainties have been quantified based on analysis of the differences between actual and forecasted values of the summer peak that FPL has experienced historically.

Q. Please summarize your testimony.

A. My testimony addresses FPL's customer growth forecast, summer and winter peak demand forecasts, and the net energy for load forecast. My testimony explains how these forecasts are developed and why they are reasonable. As discussed in my testimony, FPL is expected to experience moderate growth in its customer base through 2024. By 2019, the number of FPL customer

accounts (customers) is expected to surpass the five million mark, and by 2024, the cumulative increase in customers from 2014 is expected to reach almost 675,000. Summer peak demands are also projected to increase at a moderate rate. Although the percentage growth rates projected for the summer peak are somewhat lower than those experienced historically, the absolute increases will remain significant. By 2019, the summer peak is projected to reach 25,045 megawatts (MW), an increase of 2,110 MW relative to the 2014 summer peak, which equates to a cumulative increase of approximately 9%. Finally, my testimony explains that a 10% cumulative increase in FPL's net energy for load is also expected between 2014 and 2019, a net increase in excess of 11,000 gigawatt-hours (GWh).

II. FPL'S EXISTING CUSTOMER BASE

Q. Please describe FPL's service territory.

A. FPL's service territory covers approximately 27,650 square miles within peninsular Florida, which ranges from St. Johns County in the north to Miami-Dade County in the south, and westward to Manatee County. FPL serves customers in thirty-five counties within this region.

Q. How many customers receive their electric service from FPL?

A. FPL currently serves over 4.7 million customers, as shown on Exhibit RF-2. This amounts to a population of more than nine million people.

Q. Geographically, where is the largest concentration of FPL's load?

A. The largest concentration of load is in Southeast Florida. Although FPL's service area covers thirty-five counties, two counties, Miami-Dade and Broward, have recently accounted for 43% of the Company's summer peak load.

Q. What is the current economic outlook for Florida?

A. Florida's economy continues to expand at a moderate pace. After five years of positive employment growth, Florida has recently gained back all of the jobs lost during the recession. Likewise, the unemployment rate in Florida has fallen to its lowest level since early 2008. The real estate market has also improved although the amount of new construction remains modest by historical standards. Population growth has also recovered from the historic lows reached during the recent recession.

III. LOAD FORECASTING PROCESS AND RESULTS

Q. Please describe FPL's forecasting process.

A. FPL relies on econometrics as the primary tool for projecting future levels of customer growth, net energy for load, and peak demand. An econometric model is a numerical representation, obtained through statistical estimation techniques, of the degree of relationship between a dependent variable, *e.g.*, the level of net energy for load, and the independent (explanatory) variables. A change in any of the independent variables will result in a corresponding

change in the dependent variable. On a historical basis, econometric models have proven to be highly effective in explaining changes in the level of customer or load growth. FPL has consistently relied on econometric models for various forecasting purposes, and the modeling results have been reviewed and accepted by the Florida Public Service Commission (Commission) in past proceedings, including Docket Nos. 130198-EI (Petition for prudence determination regarding new pipeline system) and 110309-EI (Petition to determine need for modernization of Port Everglades Plant).

Q. How does FPL determine the independent variables that should be used to forecast customer growth, net energy for load, and peak demand?

A. FPL has found that population growth, the economy, codes and standards, and weather are the primary drivers of future electricity needs. Accordingly, the models used to forecast customer growth, net energy for load, and peak demand rely on independent variables representing these various drivers. As discussed later in my testimony, the models used to forecast customer growth, net energy for load, and demand vary in terms of the specific independent variables used. However, a consistent set of assumptions regarding population growth, the economy, federal and state energy efficiency codes and standards, and weather are used throughout the load forecast.

Q. What sources does FPL rely on for projections of these independent variables?

A. FPL relies on leading industry experts for projections of these independent variables. Population projections are produced by the University of Florida's

Bureau of Economic and Business Research (BEBR) in conjunction with the Office of Economic and Demographic Research (EDR) of the Florida legislature. The projected economic conditions are from IHS Global Insight, a reputable economic forecasting firm. The weather factors are obtained from WSI, a division of The Weather Company, the world's leading provider of weather data and information. Estimates of the impact of codes and standards are provided by ITRON, one of the leading consultants on energy issues.

IV. CUSTOMER GROWTH FORECAST

Q. Please explain the development of FPL's customer growth forecast.

A. The growth of customers in FPL's service territory is a primary driver of the growth in the level of net energy for load and peak demand. In order to project the growth in the number of customers, FPL utilized the July 2014 population projections from EDR, the most current projections available at the time the forecast was developed.

Q. How do EDR's July 2014 population projections compare with its prior forecast?

A. Exhibit RF-1 shows that population growth rates are modestly higher but generally consistent with growth rates projected in the 2014 TYSP. While not expected to return to the growth rates experienced during the 1980s and 1990s, significant increases in the Florida population are projected through 2019.

Q. What is FPL's projected customer growth?

A. The number of customers is expected to increase moderately, averaging a 1.3% rate of increase between 2015 and 2024. As can be seen in Exhibit RF-2, by 2019, the number of customers is expected to surpass the five million mark, and by 2024, the cumulative increase in customers from 2014 is expected to reach almost 675,000. This level of growth in customers is consistent with EDR's population projections.

Q. How do FPL's projected customer growth rates compare with the growth rates experienced historically?

A. Customer growth is projected to average over 67,000 per year between 2015 and 2024, somewhat higher than the 65,000 customers per year FPL has averaged since 1990. It should be noted, however, that this historical time period included the recession during which customer growth slowed significantly. The forecast level of growth is comparable to that experienced during the 1990s but somewhat below the level of growth experienced during the boom of the early to mid-2000s. Customer growth has rebounded from the 2008 to 2010 time period when customer growth averaged less than 8,000 customers a year. Thus, the forecasted growth in customers represents a return to more historically typical growth rates.

Q. Is FPL's customer forecast reasonable?

A. Yes. The forecast incorporates the most recent EDR population projections available at the time the forecast was developed, relies on the sound and

proven forecasting methods previously reviewed and accepted by the Commission, and is consistent with historical trends in customer growth.

V. SUMMER PEAK DEMAND FORECAST

Q. What are the factors that affect FPL's summer peak demand?

A. Variability in FPL's peak demand has been a function of a larger customer base, weather conditions, economic growth, codes and standards, and changing patterns of customer behavior.

Q. What weather information does FPL utilize?

A. FPL utilizes information from four weather stations scattered throughout its service territory. Composite estimates of the hourly temperatures representative of the FPL system as a whole are developed by weighting the values by weather station with the proportion of sales served in that area.

Q. How are weather conditions incorporated into the summer peak per customer model?

A. The summer peak per customer model is calibrated using historical data on two weather series: the maximum temperature on the day of the summer peak and the sum of the cooling degree hours two days prior to the peak day. In forecasting these weather variables, FPL relies on a normal weather outlook. Normal weather is based on historical averages over the last twenty years.

Q. How are economic conditions incorporated into the summer peak per customer model?

A. The impact of the economy is captured through a variable based on Florida real household disposable income. Real disposable income is based on the real (inflation-adjusted) level of income in Florida adjusted for taxes. Florida's real household disposable income is provided by IHS Global Insight. Exhibit RF-3 shows the actual and forecasted values for Florida's real household disposable income. Between 2015 and 2024, Florida's real household disposable income is expected to increase at an average annual rate of 2.0%, higher than the 1.4% projected in the 2014 TYSP forecast. By contrast, Florida's real household disposable income increased at an annual rate of 1.2% between 1990 and 2014. The 2.0% projected annual increase in this series between 2015 and 2024 is comparable to the growth rates experienced from the early 1990s until the start of the recession in 2007. Thus, the forecast anticipates that real household disposable income will return to a normal, pre-recession level of growth.

Q. How is the impact from codes and standards incorporated into the summer peak per customer model?

A. A variable is included for the impact of codes and standards based on end-use estimates developed by ITRON, a leading expert in this area. Included in ITRON's estimates are savings from federal and state codes and standards, including the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, and the savings occurring from the use of compact

fluorescent and LED bulbs. This reduction is inclusive of ITRON's end-use engineering estimates and any resulting behavioral changes. By 2019, the cumulative savings, since 2005, from codes and standards are expected to reach 2,747 MW. It should be noted that the savings from codes and standards discussed here do not include the impact from incremental utility sponsored demand-side management (DSM) programs. As discussed in witness Sim's testimony, the impact of incremental DSM is addressed in the resource planning process.

Q. What assumptions regarding the impact of energy prices were used in the summer peak per customer model?

A. The real price of gasoline lagged one month was incorporated into the summer peak model as a proxy for energy prices. The price of gasoline is provided by IHS Global Insight. As gasoline prices fall, more income is available for the purchase of other commodities including electricity and vice versa. Exhibit RF-4 shows the historical real gasoline price along with its forecasted values. The forecast of real gasoline prices, through 2019, is lower than the price forecast used in the 2014 TYSP.

Q. How is the output from the summer peak per customer model incorporated into the summer peak forecast?

A. The output from the summer peak per customer model is multiplied by the forecasted number of customers. The result is a preliminary estimate of the forecasted summer peak. The forecasted summer peak is then adjusted for the impacts from incremental wholesale loads.

Q. Why is the forecast adjusted to include incremental wholesale loads?

A. The forecast is adjusted for incremental wholesale loads in order to reflect changes in load not otherwise reflected in FPL's historical load levels as a result of new, modified, or expanded wholesale contracts. The largest of these contracts is the power sales contract to Lee County, a not-for-profit electric distribution cooperative serving a five-county area in Southwest Florida. Other wholesale load is included, removed, or modified based on the contract terms for each wholesale customer.

Q. Are there any other adjustments to the summer peak forecast in addition to those for incremental wholesale load?

A. Yes. FPL includes an adjustment for the incremental load resulting from plug-in electric vehicles, for the new and incremental load resulting from its Economic Development Rider and Existing Facility Economic Rider, and for distributed solar generation.

Q. Why is an adjustment being made for plug-in electric vehicles?

A. The forecast is adjusted for plug-in electric vehicles in order to reflect additional load not otherwise captured in FPL's historical load levels. The current load from plug-in electric vehicles is estimated to be about 9 MW. The load from plug-in electric vehicles is expected to contribute 30 MW to the summer peak by 2019.

Q. How is the load from plug-in electric vehicles projected?

A. Projections on the number of plug-in electric vehicles in FPL's service territory were developed by the company's Customer Service Business Unit.

Projections of the U.S. market for plug-in electric vehicles were first developed based on a review of multiple forecasts from leading experts and discussions with knowledgeable professionals in the automotive industry. FPL's share of the U.S. market for plug-in electric vehicles was then estimated based on data from the Department of Motor Vehicles for registered plug-in vehicles in Florida. Using the same Department of Motor Vehicles data for counties served by FPL, FPL's share of plug-in vehicles is then estimated. The contribution to the summer peak load from plug-in electric vehicles was then derived from the vehicle forecast, an estimate of vehicle demand, and the proportion of vehicles expected to be charged during the summer peak.

Q. Why are adjustments being made for the Economic Development Rider and Existing Facility Economic Rider?

A. Under both the Economic Development Rider and Existing Facility Economic Rider, customers are provided discounts for adding new or incremental load. To qualify for either rider, customers are required to verify that the availability of the rider was a significant factor in their location or expansion decision. The Economic Development Rider and Existing Facility Economic Rider are expected to add incremental load to the summer peak not otherwise captured in FPL's historical load levels. Based on estimates developed by FPL's Economic Development group in conjunction with the Customer Service and Regulatory Business Units, the Economic Development Rider and Existing Facility Economic Rider are projected to add about 5 MW to the

summer peak beginning in 2015. This figure is expected to rise to about 27 MW by 2019.

Q. Why is an adjustment being made for distributed solar generation?

A. The forecast is adjusted for distributed solar generation in order to reflect the load impact not otherwise captured in FPL's historical load levels. The impact of distributed solar generation is estimated to reduce the summer peak by about 46 MW by 2019. For clarification, distributed solar generation in this context is referring to photovoltaics, *e.g.*, rooftop solar.

Q. How are the projected adjustments made for distributed solar generation?

A. A forecast is obtained from Greentech Media (GTM), a leading source of news and research on green technology, for installed capacity of distributed solar generation for the state of Florida. FPL's share of the state forecast is determined based on actual 2014 FPL data for residential and commercial distributed solar generation. These shares along with GTM's state forecast are used to develop FPL's installed capacity of distributed solar generation. Megawatt hours (MWh) of distributed solar are derived using a capacity factor and hourly MWh values are then developed using solar profiles. The values at the hour of FPL's summer peak are used to adjust the summer peak forecast.

Q. Have adjustments to the summer peak forecast been incorporated into prior forecasts?

A. Yes. The 2014 TYSP forecast incorporated adjustments for incremental wholesale load, the Economic Development Rider and Existing Facility Economic Rider, and for new load resulting from plug-in electric vehicles. In fact, adjustments for incremental wholesale load and plug-in electric vehicles have been incorporated into FPL's long-term forecast since the 2009 TYSP. Adjustments for the Economic Development Rider and Existing Facility Economic Rider have been incorporated into FPL's forecast since the 2012 TYSP. Adjustments for distributed solar generation described previously were not incorporated into prior forecasts.

Q. What is FPL's projected summer peak demand?

A. As shown on Exhibit RF-5, FPL is projecting an annual increase of 1.6% in the summer peak demand between 2015 and 2024. While the projected percentage growth is lower than the long term rate experienced historically, the absolute level of growth remains very large. An annual increase of 387 MW is projected between 2015 and 2024. By 2019, the summer peak is projected to reach 25,045 MW, a cumulative increase of 2,110 MW relative to the actual 2014 summer peak.

Q. How does FPL's summer peak demand forecast compare with the 2014 TYSP?

A. As shown in Exhibit RF-5, under the current forecast the summer peak is expected to grow at an annual rate of 1.6% between 2015 and 2024, slightly

lower than the 1.7% annual growth rate projected in the 2014 TYSP. The summer peak forecast is driven by economic conditions and population growth and the long-term growth in the summer peak forecast is comparable to the forecast growth rates in the 2014 TYSP.

Q. Is FPL's summer peak demand forecast based on an econometric model with a strong goodness of fit and a high degree of statistical significance?

A. Yes. Goodness of fit refers to how closely the predicted values of a model match the actual observed values. FPL's summer peak model has a strong goodness of fit as demonstrated by the model's adjusted R square of 92.1%. This means that 92.1% of the variability in the summer peak per customer is explained by the model. In addition, the coefficients for all of the variables have the expected sign (+/-) and are statistically significant. This indicates that the variables influencing the summer peak demand have been properly identified and their predicted impact is statistically sound. Additionally, there is no observable pattern in the residuals. Finally, the model has a Durbin-Watson statistic of 2.020 indicating the absence of significant autocorrelation. The absence of significant autocorrelation is a desirable quality in a well-constructed model. Overall, the summer peak model has excellent diagnostic statistics.

Q. In addition to its base case forecast, has FPL developed an alternative forecast of the summer peak demand?

A. Yes. As previously discussed, FPL has also developed a risk-adjusted forecast of the summer peak in order to address the uncertainty inherent in

long-term projections. While the 2019 need is based on FPL's base case summer peak forecast, there is a probability that this 2019 need may be higher. The risk-adjusted summer peak forecast quantifies the probability and magnitude of this risk.

Q. How do FPL's base case and risk-adjusted forecasts of the summer peak differ?

A. FPL's base case forecast of the summer peak reflects the most likely future values of the summer peak. As such, the base case forecast is designed to reflect an approximately equal chance of under- or over-forecasting the summer peak. FPL's risk-adjusted forecast of summer peak is designed to reduce, but not eliminate the probability of under-forecasting the summer peak. The risk-adjusted forecast is designed to reflect the higher values of summer peak demands that could occur in the future given past differences between actual and forecasted values of the summer peak. Based on prior vintages of FPL's forecast, there is a 75% probability that the actual value of the summer peak in the future will be equal to or less than its risk-adjusted projections. Conversely, there is a 25% probability, based on past vintages of FPL's forecasted summer peak, that the actual future values of the summer peak will be higher than their risk-adjusted projections. The methodology used to develop the risk-adjusted forecasts was reviewed and accepted by this Commission in Docket No. 130198-EI where the Commission concluded that "we find it is a reasonable approach for controlling the risk of under forecasting future load growth."

Q. Does FPL develop a low band risk-adjusted forecast for summer peak?

A. No. From a capacity perspective, there is no need to develop a low band risk-adjusted forecast. If the base case need is met, by definition any low band risk-adjusted forecast would be met as well.

Q. What is FPL's risk-adjusted forecast for summer peak?

A. As shown in Exhibit RF-6, the summer peak reaches 26,188 MW by 2019 and 28,550 MW by 2024 under the risk-adjusted forecast. The risk-adjusted forecast indicates a cumulative increase in the summer peak of 4,815 MW between 2015 and 2024.

Q. How does the growth shown in FPL's risk-adjusted forecast for summer peak compare with historical growth rates?

A. FPL's risk-adjusted forecast shows an average annual increase of 2.1% in the summer peak demand between 2015 and 2024. These projected growth rates are comparable to the growth rate averaged over the last twenty-four years.

Q. How does FPL's risk-adjusted forecast of the summer peak compare with its base case forecast?

A. As shown in RF-6, the risk-adjusted forecast is 1.9% higher than the base forecast in 2015, the equivalent of 449 MW. By 2024, the delta between the risk-adjusted forecast and base case forecast increases to 6.6% or 1,779 MW.

Q. Are FPL's base case and risk-adjusted summer peak demand forecasts reasonable?

A. Yes. FPL's summer peak demand forecasts are based on reasonable assumptions developed by industry experts, are consistent with historical

experience, and rely on the forecasting methods previously reviewed and accepted by the Commission. The model employed by FPL has a strong goodness of fit and a high degree of statistical significance. FPL's base case forecast is designed to reflect an approximately equal chance of under- or over-forecasting the summer peak, while the risk-adjusted forecast of summer peak is designed to reduce, but not eliminate the probability of under-forecasting the summer peak.

VI. WINTER PEAK DEMAND FORECAST

Q. What is FPL's process to forecast winter peak demand?

A. Like the summer peak model, the winter peak model is also an econometric model. The winter peak model is a per-customer model that includes two weather-related variables: the minimum temperature on the peak day and the square of heating degree hours from the prior day until 9:00 a.m. of the peak day. The model also has an economic term, housing starts per capita. In addition, the model includes a term for peaks occurring during the weekends as these tend to be lower than weekday peaks. The projected winter peak load per customer value is multiplied by the total number of customers to derive a preliminary estimate of the forecasted winter peak.

Q. Are the same line item adjustments made to the summer peak forecast also made to the winter peak forecast?

A. Yes. The winter peak forecast is adjusted for incremental wholesale loads, new load resulting from plug-in electric vehicles, incremental load resulting from the Economic Development Rider and Existing Facility Economic Rider, and the impact of distributed solar generation.

Q. How are codes and standards treated in the winter peak forecast?

A. ITRON developed end-use estimates of the codes and standards impacting the winter peak, similar to the estimates developed for the summer peak. As is the case in the development of the summer peak forecast, codes and standards do not include incremental utility-sponsored DSM programs as these are addressed in the resource planning process. Rather, codes and standards refer to national and state efficiency standards as well as the savings resulting from compact fluorescent and LED bulbs. The historical levels of the winter peak are first increased to remove the historical impact of codes and standards. The winter peak per customer model is based on these adjusted historical levels. The future impact from codes and standards is then treated as a line item adjustment reducing the level of the winter peak forecast.

Q. What is FPL's projected winter peak demand?

A. As shown in Exhibit RF-7, the winter peak is projected to increase at an annual rate of 0.7% between 2015 and 2024. The annual growth in the winter peak between 2015 and 2024 is expected to be 141 MW a year. By 2019, the

winter peak is expected to reach 21,792 MW, an increase of 2,074 MW over the actual January 2015 winter peak of 19,718 MW.

Q. Why are FPL's projected winter peaks low relative to the 2010 winter peak?

A. The 2010 winter peak was the result of the extraordinary period of sustained cold weather experienced in January 2010. The day prior to the peak, January 10, 2010, was the third coldest day on record in the FPL service area based on records going back to 1948. Moreover, the cold weather had already been experienced almost continuously for more than a week prior to the January 2010 peak. Indeed, January 2010 holds the record for having the highest number of consecutive days below 40°F. Due to this period of sustained cold weather, a record peak of 24,346 MW was recorded on January 11, 2010. Projected winter peaks are based on the weather normally experienced on the day of the winter peak, as opposed to the record cold experienced in January 2010. As a result, the projected winter peaks through 2024 are not expected to exceed the 2010 winter peak. However, a peak of this magnitude while unlikely is still a possibility and outlines the risk associated with inadequate generating capacity.

Q. Is FPL's winter peak demand forecast based on an econometric model with a strong goodness of fit and a high degree of statistical significance?

A. Yes. Goodness of fit refers to how closely the predicted values of a model match the actual observed values. FPL's winter peak model has a strong goodness of fit as demonstrated by the model's adjusted R square of 94.6%.

This means that 94.6% of the variability in the winter peak per customer is explained by the model. In addition, the coefficients for all of the variables have the expected sign (+/-) and are statistically significant. This indicates that the variables influencing the winter peak demand have been properly identified and their predicted impact is statistically sound. Additionally, there is no observable pattern in the residuals. Finally, the model has a Durbin-Watson statistic of 1.808 indicating the absence of significant autocorrelation. The absence of significant autocorrelation is a desirable quality in a well-constructed model. Overall, the winter peak model has excellent diagnostic statistics.

Q. Is FPL's winter peak demand reasonable?

A. Yes. FPL's projected winter peak demand is based on reasonable assumptions developed by industry experts, is consistent with historical experience, and relies on the sound and proven forecasting methods previously reviewed and accepted by the Commission. The model employed by FPL has a strong goodness of fit and a high degree of statistical significance. FPL is confident that the relationship that exists between the level of winter peak demand, the weather, customers, and other variables have been properly assessed and numerically quantified.

VII. NET ENERGY FOR LOAD FORECAST

Q. How does FPL forecast energy sales?

A. FPL forecasts energy sales using an econometric model for total net energy for load. Net energy for load is a measure of electric sales that takes into account the MWh FPL generates and the net flow of interchange sales into and out of the FPL system. An econometric model for net energy for load is more reliable than models for billed energy sales because the explanatory variables can be better matched to usage. This is so because the net energy for load data do not have to be attuned to account for billing cycle adjustments, which might distort the real time match between the production and consumption of electricity.

Q. What inputs does the econometric model use to forecast net energy for load?

A. FPL has found that the customer base, weather, the economy, and codes and standards are the principal factors influencing net energy for load. Accordingly, a net energy per customer model has been developed incorporating these variables. The model output is multiplied by the number of customers to derive a preliminary net energy for load forecast.

Q. How are weather conditions incorporated into the net energy per customer model?

A. The weather variables included in the net energy for load per customer model are monthly cooling degree hours using a base of 72°F and monthly winter

heating degree days using a base of 66°F. In addition, a second measure of heating degree days is included using a base of 45°F in order to capture the additional heating load resulting from sustained periods of unusually cold weather as occurred in January 2010.

Q. How are economic conditions incorporated into the net energy per customer model?

A. A composite variable based on Florida real per capita income weighted by the percent of the state's population employed is used as a measure of economic conditions. The impact of energy prices on electricity consumption is measured by the Consumer Price Index for energy prices, as forecasted by IHS Global Insight.

Q. How is the impact from codes and standards incorporated into the net energy per customer model?

A. A variable is included for the impact of codes and standards based on end-use estimates developed by ITRON. This variable is calculated as a net energy per customer impact of codes and standards and is inclusive of ITRON's end-use engineering estimates and any resulting behavioral changes.

Q. Are the same line item adjustments made to the summer and winter peak forecasts also made to the net energy for load forecast?

A. Yes. The net energy for load forecast is adjusted for incremental wholesale loads, new load resulting from plug-in electric vehicles, incremental load resulting from the Economic Development Rider and Existing Facility Economic Rider, and the impact of distributed solar generation.

Q. What is FPL's projected net energy for load?

A. As shown in Exhibit RF-8, FPL is projecting a 1.2% annual growth rate in net energy for load between 2015 and 2024. This projected annual growth in net energy for load reflects the impact of continued economic and population growth. The absolute level of increase in GWh, however, is expected to be lower than that experienced historically. The forecast shows an annual increase in net energy for load of 1,507 GWh between 2015 and 2024, resulting in a cumulative increase of 13,563 GWh.

Q. How does FPL's projected net energy for load compare with the 2014 TYSP?

A. As shown at the top of Exhibit RF-8, the projected long-run percentage growth rates are identical as those of the 2014 TYSP. The current forecast shows a 1.2% annual growth rate in net energy for load between 2015 and 2024, the same as the 2014 TYSP.

Q. Is FPL's net energy for load forecast based on an econometric model with strong goodness of fit and a high degree of statistical significance?

A. Yes. Goodness of fit refers to how closely the predicted values of a model match the actual observed values. FPL's net energy for load model has strong goodness of fit as demonstrated by the model's adjusted R square of 99.5%. This means that 99.5% of the variability in net energy for load per customer is explained by the model. In addition, the coefficients for all the variables have the expected sign (+/-) and are statistically significant. This indicates that the variables influencing net energy for load have been properly identified and

their predicted impact is statistically sound. Additionally, there is no observable pattern in the residuals. Finally, the model has a Durbin-Watson statistic of 2.029 indicating the absence of significant autocorrelation. The absence of significant autocorrelation is a desirable quality in a well-constructed model. Overall, the net energy for load model has excellent diagnostic statistics.

Q. Is FPL's net energy for load forecast consistent with the forecasts for summer and winter peak demands?

A. Yes. All three forecasts rely on the same set of assumptions regarding population, weather, and economic growth and rely on similar modeling techniques. Additionally, similar out-of-model adjustments are made to all three forecasts.

Q. Is FPL's projected net energy for load reasonable?

A. Yes. FPL's projected net energy for load is based on assumptions developed by industry experts, is consistent with historical experience, and relies on the forecasting methods previously reviewed and accepted by the Commission. The model employed by FPL has a strong goodness of fit and high degrees of statistical significance. FPL is confident that the relationship that exists between the level of net energy for load and the economy, weather, customers, codes and standards, and other variables have been properly assessed and numerically quantified.

Q. In your testimony, you compare the 2014 and 2015 TYSP forecasts. Do these forecasts have a consistent methodology and rely on similar drivers?

A. Yes, both forecasts use consistent methodologies and rely on similar drivers. Econometric modeling is the tool used in developing each of these forecasts. Additionally, the same basic drivers obtained from the same independent experts are used as explanatory variables in each of these forecasts. Each TYSP forecast uses the best and most current assumptions available at the time the forecasts were developed, and result in models that have sound model statistics. Each forecast was reasonable for planning purposes at the time the forecasts were employed. As part of FPL's on-going commitment to process improvement, minor modifications are made at times to take advantage of more current data and recent learnings in order to make improvements to the models. However, the primary drivers of future electricity needs and the forecast methodologies remain the same in all forecast vintages.

Q. Does this conclude your direct testimony?

A. Yes.

BY MR. GUYTON:

Q Mr. Feldman, did you also submit with your testimony Exhibits RF-1 through RF-8?

A That's correct.

Q And in your previously-filed errata, did you make any correction to your prefiled exhibits?

A No, I did not.

Q Do you adopt your exhibits, RF-1 through RF-8 as exhibits in your proceeding?

A Yes.

MR. GUYTON: Commissioners, I believe those have been identified as Exhibits 7 through 14 in the Staff's Composite Exhibit list.

CHAIRMAN GRAHAM: Duly noted.

BY MR. GUYTON:

Q Mr. Feldman, would you please summarize your direct testimony for the Commissioners?

A I would be glad to.

Good afternoon, Commissioners. The purpose of my testimony is to address FPL's load forecasts utilized in evaluating the need for the Okeechobee unit. Specifically my testimony supports the company's forecast of customers, peak commands, and energy sales.

Our forecasts show that FPL is expected to experience moderate growth in its customer base through

2019. This moderate growth is consistent with the steady improvement in customer growth that FPL has experienced recently, but less than the long-term trend of growth experienced since 1990.

The forecasted level of customer growth, however, is significantly higher than the depressed levels of customer growth experienced at the height of the 2007 recession.

By 2019, the number of FPL customers is expected to surpass the five million mark. In total, FPL expects to serve 675,000 new customers over the next ten years. This expanding customer base is expected to contribute to higher peak loads.

Accordingly, summer peak demands are expected to grow at a moderate rate as well. Although the percentage growth rates forecasted for the summer peak are somewhat slower than that experienced in past decades, the absolute increase will still be significant.

Between 2014 and 2019, the summer peak is forecasted to increase by more than 2100 megawatts. This equates to a cumulative increase of over 9 percent. This increase is after accounting for more than 2700 megawatts due to the cumulative impact of codes and standards.

Codes and standards include the impact of building and appliance standards. The impacts from FPL's DSM programs are in addition to the impact from codes and standards.

The forecast also projects a 10-percent increase in energy sales between 2014 and 2019, which is a net increase of more than 11,000 gigawatts hours. In developing these forecasts, FPL utilized the most current information available and relied on inputs developed by leading industry experts.

Our forecasts are supported by statistically-verified models using methodologies that have been reviewed and accepted by this Commission in past cases. The forecasts use a consistent set of assumptions and those forecasts are used in multiple planning purposes. The resulting forecasts of customers, peak demands, and energy sales are reasonable.

In summary, FPL's load forecasts call for moderate growth that will over time lead to substantially higher levels of customers, peak demand, and energy sales. These forecasts are based on sound forecasting methodologies and assumptions developed by leading industry experts.

FPL's load forecasts are appropriate for evaluating the need for the Okeechobee unit and should

be approved for use in this proceeding.

This concludes my summary.

MR. GUYTON: We tender Mr. Feldman.

CHAIRMAN GRAHAM: OPC?

MS. CHRISTENSEN: No questions for this witness.

CHAIRMAN GRAHAM: ECOSWF?

MR. MARSHALL: We do have some questions, Mr. Chairman. Thank you.

We have a packet to hand out and we've already put it in order. They are all excerpts of exhibits that are going to be in the record. So, we do not have them numbered.

CHAIRMAN GRAHAM: You have learned very quickly, sir.

MR. MARSHALL: I'm trying.

(Laughter.)

CROSS EXAMINATION

BY MR. MARSHALL:

Q Mr. Feldman, while this is being handed out, let me just tell you what the game plan is --

A Sure.

Q -- here to try to make this go quickly.

What we're going to try to do is compare your Exhibit RF-5 --

A Okay.

Q -- if you could get that out -- with the projected load five years out since the 2005 ten-year site plan.

A Okay.

Q Do you have a pen handy to write down some numbers?

A Yes, I do.

Q Do you have a calculator?

A Yes, I do.

Q Excellent.

CHAIRMAN GRAHAM: There is one right to the right, if you want a bigger one. To the right of the --

THE WITNESS: Oh, okay. Well -- let me do that. Thank you.

BY MR. MARSHALL:

Q Mr. Feldman, your Exhibit RF-5 -- this presents the actual summer peak load in megawatts from 1990 through 2014?

A Correct.

Q All right. I would like to direct your attention to what says it's an excerpt of Exhibit 34. This is actually 40, for the record. All the excerpts we just handed out are six off. So, if it's 34, it's

40. It's because we did it from the draft exhibit list. And I apologize that we weren't able to correct that for today.

Do you have what says it's the Schedule 3.1 from FPL's ten-year site plan 2005 to 2014?

A Yes.

Q If you could, turn to Schedule 3.1, please. In the 2005 ten-year site plan, the total summer peak demand was projected to be 22,884 megawatts in 2009; is that right?

A That's what this shows.

Q And according to your Exhibit RF-5, it was actually 22,351 megawatts.

A That's correct.

Q So, that's an over-forecast of 533 megawatts; is that right?

A That's correct.

Q Can you write down that 533?

A Okay. Let me just point out that that forecast variance is not weather-normalized.

Q Has not been what?

A Has not been weather-normalized. That's an actual peak. It has not been adjusted for actual weather.

Q Okay. I would like to turn your attention

next to what has been marked as excerpt of Exhibit 35, which is actually 41, Schedule 3.1 from FPL's ten-year site plan 2006 to 2015. If you could, turn to Schedule 3.1.

A I'm there.

Q In the 2006 ten-year site plan, total summer peak demand was projected to be 24,375 megawatts in 2010. Is that right? Was it projected to be 24,375 megawatts?

A Yeah. I think I'm better off with this calculator, though. I don't remember how to use this type.

Q Is that right? I'm not sure if I -- if I heard you.

A 24,375 was the forecast for 2010.

Q And actual in 2010 was 22,256 megawatts.

A Correct.

Q That's an over-forecast of 2,119 megawatts.

A That's correct. And again, that's not weather-normalized.

Q All right. Moving on to the next one. So, this would be what says excerpt of Exhibit 36, which is actually Exhibit 42, Schedule 3.1 from FPL's ten-year site plan from 2007 to 2016. If you could, turn to Schedule 3.1.

A I'm there.

Q In the 2007 ten-year site plan, total summer peak demand was projected to be 24,612 megawatts in 2011.

A I'm sorry. Could you repeat that?

Q Sure. In the 2007 ten-year site plan, total summer peak demand was projected to be 24,612 megawatts in 2011.

A That is correct.

Q It was actually 21,619 megawatts.

A That is correct. And again, that's not weather-normalized.

Q And that's an over-forecast of 2,993 megawatts?

A Excuse me. I get a different number. Let me check again.

Q Sure. It's possible I did my math wrong. So, I'm glad -- I'm glad you're checking.

A That was the 2011 peak?

Q Yes.

A 2,993.

Q Thank you.

All right. Moving on to what says it's an excerpt of Exhibit 37, but what it actually Exhibit 43, Schedule 3.1 from FPL's ten-year site plan 2008 to

2017 -- if you could, turn to Schedule 3.1.

A I'm there.

Q In the 2008 ten-year site plan, the total summer peak was projected to be 24,837 megawatts in 2012?

A That's correct.

Q Summer peak was actually 21,440 megawatts.

A Correct. Again, that's an actual, not weather-normalized.

Q That's an over-forecast of 3,397 megawatts.

A Correct.

Q All right. I would like you to turn to what says it's an excerpt of Exhibit 38, what is actually 44, Schedule 3.1 of the FPL ten-year site plan 2009 to 2018. If you could, turn to Schedule 3.1.

A Yeah, I'm there.

Q In the 2009 ten-year site plan, total summer peak demand was projected to be 22,249 megawatts in 2013.

A That's correct.

Q Summer peak was actually 21,576 megawatts.

A That's correct.

Q That's an over-forecast of 673 megawatts.

A Non-weather-normalized, that's correct.

Q But actual, that's an --

A Actual, yes.

Q If you could, turn to the -- I think this is the final one -- excerpt of Exhibit 39, what's actually 45, Schedule 3.1 from FPL's ten-year site plan 2010 to 2019. If you could, turn to Schedule 3.1.

A I'm there.

Q In the 2010 ten-year site plan, total summer peak demand was projected to be 23,575 megawatts in 2014.

A That is correct.

Q Summer peak was actually 22,935 megawatts.

A Correct.

Q And that's an over-forecast of 640 megawatts.

A Non-weather-normalized, that's correct.

Q So, if you average -- I don't know if you were writing those numbers down as we went.

A I believe I wrote them down.

Q If you average all those numbers together, how FPL has done actually compared to its forecast, five years out, since 2005, FPL has over-forecasted summer peak load projections five years out by an average of 1725 megawatts; is that correct?

A Actually, I did not write them all down, but subject to check, I'll agree to that.

MR. MARSHALL: Okay. Thank you.

We have no further questions.

CHAIRMAN GRAHAM: SACE?

MR. WHITLOCK: SACE has no questions for Mr. Feldman. Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: FIPUG?

MR. MOYLE: FIPUG has just a couple of questions for him.

CROSS EXAMINATION

BY MR. MOYLE:

Q Good afternoon, sir.

A Good afternoon.

Q Just a couple of questions. Is it correct generally to say that FPL serves approximately half of the population of Florida?

A Close to half -- a little bit less than half the population. Somewhere around 46, 47 percent.

Q Okay. And in your testimony, you make some weather adjustments; is that right?

A Could you point me to those?

Q Sure. Well, I guess on Page 9, Line 5, you talk about -- you get information from the Weather Company; is that right?

A That's correct.

Q Who is the Weather Company?

A The company is WSI. They are a -- as I say in

my testimony, a division of the Weather Company, one of the leading providers of weather data and information.

Q What kind of information do they give you?

A We get hourly temperature values for a number of weather stations in our service territory. We get humidity, temp- -- humidity, wind speed, dew point, temperature --

Q It's all historical information?

A It's historical and it also includes 15 days of forecasted weather.

Q Do -- do they -- I assume -- are you the person within FPL that kind of keeps eye on the weather and tracks things and develops forecasts?

A Well, I do some of that. We have -- we have somebody who actually tracks the weather and downloads it every day and updates our files. I don't personally do that, but we use that weather data in our forecasts.

Q Okay. And a lot of times, you'll see on the news that this year has been the hottest year on the record, and last year was the hottest year on the record. Do you all make any adjustments based on the fact that in the recent years, we've had some of the hottest years in the record?

A We don't make adjustments based on what we hear on the news or -- or different reports, but we use

20 years of historical data in our forecast. That's normal -- we call that normal weather. So, each year that gets updated for an additional year of data.

Q Okay. So, with respect -- I mean, do you know -- is it factually accurate -- in Florida, has -- in the recent five years, have some of these years been the hottest weather days -- weather years on record? Do you know?

A If the last five years -- actually, the last three years or so have been fairly mild. We have not had extremely hot weather. Prior to that, I believe 2010, when we had the cold weather, we also had one of the hottest years on record.

Q Okay. And you, in response to the questions from the other -- other counsel, you were making real clear that it wasn't weather-normalized. Is what you just described weather-normalization where you take 20 years worth of data and average it?

A Well, what we do is in our models -- our models assume normal weather, which is 20-year -- a 20-year average. And when we weather-normalize, what we do is we substitute those forecasts with actual data. So, that eliminates the effect of weather and we can see what the actual variance of the forecast is.

Q Say that again? I'm sorry.

A Okay. Let me try be to be clearer. We have a model that forecasts, for example, peak demand. Okay. And in that forecast, it has -- it assumes normal weather. Okay. If the weather is not normal, then what we would do is go back to the model, plug in actual weather so that the effect of weather is removed and look at that as a weather-normalized peak.

Q So, when you assume normal weather, how do you -- how do you assume it?

A We take 20 years -- the last 20-year average. So, for example, if we're looking at the maximum temperature, it would be the maximum temperature averaged over the last 20 years.

Q Okay. So, just for the purposes of understanding, if you had ten years where the average temperature was 90 and ten years where the average temperature was a hundred, under your model, the average would be 95?

A Correct.

Q Okay. That's all I have -- thank you -- oh, no, actually, I have one more.

So, on Page 11, I just want to understand this. Line 15, how are weather conditions incorporated into the summer peak per customer model?

A Yes.

Q And it says that the model is calibrated in using historical data on two weather series, the maximum temperature on the day of the summer peak, right?

A Correct.

Q And then the sum of the cooling degree hours two days prior to the peak day. I would think -- and I'm not a weather person, but I would think that when you're looking at the hottest day, that you would look at the cooling hours of that hottest day for the purposes of the model. Why do you look at the cooling hours two days before the hottest day?

A Well, as it turns out, what drives the summer peak is how hot it is on that day of the summer peak and what we call a heat up -- a heat buildup. And we found that we get the best model statistics, the best forecasts if we were to use the cooling degree hours two days prior to the peak.

So, you've kind of got two days prior to the peak, through the peak where the maximum temperature occurred. And that is best at explaining the summer peak and forecasting the summer peak.

Q Do you consider the -- the cooling that took place on the day of the hottest peak or two days before that?

A We have tried -- we have tried that. We've

tried multiple combinations of two days before, three days before, the two days summed up before and this gave us the best statistics and the best explanation of the summer peak.

Q Your customers, your residential customers -- they're not turning down the air two days in advance to deal with an expected hot day 48 hours from now, are they?

A Well, no, they are not, but what the summer -- what the two-day buildup does is it creates heat in the house and it builds up to that peak day when you have the hottest temperature and that contributes to the peak.

MR. MOYLE: Thank you.

CHAIRMAN GRAHAM: Staff?

CROSS EXAMINATION

BY MS. AMES:

Q Good afternoon, Mr. Feldman. How are you?

A Good. Good afternoon.

Q That's good to hear.

Mr. Feldman, you state in your direct testimony that FP&L's summer peak demand forecast was adjusted for distributed solar generation; is that correct?

A That's correct.

Q And you clarify in your testimony that distributed solar generation is photovoltaics and, more specifically, rooftop solar, correct?

A That's correct.

Q So, the term "distributed solar generation" is solar generation that is exclusive of FPL's own generation?

A That's correct.

Q FPL's summer peak demand forecast for the year 2019 is reduced by 46 megawatts to account for distributed solar generation or rooftop solar, correct?

A Let me just find that page.

Q Okay. I believe that's Page 16.

A 16. Yes, that's correct. It's reduced by 46 megawatts.

Q Okay. Thank you.

How did FPL prepare its adjustment to its summer peak demand forecast to account for rooftop solar?

A Okay. We -- we begin with actual solar on our system in 2014. And it's divided by residential and commercial. And I believe in 2014, we had 16 megawatts of residential solar and 16 megawatts of commercial solar.

And then we use a forecast by GTM Research,

Greentech Media Research, one of the leading forecasters of solar and renewable energy. I think they've been in business since 2007 producing these forecasts for multiple states, in addition to Florida.

So, we use their forecasts for the state of Florida. And for residential -- if our residential in 2014 accounted for 50 percent of the state, we would hold that constant and take 50 percent of their state forecasts for residential. And we would do the same thing for commercial.

Q And FPL purchases a statewide forecast of installed capacity of distributed generation from Greentech Media, correct?

A That's correct.

Q And in preparing its distributed generation demand adjustment, what year of the installed distributed generation forecast produced by Greentech Media did FPL use?

A I believe it was their forecast produced in the second quarter of 2014.

Q Does FPL's summer peak demand forecast include any adjustment for reductions in demand which may be associated with the Florida constitutional amendment ballot initiative known as Floridians for Solar Choice?

A No, it does not.

Q Could you briefly explain why FPL's summer peak demand does not include any adjustments for this ballot initiative?

A Well, yeah, there are a number of reasons why we don't include it. First of all, Greentech Media Research does not include it because it's not a legislation in place already. And that's what they include in their forecasts.

The other reason is, as of 2014, we have about 3200 rooftop solar systems in our system. And actually, by 2019, it's not going to be significantly different with or without that initiative. So, for multiple reasons, we haven't included that.

Once it were to get approved, if it were to get approved, we would, then, include it.

Q Does FPL's distributed solar generation adjustment to its summer peak demand forecast take into account the termination of FPL's solar PV pilot program, which was approved by the Commission in 2014?

A In that it affects the actual 2014 solar on our system, then it would be taken into account. Again, beyond 2014, it's Greentech Media's forecast that drives our PV forecast.

Q Okay. Mr. Feldman, does FPL use statewide population growth estimates from the Office of Economic

and Demographic Research, or EDR, in its forecasts of customer growth?

A Yes, we do.

Q And Florida population growth has historically been the most significant variable in projecting the number of customers in FPL's service territory, correct?

A Absolutely. That's correct.

Q Has FPL considered the possibility of using historical county population data specific to FPL's service territory rather than historical statewide data?

A We have not considered that. And there are a number of reasons why we haven't considered that. No. 1, our customer forecast has been accurate to within a couple of tenths of a percent over -- since I've been in load forecasting. So, there has not been a need to look at using the county-level data to improve that.

The other reason is the county-level forecast is -- is not as current as the state forecasts. They produce -- EDR will produce a state forecast typically in February and Dec- -- February and October, and also recently in July. The county population numbers are released in April, and they are based off of the previous year's actual population. So, that's the second reason.

The third reason is we don't serve a hundred

percent of very many counties. For example, in Alachua County, we serve, I think, 1 percent. So, it wouldn't -- I don't think it would be appropriate, given that, to use all 35 counties that we serve.

Q Okay. You say that the forecast error rate has been accurate in the past typically, I believe you said, less than 2 percent -- .2 percent?

A Typically, we've had --

Q Correct?

A Typically, yes.

Q How do you calculate that error rate and over what time period would that be calculated?

A Okay. Maybe I misspoke. You're speaking of the customer forecast variance or population?

Q It would be -- I believe it's the customer forecast error rate. Is that --

A Okay. Well, we have -- we track it monthly, the actual FPL customers compared to the forecast, monthly forecast. And then for the year, we'll take an average number of customers for the year divided by the average forecasted customers for the year.

Did that -- did that answer your question?

Q Is that for five years out?

A We do it annually -- yeah, we could -- we have a -- we could do it up to ten years out using the site

plan.

Q Has FPL's total customer forecasts had significant error rates any time in the past ten years for five years out?

A That -- that I don't have. I don't have their information. I was just speaking of one year out, where the forecast is within a couple of tenths of a percent.

MS. AMES: Okay. Staff is going to hand out a document. They are pages from FPL's ten-year site plans that are already exhibits in the record. So, this is just for reference to help everyone.

CHAIRMAN GRAHAM: Okay.

BY MS. AMES:

Q Mr. Feldman, would you please refer to Page 2 of the handout? And this is Schedule 2.3 of the FPL's ten-year site plan. And we'll be looking at Column 21.

A Okay. I'm there.

Q Okay. And the customer forecast for 2012 is -- it would be 4,880,891 customers, correct?

A That's correct.

Q Okay. And then if you would please look at Page 4, which is FPL's -- or Schedule 2.3 from FPL's 2015 ten-year site plan. And then Column 1 -- Column 21, the actual number of customers is 4,576,449, correct?

A I'm sorry. Could you repeat that?

Q Sure. I'm on Page --

A The last page?

Q Yes, the last page.

A Okay.

Q And it is Column 21.

A Okay.

Q And that would be the -- that's the actual number of customers in 2012.

A Four seven zero eight eight two nine?

Q I'm sorry. For 2012, I believe it's 4,576,449.

A I apologize, that's correct.

Q No, you're fine.

So, comparing the actuals to its forecast in 2008, the error rate there would have been approximately 6.65 percent --

A Correct.

Q -- correct? So, that -- okay. Thank you.

A Could I explain that large error?

Q Please.

A Okay. This -- this is a forecast that was done, I believe, in -- is it 2000 -- 2007, before the impact of the recession. And typically, if you look at forecasts that were done prior to the recession and look

at numbers that -- the actuals after the recession, pretty much most of those were over-forecasting because very few people saw the depth and the duration that the recession would have. So, that's the reason for that large forecast variance five years out.

Q Okay. Mr. Feldman, if you could, please look at Page 6 of the handout. And that would be Schedule 2.3 -- or it's Page 3 of the handout. I'm sorry. And it's Schedule 2.3 of FPL's 2011 ten-year site plan.

A Okay.

Q And Column 21 is a forecast for 2014.

A Okay. I'm there.

Q Number of customers would have been 4,742,529, correct?

A Correct.

Q Thank you.

And then, on Page 4 of the handout, which again is Schedule 2.3 of the 2015 ten-year site plan, the actuals for 2014 was the 4,708,829 customers, correct?

A That's correct.

Q And compared to the forecast, that would have been an error rate of, I believe, .72 percent, correct?

A That looks about right.

Q Thank you.

Okay. Mr. Feldman, is FPL's econometric customer forecast model based on causal relationships between the variables and the model such as an increase in the population can be said to cause an increase in the number of customers?

A Yes.

Q So, if the model is based on such a causal relationship, would it be preferable to incorporate into FPL's customer forecast model the population specific to FPL's service territory rather than population that includes both the service territory and the population of large geography areas not contained in the service territory?

A Well, again, the reasons that we don't look at the county level, in part, is those projections aren't as timely as the state forecasts. And I believe -- I haven't done this, but if you were to include only the counties that FPL serves -- No. 1, we don't serve a hundred percent of very many counties, but I think the relationship would still hold because you would just have a smaller coefficient on the population variable.

So, for example, if we used only the 35 counties, it would take a lower increase in population for an increase in customers. If you look at the 35

counties we serve, the county continual growth rate versus the state -- I believe they were both growing at 1.3 percent over -- I think it was the ten-year horizon.

So, I don't -- if we were to do that at the county level, I'm not sure we would get significantly different results, but again, we haven't done that.

MS. AMES: Thank you.

Staff has no further questions.

CHAIRMAN GRAHAM: Commissioners?

Redirect?

REDIRECT EXAMINATION

BY MR. GUYTON:

Q Mr. Feldman, you were asked by counsel for ECOSWF about a five-year variance between actual and ten-year site plan forecasts. Do you recall that line of questioning.

A Yes, I do.

Q And you were asked about the ten-year site plans for the years 2005 through 2010, correct?

A Correct.

Q All right. Have you -- has the company taken a look at your five-year forecast variance for earlier ten-year site plans prior to 2005?

A Yes, we have.

Q Okay. And for the years prior to 2005, what

was your five-year forecast variance, as you recall?

A Well, over the last 27 ten-year site plans, we've actually under-forecasted by 1.5 percent. With the recession, we were typically over-forecasting and the last three site plans our forecast variance is .1 -- negative .1 percent.

Q So, that's a negative point -- what did you say, 1.1?

A It's negative .1 percent for the last three ten-year site plans, looking one, two, and three years out.

Q Okay. And as a load forecaster, which period of time would you look to in terms of evaluating the accuracy and appropriateness of your model? The 27- or 25-year period, the last three years, or this select period, 2005 through '22?

A I think it would be more appropriate to look at the more recent history. Again, 20 -- 27-year history includes periods of over-forecasting and periods of under-forecasting. With the recession, we were typically over-forecasting. In 2009, we dramatically reduced our peak forecast in response to what was happening in the economy.

Since then, the forecast variances have been lower. And we're seeing positive as well as negative

forecast variances. During those recessionary years, we were typically over-forecasting consistently.

So, again, as a good forecast, you want to be over or -- you want a 50/50 chance of over- or under-forecasting, and the variance we've seen in the last three site plans, we have over- and under-forecasting years.

Q And the net of that is .1 percent?

A Negative .1 percent.

Q Right. You were asked by staff counsel about FPL's solar PV pilot project and whether or not it was captured in the load forecast.

A That's correct.

Q Do you recall that?

A Yes.

Q I believe you testified it's not captured in the load forecast. Do you know if it's captured in Dr. Sim's compilation of DSM in his resource analysis? And if you don't know, fine?

A No, I don't -- I don't know.

Q Okay. All right. You were also asked about staff's question about the constitutional ballot amendment. Do you recall that part?

A Yes.

Q And you gave two reasons as to why it was not

captured in your forecast -- and correct me if I'm misstating it -- but first was that it's not yet law, so it wouldn't be captured by Greentech.

A Correct.

Q And the second one was that it was not likely to impact the 2019 forecasted load, correct?

A Correct.

Q Would you explain that a little bit; that it's not likely to impact the 2019 forecasted load?

A Sure. As of 2014, we have 3200 customers with rooftop solar. And in only four years, it's unlikely that would be significantly more rooftop solar, even with the initiative. I mean, there would be more with the initiative, but likely not significantly by only the year 2019.

Q Are you suggesting there would be a ramp-up?

A Yes.

Q You were also asked about the error rate for customers. And you were asked about asked about two different ten-year site plan forecasts. And your answer to the first one was that you missed consumers somewhat on the -- on the forecast that didn't fully anticipate the recession and its impact. Did I -- do I recall that correctly?

A Yes, that's correct.

Q Then you were asked about the variance rate for the 2011 ten-year forecast?

A 2011 -- yes.

Q Yes. And what accounts for that variance rate, which was markedly lower, as I recall?

A This is a forecast that was done after the realization of the impact of the recession and after -- after the forecast had been significantly reduced. So, the forecast variances were much lower.

Q Okay.

A And have become lower since.

Q And is that fairly true of all your load forecasts; that since the recession, net energy for load, peak load, and customers have all declined from forecasts prior to the recession?

A The forecast variances have all declined, yes.

Q And the absolute levels of the forecasts have declined as well, correct?

A That's correct.

MR. GUYTON: That's all we have. Thank you.

MS. AMES: Chairman --

CHAIRMAN GRAHAM: Okay.

MS. AMES: Sorry. Staff would just like to clarify that the excerpts we referred to from the ten-year site plans are already marked as hearing

Exhibits 43, 46, and 50. Just to be clear. It wasn't anything new.

CHAIRMAN GRAHAM: Okay. Exhibits?

MR. GUYTON: Florida Power & Light moves Exhibit 7 through 14.

CHAIRMAN GRAHAM: Seven, eight, nine, 10, 11, 12, 13, and 14. Seeing no objections.

(Exhibit Nos. 7 through 14 admitted into the record in Volume 1.)

CHAIRMAN GRAHAM: Any other exhibits? I don't think so.

Sir, thank you for your testimony.

Florida Power & Light's next witness, please.

MR. GUYTON: We would like to call Jacquelyn Kingston. But if I might ask that we take a very short comfort break?

CHAIRMAN GRAHAM: We'll give you about three to five minutes.

MR. GUYTON: That's all I need. Thank you.

(Brief recess from 3:48 p.m. to 3:51 p.m.)

CHAIRMAN GRAHAM: Florida Power and Light, your witness.

DIRECT EXAMINATION

BY MR. GUYTON:

Q Ms. Kingston, have you previously been sworn?

A Yes, I have.

Q Please state your name and business address.

A Jacquelyn Kingston, 700 Universe Boulevard, Juno Beach, Florida 33408.

Q And Ms. Kingston, who is your employer?

A Florida Power & Light Company.

Q What is your position with Florida Power & Light Company?

A I'm a manager of project development for fossil generation.

Q And did you file as part of FPL's direct case direct testimony consisting of 23 pages?

A Yes, I did.

Q Did you also file an errata sheet for your direct testimony.

A Yes.

Q And if I were to ask you the same questions as appear in your prefiled direct testimony, would your answers be the same as corrected by your errata?

A Yes, they would be.

MR. GUYTON: Mr. Chairman, we ask that Ms. Kingston's direct testimony as corrected by errata be inserted into the record.

CHAIRMAN GRAHAM: We will insert Ms. Kingston's direct testimony as corrected into

the record as though read.

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

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for determination of need for Okeechobee Clean Energy Center Unit 1, by Florida Power & Light Company	DOCKET NO. 150196-EI FILED: November 20, 2015

ERRATA SHEET OF JACQUELYN K. KINGSTON

September 3, 2015 Direct Testimony

PAGE #	LINE #	CORRECTION
15	4	change “96.7%” to “95.5%”
15	5	change “1.1%” to “1.0%”
15	6	change “2.2%” to 3.5”
15	15	change “96.7%” to “95.5%”

September 3, 2015 Exhibits

EXHIBIT #	LINE #	CORRECTION
JKK-8	n/a	Planned Outage Factor change “2.2%” to “3.5%”
JKK-8	n/a	Forced Outage Factor change “1.1%” to “1.0%”
JKK-8	n/a	Equivalent Availability Factor change “96.7%” to “95.5%”

I. INTRODUCTION

Q. Please state your name and business address.

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

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

A. I am employed by Florida Power & Light Company (FPL or the Company) as a Manager of Project Development for fossil generation, including the proposed Okeechobee Clean Energy Center Unit 1 (OCEC Unit 1 or the Project).

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

A. I manage the development of new power generation projects. I am responsible for overseeing the activities of the project team that collectively make the project successful, including early stage due diligence, permitting, and engineering. Ultimately, my goal is to ensure that the development project is transitioned to construction on schedule to support the required commercial operation date. I have overall responsibility for the development of OCEC Unit 1.

Q. Please describe your education and professional experience.

A. I received a Bachelor of Science in Biological Sciences from Florida Institute of Technology in 2004 and a Master of Science from Florida Atlantic University in 2006. Additionally, I am a certified Project Management Institute (PMI) Project Management Professional (PMP). PMI's PMP

credential is the most important industry-recognized certification for project managers. Globally recognized and demanded, the PMP demonstrates that one has the experience, education, and competency to lead and direct projects.

Throughout my nine year career with FPL, I have been involved in the development, permitting, and construction of multiple fossil power plants. In addition to the development of OCEC Unit 1, I have been responsible for the permitting of three (3) combined cycle (CC) projects, construction compliance (ensuring projects were constructed in accordance with environmental permits and applicable regulations) for two (2) CC projects, and development of two (2) gas turbine peaker replacement projects (replacement of gas turbines with combustion turbines (CTs) for peaking capacity), totaling over 5,200 megawatts (MW) of electrical generating capacity. These projects include FPL's Cape Canaveral Next Generation Clean Energy Center, Riviera Beach Next Generation Clean Energy Center, West County Energy Center Unit 3, Lauderdale Gas Turbine Power Park, and Ft. Myers Gas Turbine Power Park.

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

engineering.

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

Q. What is the purpose of your testimony?

A. The purpose of my direct testimony is three-fold. First, I discuss FPL's experience building and operating CC generating units. Second, I describe the proposed Project in detail, including a description of the site, the technology, engineering design parameters, operating characteristics, and overall project cost and schedule. I will demonstrate that the performance standards assumed for the OCEC Unit 1 are both reasonable and achievable. Third, I address the consequences if a determination of need for the OCEC Unit 1 was delayed.

Q. Please summarize your testimony.

A. FPL has performed an extensive assessment of what generating option is the best to meet its projected 2019 resource need. FPL witness Sim addresses how FPL determined its resource need and the multiple analyses performed by his department supporting the choice of a self-build generating alternative. Ultimately, FPL chose the best, most cost-effective generating technology and site for FPL's customers. The OCEC Unit 1 is FPL's best alternative to meet its need for maintaining system reliability and integrity and the need to provide adequate electricity at a reasonable cost.

FPL plans to construct and operate OCEC Unit 1, a 3-on-1 (3x1) CC unit at a greenfield site in Okeechobee County. The Project will consist of three advanced technology CTs, three heat recovery steam generators (HRSGs), and one steam turbine/electric generator. Natural gas will be the primary fuel for OCEC Unit 1. Ultra low-sulfur distillate (light fuel oil) will be used as a backup fuel for the CTs. The cooling water source for the Project will be groundwater from the Floridan Aquifer. The surficial aquifer will be used for potable and process water. By using natural gas as the primary fuel for OCEC Unit 1 and technology that is recognized by the Florida Department of Environmental Protection (FDEP) as the Best Available Control Technology (BACT) for minimizing air emissions, OCEC Unit 1 is projected to be the most fuel-efficient CC unit in the state of Florida and among the cleanest and most efficient fossil fuel-fired, electric-power generating units in the world.

OCEC Unit 1 is expected to have an in-service date of June 2019. The projected cost of the OCEC Unit 1 is $1,196.0 million. The Project is estimated to generate approximately $238.8 million in tax revenue from 2020 to 2049. The project will also result in a number of significant public welfare benefits, including the creation of an estimated 650 direct jobs at its peak during construction.

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

A delay in the determination of need for the OCEC Unit 1 would result in a delay in the power plant certification for OCEC Unit 1. Such a delay would defer the operation of this valuable asset that will maintain system reliability and provide an efficient reliable generating unit; ensuring customers have adequate electricity at a reasonable cost. In addition, it would result in a higher system heat rate and lower customer fuel savings than customers would enjoy if the unit were constructed on time.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibits JKK-1 through JKK-12. The titles to each exhibit are shown below, and they are all attached to my direct testimony.

Exhibit JKK-1	Typical 3x1 Combined Cycle Unit Schematic
Exhibit JKK-2	FPL Combined Cycle Power Plants
Exhibit JKK-3	History of FPL Combined Cycle Capital Construction Costs
Exhibit JKK-4	OCEC Unit 1 Site Regional Map
Exhibit JKK-5	OCEC Unit 1 Site Property Delineation
Exhibit JKK-6	Aerial Photo of Okeechobee FPL Property (January 2015)
Exhibit JKK-7	OCEC Unit 1 Proposed Site Plan Rendering

Exhibit JKK-8	OCEC Unit 1 Plant Specifications
Exhibit JKK-9	OCEC Unit 1 Water Balance
Exhibit JKK-10	Florida Reliability Coordinating Council Letter
Exhibit JKK-11	OCEC Unit 1 Expected Construction Schedule
Exhibit JKK-12	OCEC Unit 1 Plant Construction Cost Components

II. OVERVIEW OF COMBINED CYCLE TECHNOLOGY

A. Description of Technology

Q. Please describe the combined cycle technology that will be used for the OCEC Unit 1 Project.

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

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

Each CT/HRSG combination is called a "train." The number of CT/HRSG trains used establishes the general size of the STG. For the proposed OCEC Unit 1 Project, three CT/HRSG trains will be connected to one STG, giving rise to the characterization of the Project as a 3x1 CC unit.

B. Operating Advantages

Q. What level of operating efficiency is anticipated for the OCEC Unit 1 Project?

A. In general, modern CC plants can be expected to achieve a fuel to electrical energy conversion rate (heat rate) of less than 7,000 British thermal units (Btu) per kilowatt hour (kWh), as opposed to values in the 10,000 Btu/kWh range for conventional steam-electric generating units or typical simple cycle units. FPL anticipates that OCEC Unit 1 will have an average base heat rate as low as 6,304 Btu/kWh (based on an average ambient air temperature of 75°F) over the life of this Project. The proposed 3x1 CC unit will therefore produce the same amount of energy as a similarly sized conventional steam plant using approximately 35% less fuel. The addition of this highly efficient unit to the FPL system is projected to improve the overall system heat rate.

The lower the heat rate, the more efficient the generating fleet is and the greater the fuel savings are for the benefit of FPL's customers.

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

A. Yes. An advantage of the multi-train CC arrangement is that it allows for greater flexibility in matching unit output to generation requirements over time. This is possible because each of the CTs and the steam turbine can be independently controlled, allowing the unit greater flexibility in matching the load requirements at any given point in time.

C. FPL's History of Building and Operating Combined Cycle Plants

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

A. Yes. FPL has extensive experience in building CC plants on time and within budget. FPL's first CC plant (Putnam Units 1 & 2) went into service in 1976 and was recently retired at the end of 2014 after 38 years of operations. More recently, FPL successfully constructed three new CC "greenfield" units at its West County Energy Center and two new CC modernizations at its Cape Canaveral and Riviera Beach sites. Currently, FPL is constructing a CC modernization project at its Port Everglades site.

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

A. Currently, there are 15 CC units in operation in FPL's service territory as shown in Exhibit JKK-2. These 15 existing CC units comprise 14,817 MW (net summer) of capacity in service, with an additional 1,237 MW currently under construction, for a total of over 16,000 MW.

In addition to its CC operating experience, FPL has extensive experience operating simple-cycle CTs, which comprise the front end of the CC train (*i.e.*, no HRSG or STG). FPL has operated CTs as simple-cycle units at its Fort Myers and Martin plant sites in Florida.

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

A. FPL has consistently demonstrated its ability to cost-effectively construct reliable and efficient plants that save money for customers over the project lives. Most recently, in December 2014, *Power Engineering* and *Renewable Energy World* magazines honored FPL's Riviera Beach Clean Energy Center with its "Project of the Year" award in the "Best Gas-Fired Project" category. The "Project of the Year" award recognizes the world's best power projects, honoring excellence in design, construction, and operation of power generation facilities. Examples of other FPL CC plants that have received similar recognitions include Martin Units 3 and 4, Sanford Units 4 and 5, Fort Myers Unit 2, Turkey Point Unit 5, and West County Energy Center Units 1, 2, and 3.

FPL's fossil fleet performance has consistently exceeded fossil industry performance averages and is frequently ranked "Top Decile" or "Best in Class" among FPL's large electric utility fossil fleet peers. Since 1990, as FPL transformed the fossil generating fleet, FPL substantially improved operating performance across key factors integral to generating electricity for

its customers. These performance factor improvements include the reduction of system heat rate, forced outage rate, total non-fuel O&M costs, and air emissions.

With world-class operational skills, FPL maximizes the value of its existing and new assets to its customers. FPL's employment of operational best practices has resulted in its industry leading positions. FPL's fossil-fueled fleet has achieved an Equivalent Availability Factor (EAF) of 92.7% averaged over the past 10 years. This compares very favorably to the U.S. industry average EAF of 87.1%. EAF represents plant availability and is a measure of the percent capacity available from a generating unit to provide electricity throughout the year, regardless of whether the generating unit is actually called upon to operate.

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

A. FPL uses technology to optimize plant operations, gain process efficiencies, and leverage the deployment of technical skills as demand for services increases. For example, the Company's Fleet Performance and Diagnostics Center (FPDC) in Juno Beach, Florida, provides FPL with the capability to monitor every plant in its system. The FPDC uses advanced technology to troubleshoot problems when they happen and often prevent them before they occur. FPL can compare the performance of like components on similar generating units, determine how it can make improvements, and often avoid

problems, ultimately saving customers money. Live video links can be established between the FPDC and plant control rooms to immediately discuss challenges that may arise, thus enabling FPL to prevent, mitigate, and/or solve problems.

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

A. FPL has a proven track record of constructing CC power plants within budget. Since 2005, FPL has constructed eight CC units and all were completed on or below budget. Exhibit JKK-3 lists the CC projects constructed by FPL and the approved and actual construction costs.

III. OCEC UNIT 1 COMBINED CYCLE PROJECT

A. Site Description

Q. Please describe the OCEC Unit 1 Plant site.

A. OCEC Unit 1 will be located on 2,842 acres of FPL-owned land in northeast Okeechobee County (Exhibits JKK-4 and JKK-5). The site is approximately 8 miles southeast of Yeehaw Junction, 27 miles northeast of the city of Okeechobee, and approximately 24 miles west of the city of Vero Beach. The site, which was acquired in 2011, is predominately used for agriculture production (cattle and citrus). Exhibit JKK-6 includes an aerial photo of the site taken in January 2015. Once operational, OCEC Unit 1 will comprise approximately 250 acres of the site. The remainder of the site is being

evaluated as a potential future location for up to approximately 200 MW nameplate of large-scale photovoltaic solar generation.

B. Project Description

Q. Please describe the proposed OCEC Unit 1 project in more detail.

A. An artist's rendering of OCEC Unit 1 is shown on Exhibit JKK-7. Unit 1 will be a 3x1 CC unit consisting of three nominal 350-MW GE 7HA.02 CTs, with dry low-NO_x combustors, peak-firing, inlet cooling, wet compression, and three HRSGs, which will use the waste heat from the CTs to produce steam to be utilized in a new steam turbine generator. The HRSG stacks will be approximately 149 feet tall.

Each CT is projected to utilize inlet air evaporative cooling. Evaporative coolers achieve cooling using water evaporation to remove heat from the inlet air. This increases the density of air flowing through the turbine, allowing additional power to be produced during periods of high ambient air temperature. The evaporative coolers normally would be utilized when the ambient air temperature is greater than 60°F. The base unit capacity at 95°F is 1,511 MW. For additional power production at peak periods, peak firing and wet compression, which sprays additional water in a fine mist into the gas turbine inlet air, can be turned on. Peak firing and wet compression can be utilized during peak demand periods to add about 111 MW of capacity to the unit, totaling 1,622 MW.

With its anticipated average heat rate as low as 6,304 Btu/kWh during baseload operation (based on an average ambient air temperature of 75°F), OCEC Unit 1 is projected to be the most fuel-efficient CC unit in the state of Florida. The unit will have an estimated EAF of approximately 96.7%, an estimated average forced outage factor of approximately 1.1%, and a planned outage factor of 2.2%. Plant specifications are shown in Exhibit JKK-8.

With OCEC Unit 1, FPL's system reliability and integrity will be maintained and even improved. Given its very low heat rate, the unit will improve FPL's overall system heat rate. This improvement in system heat rate means that the OCEC Unit 1 will be dispatched ahead of other efficient FPL combined cycle units, resulting in significant fuel savings to FPL's customers.

The OCEC Unit 1's EAF will also improve system reliability, making the unit available for dispatch up to 96.7% of the time. Having such an efficient unit available improves FPL system's operational reliability.

The performance level of CC plants continues to evolve and advance in the marketplace. As a result, FPL will continue to evaluate enhanced designs and models for the OCEC Unit 1's CTs, HRSGs, and steam turbine (collectively, the "Power Train Components") and other related equipment necessary for operation of the unit, as a part of FPL's continuing efforts to determine

whether an enhanced design or model would provide even greater projected benefits to FPL's customers.

For example, FPL is continuing to evaluate the optimal steam cycle equipment configuration, which could have the potential for additional capital costs while at the same time providing overall system CPVRR cost savings benefits to FPL's customers, based on increased output and a lower heat rate resulting from the optimization. Similarly, if an enhanced design or model emerges as a result of continued evaluation, FPL will optimize the condenser and cooling towers needed for OCEC Unit 1 as a part of FPL's continuing efforts to provide the greatest benefits to its customers.

In the event that FPL selects an enhanced design or model for the Power Train Components and other related equipment other than the analyzed technology subsequent to the Commission having granted a determination of need for OCEC Unit 1, FPL would make an informational filing to the Commission, as discussed in the direct testimony of FPL witness Sim.

Q. Please describe the potential air emissions of the OCEC Unit 1 project.

A. The use of natural gas as a primary fuel source, with light fuel oil as a back-up fuel, combined with combustion control technologies, will minimize air emissions from the unit and ensure compliance with applicable emission limiting standards. Maximum total air quality impacts for OCEC Unit 1 are predicted to be below and in compliance with the National Ambient Air

Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments. The NAAQS are standards required by the Clean Air Act and established by the Environmental Protection Agency (EPA) that protect the public health of the most sensitive populations as well as public welfare. The PSD increments are levels of air pollutants established by the Clean Air Act and EPA that make sure "clean air remains clean." The low air quality impacts, well below these standards, are achieved by meeting BACT for regulated air pollutants that include particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), carbon dioxide (CO_2), volatile organic compounds (VOCs), and sulfuric acid mist. The use of natural gas and light fuel oil (with maximum sulfur content of 0.0015%) minimizes emissions of SO_2, PM, and other fuel-bound contaminants. Combustion controls similarly minimize the formation of NO_2, and the combustor design will limit the formation of CO and VOCs. When firing natural gas, NO_2 emissions will be controlled using dry-low NO_x combustion technology and Selective Catalytic Reduction (SCR). Water injection and SCR will be used to reduce NO_2 emissions during operations when using light fuel oil as back-up fuel. This emission control design is accepted by the FDEP and EPA as BACT for air emissions.

The design of OCEC Unit 1 will incorporate features that are projected to make it one of the most efficient and cleanest fossil generating units in Florida, if not the world. The use of the latest combustion turbine and

combined cycle technology reduces the emissions of CO_2 by about 35% relative to conventional steam electric generating units. This will result in very low emissions of CO_2 for the amount of electric generation OCEC Unit 1 can produce.

Q. What types of fuel will OCEC Unit 1 be capable of burning?

A. The Project will use natural gas as the primary fuel source. As discussed in the testimony of FPL witness Stubblefield, a new pipeline lateral will be required to be constructed to transport natural gas to the site. OCEC Unit 1 also will be capable of using light fuel oil, more specifically a distillate fuel oil with a maximum sulfur content of 0.0015%, as a back-up fuel. The site design allows for operation at full capacity for seventy-two (72) hours of continuous operation using back-up fuel.

C. Water Supply - Access and Availability

Q. What are the water requirements for the OCEC Unit 1 project, and how will they be met?

A. The potential water supply source is groundwater from the surficial aquifer system and the Floridan Aquifer system. FPL is requesting authorization for a daily average withdrawal from the Floridan Aquifer of 9 million gallons per day (MGD) and a maximum daily allocation of 11 MGD. FPL is also requesting a daily allocation of 0.08 MGD from the surficial aquifer. Primary water uses will be for condenser cooling, combustion turbine evaporative coolers, steam cycle makeup, and service water. Water will also be used on a

limited basis for NO_x control when using light fuel oil. Condenser cooling for the steam cycle portion will be accomplished using mechanical draft cooling towers. The overall water balance for OCEC Unit 1 is shown on Exhibit JKK-9.

D. Electric Transmission Interconnection Facilities

Q. How will the OCEC Unit 1 project be interconnected to FPL's transmission network?

A. OCEC Unit 1 will connect to a new 500 kV transmission switchyard on the OCEC property. Transmission lines from the existing Martin-Poinsett 500 kV line will be looped into the new switchyard to interconnect the facilities to the FPL transmission grid.

The Florida Reliability Coordinating Council (FRCC) has reviewed FPL's proposed interconnection and integration plan for the Project and determined that it will be reliable, adequate, and will not adversely impact the reliability of the FRCC transmission system. Please see Exhibit JKK-10.

E. Proposed Construction Schedule

Q. What is the proposed construction schedule for the OCEC Unit 1?

A. A summary of estimated construction milestone dates is shown on Exhibit JKK-11. FPL will commence construction upon receipt of the necessary regulatory approvals, which FPL anticipates will occur by December 2016.

Construction will require approximately 27 months, and the Project is expected to start commercial operations in June 2019.

Q. What is the current status of the certifications and permits required to begin construction of OCEC Unit 1?

A. Several local, state, and federal approvals are required prior to start of construction for OCEC Unit 1. FPL intends to file for FDEP site certification under the Florida Electrical Power Plant Siting Act in September 2015. Concurrently, FPL will file for a Prevention of Signification Deterioration air construction permit. In August 2015, FPL filed a U.S. Army Corps of Engineers (USACE) Section 404, Clean Water Act, Dredge & Fill Permit application for impacts to onsite wetlands. The USACE application is currently under agency review. In April 2015, FPL was issued a permit from FDEP to construct an exploratory well to investigate the geology and hydrogeology of the site, and the feasibility of disposal of non-hazardous fluids via deep well injection. No local rezoning with Okeechobee County is required for this Project.

F. Estimated Construction Costs

Q. What does FPL estimate that the OCEC Unit 1 will cost?

A. A summary of estimated costs is shown on Exhibit JKK-12. FPL estimates that the total cost will be $1,196.0 million. Principal components include the power block and generator transformers at $1,031.5 million, transmission interconnection and integration at $52.0 million, and Allowance for Funds

Used During Construction (AFUDC) at $112.5 million. FPL will annually report to the Florida Public Service Commission's (Commission or PSC) Director of Economic Regulation updates to the budgeted and actual cost of OCEC Unit 1, compared to the estimated total in-service cost.

Q. Are these estimated costs for OCEC Unit 1 the same as the estimated costs published in the 2015 Request for Proposals for 2019 Capacity Needs?

A. Yes.

G. Other Benefits

Q. What other benefits are associated with OCEC Unit 1?

A. Several additional benefits come to mind. First, the Project will result in additional property tax revenues to governmental agencies of some $238.8 million over the projected life of the unit. This will be a significant benefit to the local economy. Second, during construction of the unit there will be, at the peak of construction, some 650 additional jobs brought into the local economy. Third, there will be approximately 30 permanent positions at the OCEC Unit 1. Fourth, beyond the significant payroll and tax impacts on the local economy, there will be indirect economic effects on the local economy through additional demands for goods and services. These are significant economic benefits of the Project beyond the fuel savings and system reliability improvements.

IV. CONSEQUENCES OF DELAY

Q. What consequences with respect to licensing and construction of OCEC Unit 1 would be likely if the need determination for the project was delayed?

A. FPL has set an in-service date of June 2019 for OCEC Unit 1. FPL anticipates commencing site work following the receipt of all necessary approvals, anticipated by December 2016, which includes Site Certification from the FDEP. If the need determination for the project was delayed, this would delay issuance of the PSC Need Determination Agency Report which is required as part of the FDEP Site Certification process. A delayed issuance of an Agency Report suspends the Site Certification process from moving forward until the report is received which could have a trickle-down effect and result in a delayed FDEP Site Certification and ultimately a delayed start of construction resulting in an in-service date later than when the unit is needed. Such a delay would defer the operation of this valuable asset necessary to maintain system reliability and provide an efficient reliable generating unit that will contribute to ensuring customers have adequate electricity at a reasonable cost. In addition, it would result in a higher system heat rate and lower customer fuel savings than customers would enjoy if the unit were constructed on time.

V. CONCLUSION

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

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

Q. Does this conclude your testimony?

A. Yes.

BY MR. GUYTON:

Q Mrs. Kingston, did you also submit with your testimony Exhibits JKK-1 through JKK-12?

A Yes.

Q And in your previously-filed errata, did you make any corrections to your prefiled exhibits?

A Yes, I did.

Q And as corrected by your errata, do you adopt Exhibits JKK-1 through 12 as your exhibits in this proceeding?

A Yes.

MR. GUYTON: Commissioners, those exhibits have been identified as Exhibits 15 through 27 in the staff's composite list.

CHAIRMAN GRAHAM: Duly noted.

(Transcript continues in sequence in Volume 3.)

CERTIFICATE OF REPORTER

STATE OF FLORIDA)
COUNTY OF LEON)

I, ANDREA KOMARIDIS, Court Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 2nd day of December, 2015.

ANDREA KOMARIDIS
NOTARY PUBLIC
COMMISSION #EE866180
EXPIRES FEBRUARY 09, 2017