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 4

(Pages 343 through 598)

PROCEEDINGS:	HEARING
COMMISSIONERS PARTICIPATING:	CHAIRMAN ART GRAHAM COMMISSIONER LISA POLAK EDGAR COMMISSIONER RONALD A. BRISÉ COMMISSIONER JULIE I. BROWN COMMISSIONER JIMMY PATRONIS
DATE:	Wednesday, December 2, 2015
TIME:	Commenced at 9:40 a.m. Concluded at 12:30 p.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	LINDA BOLES, CRR, RPR Official FPSC Reporter (850) 413-6734
APPEARANCES:	(As heretofore noted.)

I N D E X

WITNESSES

EXHIBITS

NUMBER:		ID.	ADMTD.
78	SACE/Wilson Blog	435	440
79	Rebuttal Testimony & Exhibits of Roberto R. Denis Docket No. 981890-EU	44	595

P R O C E E D I N G S

(Transcript continues in sequence from Volume 3.)

CHAIRMAN GRAHAM: Good morning, everyone.

(Chorus of good mornings.)

I guess it is after 9:00 -- or 9:30 rather, so I think it's time to get started. Florida Power & Light, I think we have your last direct witness.

MR. COX: Yes. Good morning, Chairman Graham. Florida Power & Light calls its witness Heather Stubblefield.

Whereupon,

HEATHER STUBBLEFIELD

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

EXAMINATION

BY MR. COX:

Q Good morning, Ms. Stubblefield.

A Good morning.

Q Ms. Stubblefield, could you state your name and business address for the record, please?

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

Q And were you sworn in yesterday?

A Yes, I was.

Q Who is your employer?

A Florida Power & Light.

Q And what is your position with Florida Power & Light?

A Manager, Project Development.

Q Did FPL have prefiled in this case your direct testimony consisting of eight pages?

A Yes.

Q Did FPL file errata sheets to your prefiled direct testimony and exhibit dated November 13th, 2015, and November 25th, 2015?

A Yes.

Q If I were to ask you the questions in your direct testimony as corrected by your errata sheets, would your answers be the same?

A Yes, they would.

MR. COX: Chairman Graham, we ask that Witness Stubblefield's testimony and errata sheets be inserted into the record as though read.

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

BY MR. COX:

Q Ms. Stubblefield, did you prefile with your testimony Exhibit HCS-1?

A Yes, I did.

Q Is the information contained in your prefiled exhibit as corrected by your errata sheets true and correct to the best of your knowledge and belief?

A Yes, it is.

MR. COX: Commissioner, Witness Stubblefield's exhibit attached to her testimony as corrected by the errata sheets has been identified as Exhibit 27.

CHAIRMAN GRAHAM: Duly noted.

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 HEATHER C. STUBBLEFIELD

September 3, 2015 Direct Testimony

PAGE #	LINE #	CORRECTION
7	6	Delete "all of those"
7	21	Insert ", in addition to FPL's existing gas transportation capacity," after "capacity"

September 3, 2015 Exhibits

EXHIBIT #	PAGE #	COLUMN #	LINE #	CORRECTION
Exhibit-HCS-1	2	D	7-41	Delete original Column D to remove Sabal Trail from exhibit.

I. INTRODUCTION AND CREDENTIALS

Q. Please state your name and business address.

A. My name is Heather C. Stubblefield. My business address is 700 Universe Boulevard, Juno Beach, Florida 33408.

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

A. I am employed by Florida Power & Light Company (FPL) as Manager of Project Development in the Energy Marketing and Trading (EMT) Business Unit.

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

A. I am responsible for evaluating gas transportation alternatives for FPL's gas-fired generation expansions. This includes evaluating proposals from pipeline companies, negotiating terms and conditions, and executing transportation agreements which are in the best interest of FPL's customers.

Q. Please describe your educational background and professional experience.

A. I graduated from Auburn University with a Bachelor of Arts degree in Business Administration in 1986. I joined Sonat, Inc. (NKA Kinder Morgan, Inc.) in 1988, where I held various positions in Human Resources, Internal Auditing, and the Sonat Marketing Company. In 2003, I joined FPL Group Resources as the Director of Marketing for liquefied natural gas initiatives. In 2005, I transferred to the EMT Business Unit of FPL where my duties include evaluating gas transportation alternatives for FPL's gas-fired generation

expansions. This includes evaluating proposals from pipeline companies, negotiating terms and conditions, and executing gas transportation agreements that are in the best interest of FPL's customers.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibit HCS-1, FPL's November 3, 2014 and October 7, 2013 Fuel Price Forecasts, which is attached to my direct testimony.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present and explain (1) the fossil fuel price forecasts used in the evaluation of FPL's Okeechobee Clean Energy Center Unit 1 (OCEC Unit 1); and (2) the proposed fuel and fuel transportation plan for OCEC Unit 1.

Q. Please summarize your testimony.

A. FPL's fuel price forecasts reflect the projected commodity and transportation costs for fuel oil, natural gas, and coal. The November 2014 Fuel Price Forecast is the same fuel price forecast that was used in FPL's 2015 Ten Year Site Plan (TYSP). In addition, the fuel price forecasts were developed using the same methodology that was presented in my testimony for the Determination of Need filings for West County Energy Center Unit 3 and the modernizations of Cape Canaveral Plant, Riviera Plant, and Port Everglades Plant; therefore, this forecast is reasonable for the evaluation of OCEC Unit 1.

OCEC Unit 1 will burn natural gas as its primary fuel. With the addition of the capacity FPL has contracted for on the Sabal Trail Transmission, LLC (Sabal

Trail) and the Florida Southeast Connection, LLC (FSC) pipelines beginning in 2017 (400,000 million Btu per day (MMBtu/day) increasing to 600,000 MMBtu/day in 2020), FPL will have sufficient natural gas transportation rights to meet the requirements of OCEC Unit 1. Only minor facilities modifications, such as a lateral connecting the OCEC Unit 1 to FSC and metering facilities, will be required to facilitate natural gas deliveries to OCEC Unit 1.

Finally, OCEC Unit 1 will utilize a form of light fuel oil known as ultra-low-sulfur distillate as a backup fuel source in the event of a natural gas supply disruption. Light fuel oil will be stored in sufficient quantities to allow OCEC Unit 1 to operate at full capacity for seventy-two (72) hours of continuous operation and can be resupplied with truck deliveries.

II. FUEL FORECAST

Q. Which fossil fuel price forecasts were used in the evaluation of FPL's proposed OCEC Project?

A. FPL's November 3, 2014 and October 7, 2013 long-term fuel price forecasts were used in the evaluation of OCEC Unit 1 and are provided in Exhibit HCS-1.

Q. What was FPL's methodology for developing the forecasts for fuel oil, natural gas, and coal?

A. For fuel oil and natural gas commodity prices, FPL's forecast applied the following methodology: (1) for the first two years, the methodology uses the forward curve for Henry Hub natural gas, New York Harbor 0.7% sulfur heavy oil, and ultra-low sulfur diesel fuel oil; (2) for the next two years, FPL uses a 50/50 blend of the forward curve and the most current projections from The PIRA Energy Group; (3) for years 5 through 20, FPL uses the annual projections from The PIRA Energy Group; (4) for the period beyond year 20, FPL used the real rate of escalation from the Energy Information Administration. In addition to the development of commodity prices, price forecasts were also prepared for fuel oil transportation and natural gas transportation costs. These transportation costs, when added to the projected commodity prices, resulted in the delivered price forecasts used to evaluate the cost effectiveness of OCEC Unit 1. Coal prices were based on mine-mouth and transportation costs provided by JD Energy, Inc. This methodology is consistent with the approach to fuel forecasting used in previous filings, including FPL's 2015 Ten Year Site Plan.

Q. Please identify the key drivers that affect the future price of fossil fuels.

A. Future fuel oil and natural gas prices, and to a much lesser extent coal prices, are inherently uncertain due to a significant number of unpredictable and uncontrollable drivers that influence the short and long-term prices. These

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

Q. Are FPL's long-term fossil fuel price forecasts reasonable for the evaluation of capacity options such as OCEC Unit 1?

A. Yes. Each of the FPL long-term fossil fuel price forecasts was reasonable for the evaluation of OCEC Unit 1 at the time they were used. All of those FPL fuel price forecasts reflect the projected supply, demand and price for fuel oil, natural gas, and coal, as well as the transportation of these fuels to the existing and proposed sites.

III. FUEL TYPE AND FUEL TRANSPORTATION

Q. What is the primary fuel type that will be utilized in OCEC Unit 1?

A. OCEC Unit 1 will burn natural gas as the primary fuel source.

Q. Does FPL have sufficient gas transportation capacity to serve OCEC Unit 1?

A. Yes. As previously approved by the Florida Public Service Commission in Docket 130198-EI, Order No. PSC-13-0505-PAA-EI, FPL has contracted with Sabal Trail and FSC for incremental gas transportation capacity of 400,000 MMBtu/day beginning May 1, 2017 increasing to 600,000 MMBtu/day beginning May 1, 2020. This capacity is sufficient to meet FPL's system gas requirements including the addition of OCEC Unit 1 in 2019.

Q. Does FPL currently have natural gas delivery to OCEC Unit 1 site?

A. No. Because this is a greenfield site, there is currently no gas transportation service to the site. If OCEC Unit 1 is approved, FPL will work with FSC to construct the necessary facilities, including a lateral and metering equipment, which will be required to effectuate deliveries to OCEC Unit 1.

Q. Has the cost of the additional gas transportation facilities been included in the evaluation of OCEC Unit 1?

A. Yes, FPL has included the estimated cost of these facilities in the evaluation of OCEC Unit 1.

Q. Will OCEC Unit 1 have a backup fuel source in the event of a natural gas supply disruption?

A. Yes. OCEC Unit 1 will be capable of burning light fuel oil in the event of a natural gas supply disruption. Light fuel oil will be trucked to the site and stored on-site in sufficient quantities to allow the site to operate at full capacity for seventy-two (72) hours of continuous operation.

Q. Does this conclude your direct testimony?

A. Yes.

BY MR. COX:

Q Ms. Stubblefield, have you prepared a summary of your testimony?

A Yes, I have.

Q Could you please summarize your testimony for the Commissioners.

A Yes. The purpose of my testimony is to present the fossil fuel price forecast used by FPL in the evaluation of the Okeechobee unit. It's also to explain the fuel transportation plan for Okeechobee.

The proposed plant will burn natural gas as its primary fuel and would utilize fuel oil as a backup fuel source. FPL's fuel price forecast reflects a projected supply, demand, and price for natural gas, fuel oil, and coal, as well as the transportation of these fuels to FPL's existing plants and to the proposed Okeechobee site.

FPL relies on leading industry fuel forecasting experts for the fuel price forecasts; therefore, FPL's fuel price forecasts are reasonable for the evaluation of Okeechobee.

Natural gas will be supplied to the Okeechobee unit via a new pipeline lateral from the Florida Southeast Connection Pipeline. FPL will have sufficient natural gas transportation capacity to meet the

requirements of the Okeechobee unit. This concludes my summary.

MR. COX: Thank you, Ms. Stubblefield.

The witness is tendered for cross-examination.

CHAIRMAN GRAHAM: Thank you. Welcome.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: OPC.

MS. CHRISTENSEN: No questions.

CHAIRMAN GRAHAM: ECOSWF?

MR. MARSHALL: Yes. Thank you.

EXAMINATION

BY MR. MARSHALL:

Q FPL has contracted with Sabal Trail and the Florida Southeast Connection to supply natural gas to FPL.

A That's correct.

Q And that's to the tune of 600 million cubic feet per day in 2020.

A In 2020 -- it's 400,000 MMBtu a day in 2017, increasing to 600 in 2020.

Q And that's a significant amount of the total Sabal Trail capacity.

A It is a significant amount of that capacity.

Q And the proposed plant here is planned to connect with the Florida Southeast Connection.

A That's correct.

Q What is the gas transmission capital cost of that connection?

A Of that lateral?

Q Of that lateral.

A It's around $25 million.

Q FPL is a subsidiary of NextEra Energy.

A That's correct.

Q And NextEra Energy is one of the major investors in the Sabal Trail project.

A Yes, that's correct.

Q And the Florida Southeast Connection is a wholly owned subsidiary of NextEra Energy.

A Yes, it is.

Q You would agree that future natural gas prices are inherently uncertain.

A I would agree with that statement.

Q And this is because of a significant number of unpredictable and uncontrollable drivers that influence the short- and long-term prices of natural gas.

A That's what I've stated in my testimony.

Q And those drivers would include worldwide demand.

A Yes, they would.

Q Production capacity.

A Yes.

Q Economic growth.

A Yes.

Q Environmental legislation.

A Yes.

Q And politics.

A Yes.

MR. MARSHALL: Thank you.

No further questions.

CHAIRMAN GRAHAM: SACE.

MR. WHITLOCK: Good morning, Mr. Chairman. Commissioners.

EXAMINATION

BY MR. WHITLOCK:

Q Ms. Stubblefield, I just have one question for you. If I could direct you to page 7 of your prefiled testimony, please, ma'am. And counsel for ECOSWF just asked you a question along these same lines about the fact that FPL has already contracted with Sabal Trail and the Florida Southeast Connection for the gas -- incremental gas transportation capacity of 400,000 cubic feet beginning May 1st, 2317, and increasing to 600,000 cubic feet beginning May 1st, 2020; correct?

A Yes.

Q Now this -- the increase beginning May 1st,

2017, was that increase to take into account the proposed Okeechobee project?

A You said the increase in 2017. Are you talking about the initial 400,000 a day in 2017 or the --

Q Oh, I'm sorry. The increase in 2020. I apologize. I misspoke?

A We ran the analysis when we reviewed the pipeline project and made the selections that we did. We had a resource plan that demonstrated a need for 400,000 a day in 2017, and then an incremental 200,000 a day in 2020. Okeechobee was not part of that resource plan, but that incremental 400,000 a day was because we hadn't added any incremental transport since 2011 and we had not added transport for Cape Canaveral, Riviera, or Port Everglades. So that initial capacity is to serve those units.

Q And then the additional 200 -- the additional 200,000, assuming Okeechobee is not built, where will that gas be utilized?

A It could be utilized in those existing units. As we have to take off more -- we're using more generation and have to use gas in less efficient gas units if we didn't add generation.

Q Okay. Will it result in excess gas if

Okeechobee is not built?

A Well, we have to separate gas from transportation. So I think your question is would it result in excess gas transportation?

Q Correct.

A We don't believe it does. Like I said, when we ran the resource plan, when we evaluated this project, it showed that we did have that incremental need even without an Okeechobee in 2020 for that incremental 200,000 a day.

MR. WHITLOCK: Okay. Those are all my questions. Thank you, Ms. Stubblefield.

EXAMINATION

BY MR. MOYLE:

Q Thank you. And to follow up on that line, why did you provide that in this proceeding? Just as an informational item? I mean, if I understand your response to the questions, you're saying that Okeechobee needs X number of units but you've contracted for more than X number of units; is that right?

A I'm not sure I understand your question.

Q Okay. How many -- how much gas transportation capacity is needed for the Okeechobee project?

A That unit will burn between 180,000 and 200,000 a day.

Q Okay. And then on line 20, page 7, you say that you've contracted with Sabal Trail for an incremental gas transportation capacity of 400,000 per day beginning in May; right?

A That's correct.

Q So you've got -- that contract gives you twice as much as you need just based on your prior statement that you need 180 to 200.

A No. I think if you listened to my response before that, we have not added incremental gas transportation since 2011. So that initial 400,000 a day is what was needed for Cape Canaveral, Riviera, and Port Everglades. And those are existing units or will be by next summer.

Q Okay. And so my question is why is it brought up in this proceeding, if you know? I mean, it seems that that would be something that would be in a fuel docket or maybe in those other proceedings. Is this just informational to the Commission? Are you asking them to approve it?

A I think what I was trying to respond to is, you know, what is the transportation plan for Okeechobee, and to let the Commission know that we do have sufficient gas transportation to meet the needs of Okeechobee with what we've already secured. In every

need determination filing that I've been a part of, we always present that transportation plan to let the Commission know how we plan to deliver gas and what costs could be associated with that.

Q The methodology that you use for forecasting, I guess you say -- this is on page 6. The question is, quote, what was FPL's methodology for developing the forecasts for fuel oil, natural gas, and coal? And then you provide a pretty lengthy answer there. Do you see that?

A Yes, I do.

Q Is -- the way I read the question and your answer, I guess fuel and natural gas -- fuel oil and natural gas, you use the same methodology; is that right?

A That's correct.

Q And then coal you do something different?

A Right. We use the cost provided by JD Energy.

Q Okay. So I just want to -- a couple of questions on your natural gas forecasting methodology. Do you know when the last time this was changed?

A The last time we've updated the fuel forecast? There was a July of 2015 update.

Q Not necessarily update in terms of data, but has there been a material change in the methodology?

A The methodology? Since I have been testifying in need determinations, which goes back to 2008 with West County 3, this has been the methodology that FPL has used and has been approved by this Commission and deemed reasonable for the evaluation of new generation projects.

Q So no changes?

A No changes while I have been testifying to this.

Q Since 2008?

A Yes.

Q Do you know, is this the same methodology that was used to forecast natural gas fuel prices in other proceedings before this Commission?

A Yes. It would -- this would be the same for anything that --

Q Woodford was the same, the Woodford case?

A If were, quote, a long-term -- we have a long-term and a short-term, which really basically use the same methodology. But, yes, it would have used the same methodology. The Ten-Year Site Plan would have used the same methodology.

Q Okay. So my specific question is you're familiar with the Woodford case?

A I am somewhat familiar with that case.

Q Do you know if the fuel --

MR. COX: Objection, Chairman. This is beyond the scope of her testimony, the Woodford project.

MR. MOYLE: I don't think so. I mean, she's saying they use the same fuel forecast. I'm just getting her to confirm that they used the same fuel forecast for other proceedings including Woodford. I mean, natural gas is natural gas.

MR. COX: Chairman Graham, I believe she answered that question. I don't know why it needs to be discussed further.

MR. MOYLE: I didn't think she answered it that directly. So if she can just answer and say, yeah, it's the same, we're good.

CHAIRMAN GRAHAM: Ask the question.

BY MR. MOYLE:

Q Is the fuel forecast for natural gas that was used in the Woodford, is it the same fuel forecast that was used in this case, the same methodology?

A To my knowledge, it is the same methodology, subject to check. But it should be the same methodology.

Q Why the caveat? Why the "subject to check"? You just are not sure?

A Well, I didn't provide that fuel forecast, so

I would like to verify that.

Q Okay. A couple of other questions.

You're using a fuel oil backup for this power plant; correct?

A That's correct.

Q The last need determination, I seem to recollect you didn't have a fuel oil backup. Is that your recollection?

A No. I think we've had a distillate light fuel oil backup in all the need determinations that I have --

Q Have you been involved in the modernization projects?

A Yes.

Q And your recollection is --

A To my recollection, those had light oil fuel backup.

Q And that's a benefit because you get up to 72 hours of fuel in the event there's a disruption to the gas?

A Correct.

Q Okay. A couple of other questions, and there's a document that I'd like to ask you a couple of questions about. It's a confidential document. Your counsel sent it around just a couple of days ago. It's entitled "Long-Term Forecast Methodology Price Summary

for Natural Gas." Are you familiar with that document?

A I've got a lot of documents in here that say fuel price forecast.

MR. COX: If you could refer to the specific interrogatory, I think she has it.

And, by the way, that was not sent around just a few days ago. The corrected version was sent around a few days ago.

MS. HELTON: Mr. Chairman, has that been distributed to all the parties? Do we have --

MR. COX: It would have been distributed to those parties who had signed a nondisclosure agreement.

MS. HELTON: I guess my point is is it before the Commissioners and the rest of the parties? Is it already in the record. Is it a prefiled exhibit, or what is it exactly that we're looking at?

MR. COX: Is that -- Jon, is that correct?

MR. MOYLE: It was what you emailed to me two days ago and said this is a new corrected exhibit.

MR. COX: It would have been POD No. 6 from the staff. I don't know which staff exhibit that was in.

MS. AMES: I believe this is response -- the confidential portion is to 6B of staff's first production of documents, and that is staff's Exhibit 61.

MS. HELTON: Okay. But does Mr. Moyle have a copy for everyone to look at in a red folder with the confidential information highlighted as is required by the Prehearing Order?

MR. MOYLE: Well, what I've done is because it was -- just came to me very late in the process as the most updated information, FPL kindly provided me a red copy because it's their confidential information. I didn't want to take it home, and so I gave it back to them and said, "Would you guys mind hanging onto this for the proceeding?" So I'm using their document, their information.

I tell you what, rather than getting wrapped around the axle on this, I think I might be able to ask questions in a general context without referencing the exhibit. How is that?

CHAIRMAN GRAHAM: Okay.

BY MR. MOYLE:

Q As -- when you're sourcing transportation, there's three ways presently you can get natural gas transportation into the state of Florida; is that right? FGT, Gulfstream, and Sabal Trail?

A Sabal Trail doesn't exist currently, and there's also -- Southern Natural Gas has some delivery into the northern part of the state.

Q So Sabal Trail comes online in '17; is that right?

A That's correct.

Q And when you're making a decision about who to use, how do you determine price? Do you go with the lowest cost so that the customers are saving the most money with the transportation or do you make some other judgments?

A Are you talking about when we go out initially and contract for gas transportation or are you talking about once we have the gas transportation, how we make the daily dispatch decision on how we utilize that transportation?

Q The former.

A When we go out and secure gas transportation, we, in the past, have gone to both FGT and Gulfstream and gotten them to provide us proposals for new gas transportation capacity. For the last few years, we first had the pipeline solicitation and then the pipeline RFP because we were trying very hard to bring a third natural gas pipeline into the state. So that was a competitive process where people bid. We did an evaluation and brought that project in front of this Commission to approve our final decision.

Q Okay. So if I understood your answer to that

question, you said, "What we've done historically is we would check prices with FGT and Gulfstream. Now we've got Sabal Trail." Did you check prices with FGT and Gulfstream in this case for transportation?

A Yeah. For -- no, because we already have the Sabal Trail capacity.

Q Right. But Sabal Trail a different company. It's not FPL; right?

A That's correct.

Q And they're a competitor just like FGT and Gulfstream, as I understand it.

A They would be.

Q And you're saying that you didn't -- you got -- your gas is coming through Sabal Trail; right?

A When we signed up for the gas transportation on Sabal Trail and FSC, Florida Southeast Connection, it took care of our needs through 2020. So anything that was added -- when we ran the analysis for the addition of Okeechobee, this capacity that we already had secured was sufficient to meet those needs.

Q Okay. So like this document that I've been -- that's been talked about a little bit, if it were to show that there were cheaper options in other places, what do you do with that information?

A Well, we've already made a firm contractual

commitment to Sabal Trail and Florida Southeast Connection, so we are on the hook for those firm demand charges. So it wouldn't be prudent to go out and secure additional gas transportation capacity where we would be subject to additional firm transportation charges.

Q Okay. And when you say you've already secured that firm transportation, those were the numbers we were talking about, the 400 going to the 600?

A Yes. That's correct.

Q And did you have a public solicitation for that?

A We had a public RFP for that.

Q When you say "we," who do you mean?

A Florida Power & Light had an RFP when we went out for the new pipeline capacity, when we chose Sabal Trail and Florida Southeast Connection.

Q Did Gulfstream apply or submit a response?

A They -- Spectra did and so did FGT.

Q And Spectra is part of Sabal Trail; right?

A Yes, they are.

Q So Gulfstream did not?

A They elected to propose a new project, the Sabal Trail, instead of proposing an expansion of their existing system.

Q Is Gulfstream part of Sabal Trail too?

A No, they are not.

Q Okay. Final just line of questioning. There was a -- I think staff passed out this exhibit. This is the second errata sheet of Heather Stubblefield. Do you have a copy of that?

A Yes.

Q So it makes some corrections?

A Yes. There was a very minor correction.

Q Okay. And the fuel forecast that's the third page in shows natural gas, oil, and coal. Do you see that?

A Yes.

Q Okay. Do you track EIA natural gas forecasts?

A We look at those. It's not something we track on a regular basis, but we do look at EIA.

Q And EIA is who?

A The Energy Information Administration.

Q It's a government agency?

A It is a government agency.

Q Right. Are you aware that their fuel forecasts for natural gas have been relatively stable over the next ten years?

A I can't say that I've looked at it recently.

Q Do you believe that the third page of this errata sheet for natural gas transmission reflects

relatively stable prices over the next ten years?

A I think it reflects stable, fairly stable prices over the next few years, and then always these four curves will escalate in the out years.

Q And my understanding on natural gas is it's volatile and it varies a lot. Is that your understanding?

A Yes, it does.

Q So if I look at this, it looks like it pretty much goes up over time, not a lot of swings. I mean, it goes down between 16 and 17 a penny. But looking at the exhibit, wouldn't you agree that it shows sort of a constant upward trend?

A Yes, it does.

Q And how do reconcile that with the volatility that we've seen in the gas markets where they're up, they're down, they move around so much?

A Well, I think what you're looking at are annual numbers here. If you looked at monthly numbers, you would probably see more volatility.

Q But haven't -- you would agree that natural gas on an annual basis has fluctuated in the last ten years and come down significantly; correct?

A Yes, it has.

Q But the fuel forecast doesn't see that or

project that on -- really in any scenario, does it?

A Doesn't project what?

Q Your annual projections, they're all increases, I think, with the exception of one penny in '16 and '17.

A Again, but those don't show the variations that would occur monthly.

MR. MOYLE: Okay. Thanks for your -- thanks for your time.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Staff?

EXAMINATION

BY MS. AMES:

Q Good morning, Ms. Stubblefield. How are you?

A Good.

Q Good. I just have a few questions about your errata sheets.

A Yes.

Q First I'm going to refer to your -- the first errata sheet that was filed on November 13th, 2015. Do you have that?

A Yes.

Q Okay. Great. And this errata sheet contains corrections to your direct testimony and also to page 2 of hearing Exhibit 27; correct?

A Yes.

Q And that correction to hearing Exhibit 27 was to delete column D to remove Sabal Trail; correct?

A Yes.

Q Could you just briefly explain the reason for making that correction?

A Yeah. The model had a placeholder in it, but we had not finalized and gotten final approval for Sabal Trail and FSC yet. So when we initially pulled the data, they pulled data out of the model. But when we went back and reviewed it, it was not actually the Sabal Trail/FSC data. Again, it was a placeholder that had been in there previously, so we just wanted to correct the record on that.

Q And now if you could look to the second errata sheet which was filed November 25th.

A Yes.

Q Okay. And this contains, this errata sheet contains corrections to page 1 of hearing Exhibit 27; correct?

A Correct.

Q And that change was in column D, line 9, changing $4.11 to $4.12; correct?

A Yes.

Q Could you briefly explain the need for that

change?

A Yeah. I think when we went back and looked at it, there was a time period mismatch because that started in the middle of the year. Somehow the time periods did not line up, so we fixed that time period.

Q Okay. And if you could look at page 1 of your hearing -- of hearing Exhibit 27.

A Is that my HCS-1?

Q Yes, ma'am.

A Okay.

Q And so column D, line 9, reflects that change -- the corrected change; correct?

A Yes.

Q And that $4.12 is the eight-month average of Sabal Trail/Florida Southeast Connection delivered price; correct?

A Yes.

Q Thank you. And could you please just briefly explain why FPL uses an eight-month average versus a 12-month, which was used for the other years contained in that exhibit?

A Well, I think because Sabal Trail doesn't come on until May of '17, so it wasn't appropriate. We just wanted to use the months where it was actually in service.

MS. AMES: Thank you. No further questions.

CHAIRMAN GRAHAM: Commissioners? Commissioner Brown.

COMMISSIONER BROWN: Thank you.

Thank you very much for your testimony. You talked about the additional capacity that has already been contracted for on Sabal Trail with Mr. Moyle.

THE WITNESS: Yes.

COMMISSIONER BROWN: What are the transportation costs above that $1.2 billion of the Okeechobee 1?

THE WITNESS: Are you talking about -- did you want to know the lateral costs or are you --

COMMISSIONER BROWN: Uh-huh. All of the above, yes.

THE WITNESS: 25 million for the lateral costs. And then I could calculate -- try to calculate for you the Sabal Trail/FSC commitment that would be dedicated to that. But we don't really look at it that way. We look at it on a systemwide transportation basis demand charge. But are you talking about just the Sabal Trail/FSC costs that would run through the fuel clause?

COMMISSIONER BROWN: Yes. Yes.

THE WITNESS: I think we calculated for year one, if you just looked at the demand charge and then

the way the lateral costs are covered, it's in addition to the demand charge. So it's paid through a demand charge. It's not in the 1.2 billion. It's going to be in the transportation charge that will run through the fuel clause.

I think it was about $150 million in year one. But because the FSC rate declines over time and then we go from the 400 to the 600, the FSC rate declines, that rate begins to drop significantly then going forward.

COMMISSIONER BROWN: Thank you.

CHAIRMAN GRAHAM: Commissioner Brisé.

COMMISSIONER BRISÉ: Thank you, Mr. Chairman.

Just a couple of quick questions in terms of the general trend of the pricing for natural gas. So would you say that the trend for the pricing on natural gas is going up or down or have we hit bottom?

THE WITNESS: If I could predict that, I could be very, very rich. I don't know. There's a lot of dynamics going on in the market right now. I mean, there's me Marcellus gas. We have a lot of transportation pipelines that are changing the direction of flow. And those projects are going to come over -- come on in the next couple of years, so that gas is going to be able to get to the southeast, which would lead you to believe that prices should decline. But

then on top of that, we have these LNG export projects. I've also heard numbers as high as 6 Bcf exports to Mexico. So I think it's going to be pretty interesting to see how that balances out. You know, is there going to be enough of this Marcellus gas to offset that demand going offshore into Mexico? So I wish I could give you a better answer, but I don't -- I don't have one.

COMMISSIONER BRISÉ: All right. See, I'm trying to work on my career for after here, so if you ever find that answer, let me know.

(Laughter.)

THE WITNESS: All right.

COMMISSIONER BRISÉ: All right. Thank you.

CHAIRMAN GRAHAM: Redirect.

MR. COX: Chairman Graham, FPL has no redirect. Thank you.

CHAIRMAN GRAHAM: Exhibits.

MR. COX: FPL would move Exhibit 27 into the record.

CHAIRMAN GRAHAM: We will enter Exhibit 27 into the record.

(Exhibit 27 previously admitted in Volume 1.)

I don't think there's any other exhibits. Ms. Stubblefield, thank you very much for your testimony.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: SACE.

MR. WHITLOCK: Thank you, Mr. Chairman. I believe at this time, as staff noted at the outset of the proceedings, the amended testimony of SACE witness Mims has been stipulated to with the parties, and therefore SACE would move to enter the stipulated revised testimony of Witness Mims and Exhibit NAM-1, which has been marked Exhibit 32 on the Comprehensive Exhibit List into the record at this time.

And just for the record, so we're clear, Witness Mims' testimony was revised pursuant to Order No. PSC-15-0546-PCO-EI.

CHAIRMAN GRAHAM: If there's no questions or concerns about Witness Mims' direct testimony into the record, we will enter that into the record.

(Exhibit 32 previously admitted in Volume 1.)

MR. WHITLOCK: Thank you, Mr. Chairman.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re:	Florida Power & Light Company for Determination of Need for Okeechobee Clean Energy Center Unit 1	DOCKET NO. 150196-EI

I. INTRODUCTION

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

A. My name is Natalie Mims. I am a principal at Mims Consulting, LLC and my business address is 1035 Santa Barbara Street, Suite 8, Santa Barbara, California 93101.

Q. On whose behalf are you testifying?

A. Southern Alliance for Clean Energy ("SACE").

Q. Please summarize your qualifications and work experience.

A. I graduated from the Pennsylvania State University in 2002 with a Bachelor of Arts degree in English and Political Science. I received a Master of Environmental Law and Policy from the Vermont Law School in 2004. Since then I have worked on a wide range of energy and environmental policy issues, including energy efficiency potential studies; energy efficiency program design and implementation; and evaluation, measurement and verification of efficiency programs. A copy of my resume is included as Exhibit SACE-NAM-1.

Q. Have you testified previously before the Florida Public Service Commission ("the Commission")?

A. Yes. I testified in front of the Commission during the 2014 Florida Energy Efficiency Conservation Act ("FEECA") proceeding. In addition, I presented to the Florida Commissioners during an Internal Affairs meeting in January 2012 on the importance of robust evaluation, measurement and verification ("EMV") of

DSM impacts. I have also testified before the North Carolina, South Carolina, Georgia and Indiana commissions.

Q. Are you submitting exhibits along with your testimony?

A. Yes. I am submitting the following exhibits with my testimony:

- Exhibit NAM-1: Resume of Natalie Mims
- ~~Exhibit NAM-2: Letter re: Measures Not Included in FPL's EE Potential Study~~

Q. FPL is seeking approval from the FPSC to construct and operate a new natural gas combined cycle plant. What are the statutory requirements for the FPSC to determine the need for this power plant?

A. Florida statute requires that the Commission take into account several factors when determining if a new power plant is needed including: (1) the need for electric system reliability and integrity; (2) the need for adequate electricity at a reasonable cost; (3) the need for fuel diversity and supply reliability; (4) whether the proposed plant is the most cost-effective alternative available; (5) whether renewable energy sources and technologies; as well as conservation measures, are utilized to the extent reasonably available. Finally, the Commission shall consider the conservation measures taken by or reasonably available to the applicant or its members which might mitigate the need for the proposed power plant.

Q. Based on your review of FPL's application and their DSM plan, do you believe that FPL has met the statutory requirements for proving the need for the OCEC Unit 1?

A. No, I do not, for several reasons. Based on this fact, I recommend that the Commission deny FPL's Petition for Determination of Need for the OCEC Unit 1.

Q. Will you address any of these reasons in your testimony?

A. Yes, I will. The purpose of my testimony is to address (1) how increasing natural gas capacity does not maintain or enhance FPL's fuel diversity; (2) conservation measures are not being utilized to the extent reasonably available; (3) there are additional conservation measures reasonably available to FPL and its customers that might mitigate the need for the proposed power plant; and (4) the proposed plant is not the most cost-effective alternative for FPL's customers.

II. INCREASING FLORIDA'S DEPENDENCE ON NATURAL GAS DOES NOT MAINTAIN OR ENHANCE FPL'S FUEL DIVERSITY.

Q. As referenced above, the Commission is required by statute to consider the need for fuel diversity in making its determination regarding the need for FPL's proposed OCEC Unit 1. Will the OCEC Unit 1 improve FPL's fuel diversity if constructed and placed into operation?

A. No, and FPL witness Dr. Sim concedes as much in his prefiled testimony. In fact, even though FPL's 2014 ten year site plan, at p. 7, lists "maintaining/enhancing fuel diversity in the FPL system" as an ongoing concern, FPL still now seeks Commission approval to build another plant which will only increase its reliance on natural gas. This is certainly not maintaining, and much less enhancing, fuel diversity in the FPL system.

Q. However, Dr. Sim does state that OCEC Unit 1 will not "significantly" increase FPL's reliance on natural gas. Does this alleviate your concern?

A. No. In 2014, Florida was second in the nation to Texas in net electricity generation from natural gas.[1] As such, Florida's, and FPL's, reliance on natural gas is already significant, and OCEC Unit 1 will only exacerbate this reliance.

[1] US Energy Information Administration, Florida State Profile and Energy Estimates. Available at: http://www.eia.gov/state/?sid=FL

In fact, in FPL's 2015 Ten Year Site Plan, natural gas contributed to 68% of the Company's energy generation in 2014, and the Company forecasted that it is the only fuel type that will increase in 2016, and continue to grow from 2019 (when OCEC unit 1 is scheduled to come online) to 2024.[2] Ultimately, FPL anticipates that natural gas will be used to generate 73% of its energy in 2024.[3] However, FPL anticipates solar energy contributing about 0.5% annually from 2019 to 2024, and the amount of energy coming from nuclear declining as a percentage of total generation in the same time frame. It would seem that if FPL is truly trying to diversify its fuel sources, at least one of these resources would be increasing as a percent of total generation over time, not just natural gas.

Table 1. FPL's fuel mix as a percentage of total generation[4]

	Natural Gas	Nuclear	Coal	Solar
2015	66.7%	23.2%	3.5%	0.2%
2016	69.2%	23.3%	3.1%	0.3%
2017	64.0%	22.8%	2.7%	0.6%
2018	64.1%	22.7%	2.6%	0.6%
2019	69.5%	22.9%	2.9%	0.5%
2020	71.7%	22.3%	2.4%	0.5%
2021	71.7%	22.1%	2.6%	0.5%
2022	71.3%	22.3	2.5%	0.5%
2023	71.9%	21.8	2.5%	0.5%
2024	72.5%	21.5	2.3%	0.5%

[2] FPL 2015 Ten Year Site Plan, Schedule 6.2, Energy Sources % by Fuel Type
[3] *Id.*
[4] *Id.*

III. CONSERVATION MEASURES WHICH MIGHT MITIGATE THE NEED FOR THE PROPOSED OCEC UNIT 1 ARE NOT BEING UTILIZED BY FPL TO THE EXTENT THEY ARE REASONABLE AVAILABLE.

Q. FPL states that they took account of all identified cost-effective conservation measures prior to determining the need for the proposed OCEC Unit 1. Is this true?

A. No, they did not. FPL relies on its energy efficiency goals from the 2014 FEECA docket to determine the level of efficiency that is used as "all cost-effective efficiency" in this docket. ~~In the FEECA docket, the Company used an erroneous methodology to calculate its DSM potential, and thus vastly underestimated the amount of cost-effective DSM available.~~

~~**Q. What was the process that FPL used to determine its DSM potential?**~~

~~**A.** First, the Company resurrected a five-year old DSM potential study to evaluate its technical potential, which I will refer to as the "2009 Potential Study," and utilized the 2009 Potential Study as the starting point for its 2014 Potential Study. In a DSM potential study, technical potential should take into account all of the savings that are available, regardless of economics or concerns about participation. The EPA's National Action Plan for Energy Efficiency ("NAPEE") defines technical potential as, "the theoretical maximum amount of energy use that could be displaced by efficiency, disregarding all non-engineering constraints such as cost-effectiveness and willingness of end-users to adopt the efficiency measures."[5]~~

~~**Q. What flaws are there in FPL's technical potential analysis?**~~

~~A. There were several. The most significant was the flawed assumption that codes and standards reduce FPL's technical potential by 4200 GWh.[6,7] The existence of~~

[5] ~~US EPA National Action Plan for Energy Efficiency, Guide for Conducting Energy Efficiency Potential Studies. p2-4.~~
[6] ~~FL PSC Docket No 130199-EI, Direct Testimony Koch (FPL). Exhibit TRK-4~~

a code or standard is not an engineering constraint, and therefore should not be an element in determining technical potential. Table 2 displays FPL's conclusion that summer MWs were reduced by 14%, winter MWs by 12% and energy savings by 13% due to this inaccurate assumption.

Table 2. FPL's flawed reduction in 2014 technical potential due codes and standards [8]

	Summer MW	Winter MW	Annual GWh
2009 Potential Study Technical Potential	8,000	4,784	31,849
Reduction due to codes and standards	1,086	575	4,183
2014 Potential Study Technical Potential, reduced from codes and standards	6914	4209	27,666

This flaw was both methodologically and statutorily incorrect. The statutory guidance for the technical potential study in Florida is Section 366.82, F.S., which directs the Commission to evaluate the technical potential of *all* demand side and supply side energy conservation measures, including demand side renewable energy systems. Clearly, eliminating measures associated with codes and standards results in the evaluation of less than *all* demand side and supply side conservation measures.

The second major flaw in the technical potential that FPL calculated for its 2014 Potential Study was the limited amount of efficiency measures evaluated. Again, the technical potential should, if properly calculated, include all energy efficiency measures except those that are impossible due to engineering constraints. SACE reviewed the measures from the 2009 Potential Study, as they

[7] The Company reduced the 2009 technical potential by 4200 GWh to account for codes and standards as the first step in updating the 2009 Potential Study. See Florida PSC Staff Recommendation in Docket 130199-EI, Table 1-1 for more detail.
[8] FL PSC Docket No 130199-EI, Direct Testimony Koch (FPL). Exhibit TRK-4

were the starting point for the 2014 Potential Study, and compared them to recent energy efficiency potential studies for TVA[9] and Georgia Power.[10] There are many measures that appear to have been excluded from both the 2009 and 2014 Potential Studies that were included in the TVA and Georgia Power energy efficiency potential studies, a list of which measures are included as Exhibit NAM-2.

Finally, as in the 2009 Potential Study, FPL excluded several sectors from the technical potential in the 2014 Potential Study. As stated in the 2009 Potential Study:[11]

> It should also be noted that energy and peak savings opportunities in a few end-use sectors were specifically excluded from this study. These sectors were agriculture, transportation, communications and utilities (TCU), construction, and outdoor/street lighting…the out-of-scope sectors accounted for just over 10% of total sales [for FEECA utilities].

Q. What is the impact of the technical potential, the starting point for determining the amount of energy efficiency that is available to FPL, being fundamentally flawed and inaccurate?

A. The technical potential is the first calculation that is made when determining energy efficiency potential, thus all other calculations are dependent on that calculation. This means that FPL's entire 2014 Potential Study is flawed, and furthermore, the basis for FPL's statement that it evaluated all cost-effective energy efficiency prior to determining its need for the proposed OCEC Unit 1 is inaccurate.

[9] Tennessee Valley Authority Potential Study. *Final Report*, December 21, 2011, Global Energy Partners, available at http://www.tva.gov/news/releases/energy_efficiency/GEP_Potential.pdf
[10] Achievable Energy Efficiency Potentials Assessment. Submitted to Georgia Power Company by Nexant, January 31, 2012, available at http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=140174
[11] Itron, Inc., *Technical Potential for Electric Energy and Peak Demand Savings in Florida*. March 2009.

Q. Putting aside the fact that the rest of the 2014 Potential Study was flawed from the start, were there other flaws when FPL moved to the second step of the potential study, calculating the economic potential?

A. Yes. The NAPEE defines economic potential as:

> the subset of the technical potential that is economically cost-effective as compared to conventional supply side energy resources…they [technical and economic potential] ignore market barriers to ensuring actual implementation. Finally, they only consider the costs of energy efficiency measures themselves, ignoring any programmatic costs (e.g. marketing, analysis, administration) that would be necessary to capture them.

Again, FPL did not use the best practices outlined by the EPA when it calculated economic potential in its 2014 Potential Study. FPL Witness Koch stated:

> After the TP [technical potential] was updated, FPL's resource needs during the DSM Goals timeframe were determined and other facets of FPLs resource planning process were then used to conduct an Economic Potential (EP) or cost effectiveness screening of the DSM measures.[12]

It is inappropriate to evaluate the Company's resource needs prior to determining if measures are economic. The only factor that should be considered when calculating economic potential is whether or not the energy efficiency is less expensive than avoided cost. By creating, and using, additional criteria to define both the technical and economic potential, FPL invalidated its 2014 Potential Study.

FPL further miscalculated the amount of cost-effective energy efficiency in the 2014 Potential Study by applying yet another inappropriate screen to calculate the economic potential – the "years to payback screening to account for free riders."[13] As explained by FPL:

[12] FL PSC Docket NO 130199, Direct Testimony Thomas R Koch (FPL). Page 17, lines 21-23.
[13] FL PSC Docket No 130199, Direct Testimony Steven R Sim (FPL). Page 6 lines 12-14.

the intent of the years-to-payback test is to address the "free rider" issue so that the utility, and all of its customers, are not making incentive payments and incurring administrative costs, for DSM measures that customers will likely purchase even without an incentive payment.[14]

Evaluating free ridership, in every other jurisdiction I am aware of, is a component of utility evaluation, measurement and verification of energy efficiency programs. It is completely invalid and a flawed methodology to include this screen when calculating economic potential. As shown in Table 3 and 4, this screen eliminated 1,550 – 6,392 GWh from FPL's energy efficiency potential under the Company's RIM and TRC portfolio.[15]

Table 3. FPL's flawed reduction in 2014 technical potential due to free rider screen (RIM)

	Summer MW	Winter MW	Annual GWh
2014 Technical Potential	7,146	4,410	31,468
Reduction due to free riders – RIM portfolio	374	39	1,550
Technical potential reduced due to free riders – RIM portfolio	6,772	4,371	29,918

Table 4. FPL's flawed reduction in 2014 technical potential due to free rider screen (TRC)

	Summer MW	Winter MW	Annual GWh
2014 Technical Potential	7,146	4,410	31,468
Reduction due to free riders – RIM portfolio	374	39	1,550
Technical potential reduced due to free riders – TRC	6,772	4,371	29,918

[14] FL PSC Docket No 130199, Direct Testimony Steven R Sim (FPL). Page 23-24 lines 21-2.
[15] FL PSC Docket No 130199, FPL Response to SACE IR 45.

portfolio			

I am aware that Florida utilities are required to consider free riders when proposing their energy efficiency goals. There are other ways to "consider free riders" than using a proxy that arbitrarily eliminates energy efficiency and capacity savings. As I have suggested in the past, including free rider rates from other utilities in the Southeast would be more accurate than what FPL current uses. The free rider rates from other southeastern utilities could be applied at the residential, commercial and industrial class level as the last step of setting the goal, and that would also be more accurate than the two year proxy. Further, Southeastern utilities have found that with free ridership and spillover, their realization rates go above 100%, meaning that no savings would be eliminated from the energy efficiency goals when considering free ridership.

Q. How does the National Action Plan for Energy Efficiency define achievable potential?

A. The NAPEE breaks achievable potential into two categories, achievable potential and program potential. Based on these two definitions, FPL completely omitted calculating the achievable potential and instead moved directly to calculating the program potential. Achievable potential is defined as:

> the amount of energy use that efficiency can realistically be expected to displace assuming the most aggressive program scenario possible. This is often referred to as maximum achievable potential. Achievable potential takes into account real world barriers to convincing end users to adopt energy efficiency measures, the non-measure costs of delivering programs and the capability of programs and administrators to ramp up program activity over time.

In contrast, Program potential is defined as "the efficiency potential possible given specific program funding levels and designs."

Q. Did FPL's methodology have errors in its achievable potential?

A. FPL's calculation of achievable potential[16] is very illogical, and unconventional. FPL's ten year 2015-2024 Achievable Potential "is determined based on the maximum rebate levels for all measures that passed the prior [economic] screening."[17] I am not aware of any other utility that use this criteria to establish its achievable potential. Somehow, FPL managed to whittle its Summer MW savings from over 7,100 MW (technical potential) to a goal of approximately 50 MW a year of achievable potential.

Q. Please summarize the flaws present in FPL's energy efficiency potential study.

A. There are many flaws, including: (1) removing savings from codes and standards prior to calculating technical potential; (2) excluding entire sectors and measures from the technical potential; (3) determining utility resource needs prior to calculating economic potential; and (4) using a two year payback proxy to calculate economic potential. Finally, FPL used maximum rebate levels to determine achievable potential. While this is not necessarily impermissible, it is certainly not a best practice methodology.

Q. Do you believe that the flaws referenced above result in an inaccurate representation by FPL as to whether or not there are energy efficiency measures that are reasonably available to the Company that might mitigate the need for OCEC Unit 1?

A. Yes. Based on the erroneous methodology used by FPL to calculate its energy efficiency potential, there are additional measures that are reasonably available. First, there are savings associated with codes and standards. While FPL may

[16] As mentioned above, achievable potential, as defined by NAPEE, was not conducted by FPL. However, for simplicity, I will continue to refer to FPL's achievable potential as that, not as program potential, as defined by NAPEE.
[17] FL PSC Docket No 130199, Direct Testimony Thomas R Koch (FPL). Page 6 lines 12-14.

capture the reduction in consumption due to codes and standards in its load forecast, and not in its efficiency forecast, it could still implement an energy efficiency program to improve and assist in code compliance, therefore generating additional reasonable savings. Second, FPL did not include reasonably available energy efficiency measures in its 2014 Potential Study, and completely excluded several sectors from the 2014 Potential Study.

Finally, FPL further miscalculated the amount of reasonably available energy efficiency in the 2014 Potential Study by applying yet another inappropriate screen to calculate the economic potential – the "years to payback screening to account for free riders."[18] This inappropriate screen eliminated between 1,550 - 6,392 GWh from FPL's energy efficiency potential under the Company's RIM and TRC portfolio.[19]

IV. THE PROPOSED PLANT IS NOT THE MOST COST-EFFECTIVE OPTION AVAILABLE.

Q. Please summarize FPL's interpretation of "cost-effective" DSM?

A. FPL's interpretation of "cost-effective" DSM relies on the very restrictive perspective of the Ratepayer Impact Measure ("RIM") test. The RIM test focuses on the "cost" of reducing the Company's electricity sales and revenues over the lifetime of the demand-side measure.[20] Under this view, both customer-side energy efficiency and renewables result in unrecovered revenue requirements for the utility and upward pressure on rates for non-participating customers.

FPL's narrow perspective, however, disregards the overall and longer-term savings and benefits to all customers and society as a whole, which is the

[18] FL PSC Docket No 130199, Direct Testimony Steven R Sim (FPL). Page 6 lines 12-14.
[19] FL PSC Docket No 130199, Direct Testimony Natalie Mims (SACE); Exhibit NAM-SACE-9.
[20] FL PSC Docket No. 130210, Deposition of Steven Sim, p. 52.

goal of the Total Resource Cost ("TRC") test. The use of TRC to determine energy efficiency investments is a well-established best practice in the nation. In contrast, besides FPL and other Florida utilities, only one other state (Virginia) relies on the RIM test to make investment decisions.[21]

FPL has aggressively opposed the use of the TRC test to determine energy efficiency investments in Florida for many years. In 2014, FPL insisted that, between the RIM and TRC tests, "only the RIM test really addresses the issue of whether it makes sense for a utility to offer a [demand-side management] measure when considering all customers on a utility system."[22]

By focusing on the impacts on customers that do not participate in demand-side programs, FPL's narrow perspective ignores opportunities for benefits and savings for all customers. Likewise, by focusing on lost revenues, FPL's perspective does little to promote reduced customer usage and fossil fuel consumption, but rather serves to protect its utility business model against the impacts of reduced usage, whether through energy efficiency or renewable generation. Moreover, policy solutions are available to address the financial impact demand-side resources can have on electric utilities, yet FPL has opposed exploring any such mechanism to make it financially neutral to such resource decisions.[23]

The use of TRC and utility incentives to support efficiency adoption are not novel or advanced concepts, and have been recognized in the industry for decades, beginning in the early 1990s.

Q. Is the RIM test used as the primary cost-effective test to make energy

[21] http://database.aceee.org/state/evaluation-measurement-verification
[22] FL PSC Docket No. 130199, Direct Testimony Sim, p. 23, starting at line 16.
[23] FL PSC Docket No. 130199, Order No. PSC-14-0696-FOF-EU, p. 7.

efficiency decisions by regulators in the United States?

A. No. Only one state, Virginia, relies on the RIM test as its primary benefit-cost test. 71% of states that have designated a primary cost-test use the Total Resource Cost ("TRC") test.

Q. How does FPL justify this extreme perspective?

A. FPL justifies its reliance on this extremely conservative perspective by citing that the Commission found that "consideration of both the RIM and TRC is necessary to fulfill the requirements of Section 366.82(3)(b), F.S."[24]

Q. How does FPL interpret the word "consideration"?

A. FPL's interpretation of the word "consideration" clearly shows their conservative perspective on energy efficiency economics. Using FPL's interpretation, to "consider" the RIM tests means that energy efficiency goals are "set based on the use of the RIM test."[25] That does not appear to me to be the same as "taking into consideration the TRC test" and in fact, appears to be only using the RIM test.

Q. What was the difference between FPL's TRC and RIM DSM goals in the 2014 FEECA proceeding?

A. The energy savings FPL projected from 2015-2017, under the TRC test was 23-46 GWh higher than when using the RIM test. As FPL noted, there are not significant differences between the summer MW in the RIM and TRC cases – about 50 MW over the ten year planning period – but this is due to the flawed modeling I discussed above. FPL's refusal to allow energy efficiency to reduce the size of a natural gas power plant is just one of the factors that FPL used to undervalue energy efficiency in its 2014 ten year site plan, and subsequently in

[24] FL PSC Docket No 130199-EI, Order No. FPSC-14-0696-FOF-EU.
[25] FL PSC Docket No 130199-EI, Rebuttal of Terry Deason (FPL). June 10, 2014. Page 41, lines 7-8.

this docket.[26]

Table 4 shows the difference in the number of measures, and Table 5 and 6 shows the difference in the energy and capacity savings using TRC and RIM to define cost-effectiveness.

Table 4. Number of measures included in FPL's FEECA analysis under TRC and RIM tests [27]

	RIM	TRC
With CO^2 Costs	124	301
Without CO^2 Costs	120	300

Table 5. Energy and capacity savings in FPL's FEECA Achievable Potential analysis using TRC Test [28]

	FPL Achievable Potential - Combined (TRC)					
	Summer MW		Winter MW		Annual GWh	
Year	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2015	47.4	47.4	38.1	38.1	64.0	64.0
2016	52.2	99.7	41.4	79.5	87.2	151.2
2017	54.2	153.8	43.1	122.6	93.4	244.7
2018	55.6	209.4	44.5	167.2	99.9	344.6
2019	57.1	266.5	46.0	213.2	106.7	451.3
2020	58.6	325.2	47.6	260.8	113.7	565.0
2021	60.2	385.4	49.3	310.1	121.0	685.9
2022	61.9	447.3	51.0	361.1	128.5	814.4
2023	63.6	510.9	52.7	413.8	136.4	950.9
2024	65.5	576.4	54.6	468.4	144.7	1,095.6

Table 6. Energy and capacity savings in FPL's FEECA Achievable Potential analysis using RIM test [29]

	FPL Achievable Potential - Combined (RIM)					
	Summer MW		Winter MW		Annual GWh	
Year	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2015	48.1	48.1	29.2	29.2	41.1	41.1

[26] FL PSC Docket No 130199-EI, Direct Testimony of Tim Woolf (Sierra Club).
[27] FL PSC Docket No 130199-EI, Direct Testimony Sim (FPL). Exhibit SRS-5
[28] FL PSC Docket No 130199-EI, Direct Testimony Koch (FPL). Exhibit TRK-6
[29] FL PSC Docket No 130199-EI, Direct Testimony Koch (FPL). Exhibit TRK-6

2016	49.6	97.7	30.0	59.2	45.6	86.7
2017	50.8	148.5	30.9	90.1	47.5	134.2
2018	51.6	200.1	31.5	121.6	49.5	183.7
2019	52.3	252.4	32.1	153.7	51.5	235.3
2020	53.1	305.5	32.7	186.5	53.6	288.9
2021	53.9	359.3	33.4	219.9	55.8	344.7
2022	54.7	414.1	34.1	253.9	58.1	402.8
2023	55.6	469.6	34.8	288.7	60.5	463.3
2024	56.5	526.1	35.5	324.2	62.9	526.3

Q. Did SACE propose energy efficiency goals in the FEECA proceeding?

A. Yes, SACE proposed that FPL achieve 1% of prior year retail sales with energy efficiency. SACE proposed this level of savings because FPL's entire analysis was so flawed, that it could not be used as the basis for goal setting. I discuss these flaws above, and in particular the major flaw that the entire energy efficiency potential study is based on an inappropriate, inaccurate methodology that trickles down to the rest of the analysis.

SACE's energy efficiency goal would have resulted in the company saving over 15,000 GWh more than what FPL proposed (60 GWh) and what the Commission ultimately approved (526 GWh).[30]

Q. Did FPL find that SACE's proposed level of savings would cost less than FPL's proposed goals?

A. Yes. FPL found that the cumulative present value revenue requirement for SACE's energy efficiency goal would cost less than FPL's goal. This is particularly important because SACE's goal was 15,000 GWh more than the Commission approved FPL goal, and it still resulted in lower cumulative present value revenue requirements. Specifically, FPL witness Sim stated, "I would agree the SACE plan is lower in total cost or revenue requirements."[31]

[30] FL PSC Docket 130199. Order No. PSC-14-0696-FOF-EU. Tables 4-6 and 5-1.
[31] FL PSC Docket 130199. Hearing Transcript, Volume 6, page 1488, line 16-18.

Q. How does FPL use the cumulative present value revenue requirement in this proceeding?

A. FPL uses the cumulative present value revenue requirement to determine the best generation option from a cost and electric rate perspective. FPL does not allow DSM to be part of this calculation by holding it constant across each option.

The bottom line is that it is cheaper to operate FPL's system with more efficiency than with less. ~~FPL continues to refuse to acknowledge this by falling back on to the argument that lost revenues, or "unrecovered revenue requirements" as FPL likes to call it, increase rates. However, the critical piece of knowledge that FPL refuses to discuss is that "unrecovered revenue requirements" result from policy decisions, not from resource decisions. The costs can be avoided or mitigated with minor changes to FPL's business model. These minor changes would result in a cleaner, cheaper, more efficient electric system.~~

~~**Q. What are your conclusions in this regard?**~~

~~A. Quite simply, FPL had the opportunity to seek and obtain much higher levels of energy efficiency, at a much lower cost than building new power plants, like the OCEC Unit 1, and did not do so. Thus, FPL, and more importantly its customers, missed out on more cost effective alternatives.~~

V. CONCLUSION

Q. Please summarize your conclusions.

A. In conclusion, I recommend that the Commission deny FPL's petition for affirmative determination of need of OCEC Unit 1. The Company has failed to demonstrate: (1) that OCEC Unit will maintain or enhance FPL's fuel diversity; (2) that all conservation measures are being utilized to the extent reasonably

available; (3) that there are not additional conservation measures reasonably available to it and its customers that might mitigate the need for the proposed OCEC Unit 1; and (4) that OCEC Unit 1 is the most cost-effective option its customers.

Q. Does this conclude your testimony?

A. Yes.

MR. WHITLOCK: Mr. Chairman, at this time SACE would call witness John Wilson.

Whereupon,

JOHN D. WILSON

was called as a witness on behalf of the Southern Alliance for Clean Energy and, having first been duly sworn, testified as follows:

EXAMINATION

BY MR. WHITLOCK:

Q Good morning, Mr. Wilson.

A Good morning.

Q Mr. Wilson, you were sworn yesterday; is that correct?

A Yes, it is.

Q Could you please state your name for the record?

A I'm John D. Wilson.

Q And who is your employer, Mr. Wilson?

A Southern Alliance for Clean Energy.

Q And what is your position with the Southern Alliance for Clean Energy?

A I'm the Director of Research.

Q And did the Southern Alliance for Clean Energy prefile direct testimony on your behalf consisting of 24 pages in this proceeding?

A Yes.

Q And did the Southern Alliance for Clean Energy also file errata to that testimony in this proceeding?

A Yes.

Q Okay. And is your testimony as corrected the same today as it was when filed?

A Yes.

Q Okay. Did SACE also prefile Exhibits JW-1 through JW-4 to your testimony?

A Yes.

MR. WHITLOCK: And, Mr. Chairman and Commission, just for the record, those are Exhibits 28 through 31 on the Comprehensive Exhibit List.

CHAIRMAN GRAHAM: Duly noted.

BY MR. WHITLOCK:

Q Mr. Wilson, do you adopt those exhibits as your own?

A Yes.

MR. WHITLOCK: Okay. Mr. Chairman, we'd ask that Mr. Wilson's testimony as corrected be entered into the record as read.

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

MR. WHITLOCK: Thank you, Mr. Chairman.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

Petition for determination of need for Okeechobee Clean Energy Center Unit 1, by Florida Power & Light Company.	DOCKET NO. 150196-EI FILED: November 27, 2015

ERRATA SHEET OF JOHN D. WILSON

October 14, 2015 Testimony

PAGE #	LINE #	CORRECTION
6	19	Change “IPR” to “IRP”
21	22	Change “South Carolina” to “Florida”

I. INTRODUCTION AND QUALIFICATIONS

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

A. My name is John D. Wilson. I am Director of Research for Southern Alliance for Clean Energy ("SACE"), and my business address is 1810 16th Street, NW, 3rd Floor, Washington, DC 20009.

Q. Please state briefly your education, background and experience.

A. I graduated from Rice University in 1990 with a Bachelor of Arts degree in physics and history. I received a Master in Public Policy from the John F. Kennedy School of Government at Harvard University in 1992 with an emphasis in energy and environmental policy, and economic and analytic methods. Since 1992, I have worked in the private, non-profit and public sectors on a wide range of public policy issues, usually related to energy, environmental and planning topics.

I became the Director of Research for SACE in 2007. I am the senior staff member responsible for SACE's utility regulatory research and advocacy, as well as energy resource analysis. In this capacity, I am responsible for leading dialogue with utilities and regulatory officials on issues related to resource planning and financial regulation, particularly as they relate to energy efficiency, renewable energy, and conventional generation resources. This takes the form of formal testimony, comments, presentations and/or informal meetings in the states of Alabama, Georgia, Florida, North Carolina and South Carolina, and with respect to the Tennessee Valley Authority. A copy of my resume is attached as Exhibit JDW -1.

Q. Have you previously testified before the Commission?

A. Yes, I testified on behalf of SACE and the Natural Resources Defense Council in the 2009 FEECA goals proceeding, filed in Docket Nos. 080407-EG through 080413-EG.

Q. On whose behalf are you testifying in this docket?

A. I am testifying on behalf of SACE.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes, I'm sponsoring the following exhibits:

Exhibit JDW-1	Resume of John D. Wilson
Exhibit JDW-2	Generation Reserve Margin Study, Duke Energy Carolinas, Astrape Consulting, 2012.
Exhibit JDW-3	Bob Barrett, "The Need for a 3rd Reliability Criterion for FPL: a Generation-Only Reserve Margin (GRM) Criterion," February 28, 2014. Sim Deposition, Ex. 3.
Exhibit JDW-4	FPL, "Calculation of 'Generation – Only Reserve Margins," undated. Sim Deposition, Exhibit 2 (p. 49).

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. I have been asked to review the issue of whether there is a need for FPL's proposed Okeechobee Clean Energy Center (OCEC) Unit 1 for the reasons set forth by FPL in its Petition filed with the Commission on September 3, 2015. In particular, my testimony focuses on the two criteria upon which FPL relies for the claimed need for the OCEC Unit 1: (1) a total minimum reserve margin (RM) of 20% (for summer and winter); and (2) a minimum generation-only reserve margin (GRM) of 10% (for summer and winter). If FPL's 20% reserve margin is

excessive, and if its 10% GRM is unnecessary, then FPL's proposed OCEC Unit 1 will result in a system that exceeds the need for electric system reliability and integrity, and this excess capacity is not needed nor does it come at a reasonable cost as these criteria are used in Section 403.519(3), Florida Statutes.

Q. Please summarize your testimony for the Commission.

A. It is my opinion that the Commission should evaluate FPL's Petition based on a 15% reserve margin (RM), rather than the 20% RM used as one basis for FPL's Petition in this docket. It is further my opinion that the Commission should reject the FPL created 10% generation-only reserve margin (GRM) upon which FPL relies as the second basis for its determination of need in this docket. Because application of a 15% RM and no GRM demonstrates that FPL does not currently have a system reliability need for the proposed OCEC Unit I, the Commission should deny the Petition.

III. FPL'S RELIANCE ON A 20% RESERVE MARGIN

Q. Are you familiar with the basis upon which FPL relies for the position that it has to meet a 20% reserve margin?

A. Yes. In Docket No. 981890-EU, three of Florida's investor owned utilities (IOUs), including FPL, presented a Stipulation to the Commission containing the 20% minimum planning reserve margins. The Commission approved the Stipulation in Order No. PSC-99-2507-S-EU, issued December 22, 1999.

Q. Based on your review of Docket No. 981890-EU, did FPL advocate for a 20% reserve margin?

A. It doesn't appear so – at least not before the Stipulation was ultimately signed. In fact, prefiled testimony and prehearing statements in that proceeding indicate that all of the IOUs and the Florida Reliability Coordinating Council (FRCC) had conducted studies that individually and collectively supported the continued use of a 15% reserve margin. In filing their proposed agreement, the IOUs stated:

> "By offering this proposal, the IOUs do not mean to be misunderstood as agreeing with Staff's criticism of the planning criteria and methodology now employed by the IOUs and the FRCC. Rather, the IOUs hope to moot this criticism and help restore confidence on the part of the Commission and its Staff concerning the state of reserves in Peninsular Florida."[1]

Q. What was the basis for the 20% reserve margin ultimately stipulated to in Docket No. 981890-EU?

A. It appears that Staff testimony and recommendation was the only basis for the selection of the 20% reserve margin. The basis for the 20% RM is adequately summarized by the following four statements of the Staff's position:

- "My recommendation of a 20 percent reserve margin is based on the concern that utilities are not giving enough weight to the potential adverse effects of weather on their generation planning."[2]

[1] Florida Public Service Commission Staff Memorandum, "Reserve Margin Agreement," Docket No. 981890-EU (October 29, 1999).
[2] Trapp Testimony, p. 8, Docket No. 981890-EU (August 31, 1999).

- "Many of the capacity advisories experienced over the last few years have occurred during off-peak maintenance periods when unpredicted severe weather, forced outages, or catastrophic events have also occurred."[3]
- "… the conditions associated with the 1989 Christmas experience gives us a good baseline to determine if the system would be better or worse off given similar circumstances."[4]
- "Based on actual historical events, the FRCC should adopt a 20 percent reserve margin criterion."[5]

In other words, the 20% reserve margin still being used and relied on by FPL is derived from a 1999 Staff evaluation which compared the operation of the power systems in place during the 1980s and 1990s with historical conditions at those times.

Q. Do you believe it is good utility practice to rely on a historical and outdated evaluation such as this for determining a utility's current and proper reserve margin?

A. No, not for planning purposes. Nor do I believe that the Commission should grant an affirmative determination of need when the claimed basis for such need relies in large part on such an outdated evaluation.

Q. Can you provide an example of how such an outdated evaluation is no longer applicable to FPL's current system?

[3] Staff Prehearing Statement, Issue 3, p. 6, Docket No. 981890-EU (October 7, 1999).
[4] Ballinger Testimony, p. 10, Docket No. 981890-EU (August 31, 1999).
[5] Staff Prehearing Statement, Issue 11, p. 8, Docket No. 981890-EU (October 7, 1999).

A. Since the 1980's and 1990's, FPL has invested in the improved reliability of its generating units. Moreover, technological advancements have made new plants that have gone online since this time more reliable. As noted by FRCC Witness Villar in 1999 testimony, "previous years' data may be invalid if it is not reflective of improvements in unit forced outage rates, changes in load forecasting methodologies, etc."[6] Indeed, circumstances have changed significantly, as demonstrated by FPL's improved reliability - between 1990 and 2011, FPL's fossil forced outage rate improved by roughly 50%.[7]

Q. Is a Stipulation like that approved by the Commission in 1999 a generally accepted method of selecting a reserve margin?

A. Not in my experience. I have participated in several proceedings in which the issue of reserve margin calculation has been addressed. For example, Exhibit JDW-2 is the *Generation Reserve Margin Study* conducted by Astrape Consulting for Duke Energy Carolinas in 2012. Astrape's approach is based on simulations of "various reserve margins to calculate the physical reliability metrics and corresponding reliability costs … to determine an optimal planning reserve margin."[8]

I have also reviewed similar material for all three IOUs in the Carolinas, for the Southern Company System (in Georgia Power IPR proceedings), for the Tennessee Valley Authority, and for numerous other utilities whose plans I have reviewed for benchmarking purposes. I do not recall reviewing any utility reserve

[6] Mario Villar, Rebuttal Testimony submitted on behalf of the Florida Reliability Coordinating Council, p. 23, Docket No. 981890-EU (September 27, 1999).
[7] Roxane R. Kennedy, Testimony & Exhibits in Re: Petition for Rate Increase by Florida Power & Light Company), Exhibit RRK-5, Docket No. 120015-EI.
[8] Ex. JDW-2, at p. 4.

margin that is based on a significantly different method of analysis – with the notable exception of the 20% reserve margin established by stipulation in Florida.

Q. Are you aware of any recent studies or substantive analysis conducted by FPL which would support the continued use of a 20% reserve margin?

A. No. In fact, FPL witness Dr. Steven Sim testified during his telephonic deposition taken in this matter on October 8, 2015, that no such study or substantive analysis existed. Dr. Sim did reference an analysis performed by FPL at some point in time, ostensibly since 1999, which indicated support for a reserve margin less than 20%.

Q. Has FPL provided any evidence in support of the need for a 20% reserve margin?

A. No. According to the testimony of Dr. Steven Sim, FPL utilized a minimum total reserve margin of 20% for both seasons; however, his testimony contains no reference to any FPL or third-party study or substantive analysis to validate this 20% RM criteria.

Q. Is it reasonable to assume that the 20% reserve margin remains appropriate because in FPL's historical experience, its existing reserve margin has resulted in adequate reserve margins and reliable service?

A. No. Utilities may err in using such a "gut check" method for identifying when a significant adjustment in the reserve margin standard is needed. For example, in 2010, the North Carolina Utilities Commission required Duke Energy Carolinas to conduct a reserve margin study. The Commission observed:

> Duke stated that it does not dispute that it has not recently conducted a formal comprehensive reserve margin study as it has

> relied primarily upon historical experience to establish its target reserve margin for planning purposes. A 17% target planning reserve margin level has resulted in adequate reserve amounts in the past and has been deemed reasonable by the Commission in the context of prior IRPs filed by the Company. … Duke stated that it does not believe that a comprehensive study is required at this time. [9]

The result of Duke Energy Carolinas' reserve margin study (provided as Exhibit JDW-2) was to reduce Duke's reserve margin from 17% to 15.5%, which had a material impact on Duke's resource plan. [10]

Q. Do you think that the Commission might reasonably rely upon a 20% reserve margin to provide an extra margin of safety?

A. No. In 1999 testimony by FPL Witness Roberto R. Denis, he explained that the approach used by FRCC to analyze the suitability of the 15% reserve margin "properly balances system reliability vs. cost by recognizing that over forecasting can lead to overbuilding, and thus higher costs, as surely as under forecasting can have an effect on ratepayers."[11] If the Commission continues to rely upon a 20% reserve margin to establish need without adequate, current evidence that such a reserve margin is needed, it will surely lead to overbuilding by FPL.

Q. If the 1999 Stipulation is no longer appropriate for the Commission to rely on for FPL's current and proper reserve margin, what should the Commission look to in this regard?

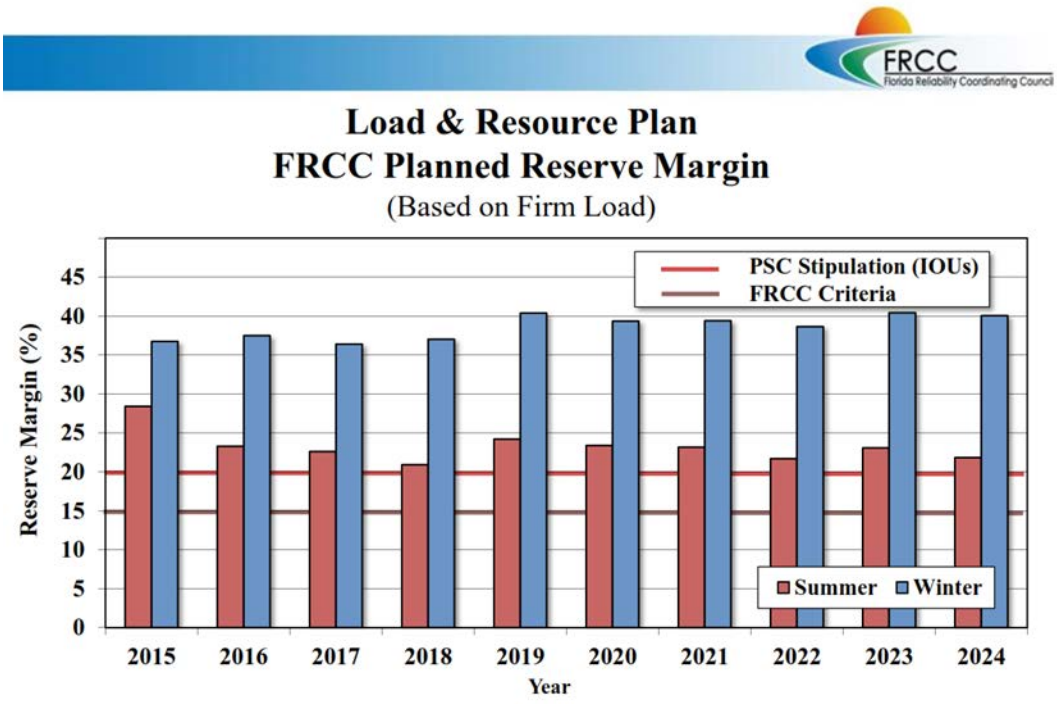
A. I recommend the Commission adopt the standard used by the Florida Reliability Coordinating Council (FRCC) until such a time as FPL, or the FRCC, provides

[9] North Carolina Utilities Commission, Order Approving 2010 Biennial Integrated Resource Plans and 2010 REPS Compliance Plans, Docket No. E-100, Sub 128 (Oct. 26, 2011) at 18.
[10] North Carolina Utilities Commission, Order Approving Integrated Resource Plans and REPS Compliance Plans, Docket No. E-100, Sub 137 (Oct. 14, 2013) at 18.
[11] Denis rebuttal Testimony, p. 17, Docket No. 981890-EU (September 27, 1999).

analysis and a revised reserve margin recommendation for the Commission to consider.

Q. Has the FRCC changed its 15% reserve margin since the 1999 Stipulation?

A. No. The Florida Reliability Coordinating Council (FRCC) still uses a 15% reserve margin, as indicated on the figure below. Also indicated is that both summer and winter planned reserve margins are well in excess of the 15% FRCC reserve margin criterion. Even though the capacity represented by OCEC Unit 1 is about one-third of the net increase to utility-owned capacity in the FRCC region by 2019, it would still be less than 2% of total FRCC summer capacity.



Source: Stacy Dochoda, *Florida Public Service Commission 2015 Ten-Year Site Plan Workshop: FRCC Presentation* (September 15, 2015).

Q. What are your conclusions regarding FPL's reliance on the 20% RM as a basis for the need to construct the OCEC Unit 1 in this docket?

A. It is my opinion, for several reasons stated earlier in my testimony, that the Commission should require FPL to use a 15% reserve margin as opposed to the 20% RM relied upon by FPL to demonstrate a need for the OCEC Unit 1. These reasons include: the 20% RM: (1) is based on a 1999 Staff evaluation of historical conditions which no longer reflect reality, including, but not limited to, the improved operating reliability of existing and new FPL power plants; (2) is not based on a commonly accepted analytical method of calculating reserve margins; and (3) is not supported by any recent studies or substantive analyses demonstrating that it is a proper reserve margin – for planning purposes or otherwise. Moreover, the 15% RM is supported by ongoing and updated analysis conducted by the FRCC in its 2015 annual assessment.

IV. FPL'S RELIANCE ON A 10% GENERATION-ONLY RESERVE MARGIN

Q. FPL also relies on a 10% generation-only reserve margin (GRM) criterion as a basis for the need for the OCEC Unit 1. How is the calculation of the GRM different from the standard reserve margin calculation?

A. In the standard reserve margin calculation, the forecast peak load is adjusted for load control program resources and energy conservation program resources, resulting in what is called the firm peak load. FPL's GRM criterion does not include these adjustments.

Q. Is the GRM criterion commonly accepted throughout the utility industry?

A. No, the GRM is a recently created FPL criterion, and it is not a commonly accepted resource planning criterion throughout the utility industry. I am not aware of any other utility that uses a GRM criterion. For example, in a recent report for the Eastern Interconnection States' Planning Council and the National Association of Regulatory Utility Commissioners (EISPC/NARUC), the only mention of a generation only reserve margin is in reference to FRCC.[12]

Q. Has the FRCC adopted a generation-only reserve margin criterion?

A. No. With respect to the GRM, the FRCC has noted that "the FRCC and certain utilities are also examining system reliability utilizing a generation-only Reserve Margin perspective."[13] FRCC later explains, "In 2014, FPL adopted a minimum 10% generation-only reserve margin (GRM) as a third reliability criterion in its Integrated Resource Planning (IRP) process."[14] While the FRCC monitors FPL's GRM, it has not adopted a GRM criterion, nor have any publicly available documents from FRCC explained how a GRM criterion might be set at a necessary level, if such exists.

Q. Has FPL ever relied on this GRM criterion in a Petition for Determination of Need prior to the current docket?

A. Not to my knowledge – rather, it is my understanding that FPL has always relied on the more commonly accepted resource planning criteria of RM and LOLP.

Q. What led FPL to create this GRM criterion?

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[12] Astrape Consulting, *The Economic Ramifications of Resource Adequacy White Paper*, funded by US Department of Energy for the Eastern Interconnection States' Planning Council and the National Association of Regulatory Utility Commissioners (January 2013).

[13] Florida Reliability Coordinating Council, *FRCC 2015 Load & Resource Reliability Assessment Report*, FRCC-MS-PL-056 Version 1 (July 2015), p. 5.

[14] *Id.* at p. 14.

A. Dr. Steven Sim's direct testimony does not provide an explanation as to the reason FPL created the GRM criterion other than the simple assertion that it "focuses solely on the need … to ensure there is an appropriate balance between generation and DSM resources." FPL's 2015 Ten-Year Site Plan (TYSP) does provide a slightly more substantive explanation of the utility's concern, "A resource plan with a higher GRM value is projected to result in more MW being available to system operators on adverse peak load days, and in lower LOLP values, than a resource plan with a lower GRM value, even though both resource plans have an identical total reserve margin."[15] Nonetheless, this discussion does not justify the addition of the higher GRM value.

In his telephonic deposition, Dr. Steven Sim testified that it was created in response to two occurrences: (1) the adoption by the Commission of DSM goals for FPL in 2009; and (2) a high load event on January 10, 2011.

Q. Do you have any concerns about the creation of the GRM criterion based solely on the above two occurrences?

A. Yes. In regards to the Commission's 2009 adoption of DSM goals for FPL, not only did FPL never meet those goals, but those goals have been superseded by significantly lower goals adopted by the Commission in 2014 and are no longer in effect for FPL.

The January 10, 2011, high load event is described by FPL Vice President Bob Barrett in a February 2014 presentation included as Exhibit JDW-3. This event was a result of a combination of factors, including cold winter temperatures

[15] FPL 2015 TYSP, p. 56.

driving a high electric heat load and what appears to be a loss of about 1,110 MW (4%) of FPL firm generation resources. Although news reports described some localized outages, FPL did not curtail firm load and retained 1,144 MW of load management capability. I have summarized relevant information from FPL documentation below.

	Anticipated FPL 2009 10-Year Site Plan	Actual January 10, 2011[16]
Firm Generation Capacity	25,982 MW[17]	24,872 MW
Peak Demand	18,697 MW	24,872 MW
DSM	1,730 MW	Activated 561 MW
Emergency Power	450 MW [18]	Sold 426 MW

The FRCC described this as an "extremely high winter peak … the coldest winter on record (or very close) in many areas of Peninsular Florida." Nonetheless, FRCC noted, "All planned load control programs served their designed purpose and firm load was served throughout the peak load period."[19]

FPL also noted that Turkey Point 4 tripped several hours after the peak event, making an additional 750 MW of generation unavailable. If Turkey Point 4

[16] Exhibit JDW-3, p. 16.
[17] According to the Florida Reliability Coordinating Council *2010 Load and Resource Plan*, FPL had a winter net capability of 25,843 MW on January 1, 2010.
[18] Exhibit JDW-3, p. 20.
[19] Florida Reliability Coordinating Council, Inc., *2010 Load & Resource Reliability Assessment Report* (July 6, 2010).

had tripped during the peak event, FPL could have utilized its load management resources or reclaimed its emergency power support from other utilities.

Q. Has FPL provided any other information explaining why a GRM criterion is necessary and warranted in its resource planning?

A. Yes, as presented on slide 14 in Exhibit JDW-3, Mr. Barrett of FPL believes the need for the GRM criterion "can be supported by 3 points."

Q. FPL's first point is "'All resource plans with identical total reserve margins are not created equal' from an operational perspective (a higher GRM plan will result in significantly more total resources – generation and load management – available for system operators than a lower GRM plan in severe peak conditions)." Please respond.

I agree that resource plans with identical total reserve margins will be less reliable to the extent they rely on load management to a greater extent. I do not agree that FPL has demonstrated that energy conservations programs have this effect. For this reason, I disagree that a higher GRM plan is necessarily less reliable than a lower GRM plan.

According to material I reviewed, FPL determined that energy conservation programs (e.g., home insulation projects) result in higher loss of load probability (LOLP) on a MW-for-MW basis than generation. FPL's analysis relies on two flawed assumptions.

First, FPL estimates that monthly demand reduction peaks in August, but is lower in other summer months, presenting a reliability risk that the effect of

programs such as Residential HVAC will be less than planned for on peak days.[20] This analysis appears to be based on average monthly savings, not on a peak analysis. Average savings should peak during August, since August days tend to be hotter on average. But to the extent that peak events in June are driven by the same type of hot conditions that are more likely to occur in August, these programs should perform identically. I am unaware of evidence that energy efficiency or load control program technologies perform less effectively on a hot June or October day than on an equally hot August day.

Second, FPL cites uncertainty about the performance of future EE programs, presenting a reliability risk in the form of load forecast uncertainty. This analysis is unreliable because it (1) is out of date (based on 2002 technology) and (2) is based on a simple average of program uncertainty without any evidence that averaging is the proper statistical technique, given the likelihood that there are relationships between the program outcomes.[21] This type of analysis should be supported by a current evaluation, measurement and verification (EM&V) study conducted by an independent consultant and its novel application in this circumstance certainly requires greater scrutiny.

Nonetheless, I do agree with one of the reasons FPL gives for DSM programs adversely affecting LOLP relative to generation resources. Exhibit JDW-3 (p. 7) illustrates FPL's discussion of load management "fatigue."[22] I agree with FPL's conclusion that evidence on this topic is "inconclusive," but

[20] FPL, "Comparison of Generation vs. DSM: 1 MW in August Basis," Sim Deposition Exhibit 2 (undated).

[21] FPL, "Confidence Levels Around DSM EE Summer MW (2002 Monitoring Data Applied to 2012 MW)," Sim Deposition Exhibit 2 (undated).

[22] Ex. JDW-3, at p. 7.

nonetheless, it is reasonable for FPL to plan around this issue. While customer response to load management requests is usually quite good for the first several times, FPL reasonably concludes that there should be "No greater than 10 events/year," among other limitations. To the extent that a peak event repeatedly draws on load management resources, it could result in lower customer response and hence a higher LOLP associated with use of load management resources.

Q. Does the issue of load management "fatigue" justify adoption of the GRM?

A. No. The GRM designed by FPL includes energy conservation programs, which are not subject to "fatigue." In fact, just the opposite as many of these programs involve the use of passive measures (e.g., insulation) or installation of lower power equipment.

It is worth noting that in the EISPC/NARUC paper on resource adequacy I referred to earlier, there is no discussion of energy conservation programs presenting a risk to resource adequacy. In contrast, Astrape Consulting did model the impacts of load management (or demand response) programs on reserve margin requirements.

Instead of the GRM, FPL should consider a reliability criterion that only differs from the standard reserve margin with respect to consideration of load management programs. In addition to discussion in the EISPC/NARUC paper, such a criterion appears to have been recommended by Staff of the Florida Public Service Commission, as presented in Exhibit JDW-4.

The "FPSC Staff Method Gen-Only Reserve Margin" differs from the FPL GRM by adjusting peak load to consider the impact of conservation programs (as

in the standard reserve margin criterion) but differs from the standard reserve margin by excluding load control programs from the peak load adjustment.

Q. FPL's second point is, "A resource plan with a higher GRM value is projected to be more reliable from an LOLP perspective." Please respond.

A. Technically, yes, but the point is mooted by the data. As I have discussed above, if the reason that a plan has a higher GRM value is less reliance on load control, then I agree that a higher GRM plan would have a higher LOLP.

However, as illustrated in Exhibit JDW-3 (p. 5), FPL's data do not support a concern that the "higher LOLP" is leading to significant risk. According to FPL, the difference between a 5% GRM and a 10% GRM is 0.01 days/year.

As noted in Dr. Sim's testimony, FPL already applies a "maximum loss-of-load probability (LOLP) of 0.1 day per year." Simply stating that a lower GRM value corresponds to a more adverse LOLP value does not explain what additional reliability risk is presented by a utility with a GRM of less than 10% but a LOLP that meets the LOLP standard. In fact, while FPL's LOLP is not included in Dr. Sim's testimony, FPL estimated it as 0.02 days per year (Exhibit JDW-3, p. 5). Furthermore, even in the 5% GRM case, the LOLP projection provided by FPL is only 36% of its LOLP standard. FPL has simply failed to present a problem that the GRM is needed to solve.

Q. FPL's third point is, "A resource plan with a higher GRM value is projected to have to use its LM resources less frequently." Please respond.

A. Yes, the more generation resources FPL invests in, at customer expense, the less it will rely on load management resources. Failing to make reasonable use of its

load management programs would be a waste of customer resources invested to develop those programs.

Q. Is any form of generation-only reserve margin the best way to address concerns about load management resources?

A. No. Concerns about the scale and responsiveness of load management resources are adequately addressed using a standard reserve margin method under guidance provided by the North American Electric Reliability Corporation ("NERC").

Florida utilities appropriately calculate reserve requirements by comparing system generation resources (and net transactions with other systems) to net internal demand. As defined by NERC, net internal demand includes unrestricted non-coincident peak adjusted for energy efficiency, diversity, stand-by demand, non-member load and demand response.[23]

It is possible that demand response or load management programs may not perform at the level indicated by subscribed capacity. Such programs often depend on communication with the customer, customer acceptance at the time of peak, and critical infrastructure performance. If such technical issues result in less demand reduction than anticipated, whether routinely or during periods of critical demand, it is appropriate to consider such factors in establishing the contribution of load management to firm supply. NERC guidance, in fact, indicates that demand response programs should be considered in net internal demand to the extent that they are dispatchable and controllable.[24]

[23] NERC, *Reliability Assessment Guidebook*, Version 3.1 (August 2012), p. 15.
[24] *Id.*

In reviewing FPL and FRCC discussion of the GRM, I did not come across any suggestion that such technical issues are actually impairing the dispatchable and controllable nature of FPL load management programs (other than "fatigue" as discussed above). NERC guidance does not suggest that there should be an upper limit set for a particular resource, including load management.

FPL applies a similar method when considering the impact of solar energy on its reserve margin. In its 2015 TYSP, FPL notes, "Approximately 46% of the 25 MW of PV at DeSoto, and 32% of the 10 MW of PV at Space Coast, are considered as firm generating capacity for summer reserve margin purposes."[25] Without necessarily agreeing with the values selected by FPL, I agree strongly with the application of seasonal-specific capacity values for resources whose dispatch or control is impaired for any reason. This may apply to any resource type, for example, I am aware that some utilities derate the summer capacity values of certain nuclear or other thermal generation units due to the likelihood of limitations in the supply or performance of cooling water.

Most often, however, load management resources are not considered at risk for underperformance. When studying Duke Energy Carolinas' reserve margin, Astrape modeled load management resources without remarking on any technical issues that might suggest a need for a lower capacity value.[26] While technical issues may exist that result in less demand reduction achieved than expected, our review of Duke Energy Carolinas' activation history data did not

[25] FPL 2015 TYSP, at, p. 17.

[26] Astrape Consulting, Inc., *Duke Energy Carolinas 2012 Generation Reserve Margin Study* (August 2012), p. 33-34, 47-48. For example, Astrape modeled various sensitivities reflecting general operational concerns affecting reserve margin planning, such as weather diversity. None of these sensitivities reflected general technical considerations related to the response of demand response resources.

reveal shortfalls. DEC reported that its demand response programs have been activated a number of times, and most programs achieved reductions consistent with (or even in excess of) expected reductions.[27]

It is also worth noting that SACE took some issue with how Duke Energy Carolinas implemented its reserve margin calculation. In response to SACE's comments, in its order on the 2012 utility IRPs issued on October 14, 2013, the North Carolina Utilities Commission ("NCUC") stated that DEC "should consider demand response in programs that it is able to control or dispatch as adjustments to net internal demand, similar to DEP."[28] This order confirmed SACE's interpretation of NERC guidelines.

Accordingly, while I do not agree that a GRM criterion is necessary for reliability purposes, to the extent that FPL provides evidence that its load management programs have an activation history that reveals a shortfall in reductions, then I would agree that such a shortfall should be considered in its reserve margin analysis. When forecasting net internal demand, FPL could reasonable adjust the capacity value of its load management programs to reflect experience.

Q. What are your conclusions regarding FPL's reliance on the 10% GRM as a basis for the need to construct the OCEC Unit 1 in this docket?

A. In addition to my points above, the FPL's utilization of its GRM criterion will skew its resource decisions towards "putting steel in the ground." In other words,

[27] Duke Energy Carolinas, 2012 IRP, p. 148. The sole exception is the Power Manager (air conditioner) program, in which activation events since 2010 achieved 3-17% less reduction than expected.

[28] North Carolina Utilities Commission, Order Approving Integrated Resource Plans and REPS Compliance Plans, Docket No. E-100, Sub 137 (Oct. 14, 2013) at pp. 20-21.

as long as FPL relies on this criterion for future resource planning, the company will overemphasize building new power plants as opposed to looking to DSM or energy efficiency, or simply more efficient utilization of existing resources, to meet its future resource needs. By adopting an unnecessary and wrongly designed criterion, FPL's customers will carry the cost of unnecessary power plant construction.

V. FPL'S ANALYSIS OF ALTERNATIVES TO THE OCEC UNIT 1

Q. Could FPL have avoided the need for the proposed OCEC Unit 1 through a more full and thorough evaluation of all reasonably available cost-effective alternatives?

A. Potentially. FPL continues to underutilize all cost-effective alternatives to conventional generation, including, but not limited to, energy efficiency. As discussed in the testimony of Natalie Mims, SACE explained in the recent FEECA proceedings how FPL had the opportunity to pursue much higher levels of energy efficiency at a much lower cost than building and operating new power plants.

Q. Are there any renewable energy sources or technologies reasonably available to FPL which might mitigate the need for the proposed OCEC Unit 1?

A. Yes. FPL has not fully explored renewable energy opportunities that could reduce risks to customers from variable fuel costs and other factors. If FPL had made greater investments in energy efficiency and pursued opportunities to procure renewable energy in South Carolina, it might be possible for FPL to avoid adding

any additional natural gas power plants – including the proposed OCEC Unit 1 - and the costs that they represent for customers.

Q. What about solar technologies?

A. FPL did not appear to consider solar resources as a generation alternative in its most recent ten-year site plan. FPL did explain new plans to add three new photovoltaic (PV) facilities with nameplate ratings of approximately 74.5 MW each. However, it is notable that these units are identified in "step 1" of FPL's resource planning process in which it applies assumptions regarding FPL's "current projection of new generating capacity additions …"[29] In other words, FPL's newest solar facilities are not the result of FPL's resource planning process as described in the ten-year site plan, but are the result of some other business development process that is not clearly described.

If FPL considered solar resources as a generation alternative to natural gas (alone or in combination), then solar technologies would be mentioned as one of the resource alternatives evaluated in "step 2," in which competing resource options are evaluated to meet FPL's resource needs. The outcome of the process is reported as "three more generation changes," including the proposed CC unit and two short-term PPAs.[30]

In my experience reviewing many utility resource plans, especially those in the Southeast, utilities often fail to evaluate solar as a resource. Only recently have a few utilities, notably the Tennessee Valley Authority, evaluated solar, wind and energy efficiency as alternatives in their capacity optimization models.

[29] FPL IRP p. 49-50.

[30] FPL IRP p. 57.

More typically, a utility will include solar as a defined model input, which is what FPL explicitly describes doing in this instance.

Q. Have you seen any information specific to FPL's analysis of using PV solar to meet all or a portion of the need that it now wants to meet with the OCEC Unit 1?

A. During Dr. Sim's deposition, in response to a SACE document request, FPL provided incomplete information about additional analysis it may have performed regarding solar with respect to meeting the purported need it now wants to meet with OCEC Unit 1. This incomplete information did not convince me that FPL includes solar as a resource alternative in its planning model.

Because of the incomplete nature of the information provided, I cannot speculate as to the extent that solar technologies could substitute for any need that may exist (now or in the future) for a combined cycle natural gas plant. I would expect FPL to increase its plans to invest in solar resources if solar was included in the capacity optimization model process. I do know from experience that as utilities like the Tennessee Valley Authority make such changes in their model process, the most cost-effective plans do include significantly increased investments in solar and wind resources. Surely in the Sunshine State, the results would be favorable to growth in solar power.

VI. CONCLUSION

Q. Based on your opinions regarding FPL's misplaced reliance on the 20% RM criterion and the 10% GRM criterion in this docket, what are your conclusions about FPL's need for the OCEC Unit 1?

A. Based on my recommendation that the Commission evaluate FPL's Petition using FRCC's 15% reserve margin rather than the 20% reserve margin adopted in the 1999 Stipulation, and my recommendation to disregard the unfounded GRM criterion, FPL does not need any new capacity in 2019, and no significant amount of new capacity in 2020, as illustrated below. As a result, FPLs' Petition should be denied.

August of the Year	Projected Summer Total Reserve Margin w/o Additions in 2019 & 2020	Projected Total MW Needed to Meet Total Reserve Margin (MW)	
		20% Reserve Margin	15% Reserve Margin
2015	26.7%	(1,421)	(2,488)
2016	21.3%	(287)	(1,376)
2017	20.9%	(190)	(1,301)
2018	20.0%	(1)	(1,129)
2019	15.7%	988	(157)
2020	14.3%	1,320	161

Q. Does that conclude your direct testimony?

A. Yes, it does.

BY MR. WHITLOCK:

Q Mr. Wilson, would you please read a summary of your testimony for the Commission, please, sir.

A Thank you. Good morning, Mr. Chairman, Commissioners. I am testifying in this proceeding to explain why SACE opposes the certification of Okeechobee Unit 1. As disclosed in my resumé, SACE has been involved in several gas plant decisions across the southeast, but we have never before outright opposed approval of a gas plant. Quite simply, my review of the evidence shows that FPL has not made a convincing case that ratepayers should spend $1.2 billion plus financing costs for this power plant because it is not needed.

FPL has ample capacity to provide power during peak hours, and FPL does not need an expensive gas plant to provide backup power should its energy efficiency programs fail to deliver or should its participants in load management programs choose to abandon FPL in an hour of need. Those are the fears that FPL's testimony incites. And when the evidence is carefully reviewed, the analysis is not up to industry standards.

The Commission should deny FPL's petition and direct FPL to provide more thorough evidence regarding appropriate summer and winter reserve margins, and why it believes that some form of a generation-only reserve

margin is necessary. If FPL's analysis then supports a future need for a power plant, it can submit another petition.

FPL has relied on a 20 percent minimum planning reserve margin since the Commission approved a stipulation in December 1999. The basis for the 1999 stipulation was staff testimony and recommendation that focused on extrapolating historical conditions to then current conditions.

Circumstances have changed significantly since 1999. For example, FPL reports improved reliability. Between 1990 and 2011, FPL's fossil forced outage rate improved by roughly 50 percent. Continued reliance on an outdated historical analysis is not consisted with generally accepted conventional utility practice.

In sharp contrast, the generally accepted method of selecting a reserve margin is an optimization study such as the one I submitted as JW-2. This study conducted for Duke Energy Carolinas in 2012 includes simulations of various reserve margins to calculate the physical reliability metrics and corresponding reliability costs to determine an optimal planning reserve margin. I've observed similar methods for all three investor-owned utilities in the Carolinas for the Southern Company system, for the Tennessee Valley

Authority, and for numerous other utilities whose plans I have reviewed for benchmarking purposes.

FPL has conducted no such optimization study to determine what its appropriate reserve margin is today to most efficiently serve the needs of its customers. Further, when it comes to explaining why a 20 percent reserve margin continues to be justified, FPL relies on anecdotal discussions of historical events. While potentially informative for some purposes, these discussions do not represent a best practice planning method for optimizing a utility's reserve margins.

The hazard of relying on such a gut check method is illustrated by Duke Energy Carolinas' experience. As a result of conducting an optimization study, Duke's reserve margin was reduced from 17 percent to 15.5 percent, which had a material impact on Duke's resource plan. I recommend the Commission rely on the 15 percent reserve margin standard used by the FRCC until such a time as FPL or FRCC provides analysis and a revised recommendation.

With respect to FPL's proposed generation-only reserve margin, the Commission should reject FPL's proposed utilization of this FPL-created criterion. FPL does not show that its LOLP standard will be even slightly at risk without a GRM under foreseeable

circumstances. I simply do not believe that FPL has made a convincing case that a GRM is necessary as FPL has simply failed to present a problem that the GRM is needed to solve.

I also testify regarding FPL's failure to fully explore renewable energy opportunities that could reduce risk to customers from variable fuel costs and other factors. For example, FPL did not appear to consider solar resources as a generation alternative to the proposed Okeechobee Unit 1. FPL's recently announced plans for solar facilities are not the result of FPL's resource planning process as described in the Ten-Year Site Plan but are the result of some other business development process that is not clearly described.

Based on my recommendation that the Commission evaluate FPL's petition using FRCC's 15 percent reserve margin and my recommendation to disregard the unfounded GRM criterion, FPL does not need any new capacity in 2019 and no significant amount of new capacity in 2020. As a result, FPL's petition should be denied. Thank you.

MR. WHITLOCK: Thank you. Mr. Chairman, Mr. Wilson is available for cross-examination.

CHAIRMAN GRAHAM: Okay. Mr. Wilson, thank

you. Welcome, rather.

THE WITNESS: Thank you very much.

CHAIRMAN GRAHAM: Florida Power & Light.

EXAMINATION

BY MR. GUYTON:

Q Good morning, Mr. Wilson.

A Good morning, Mr. Guyton.

Q You have never worked for an electric utility, have you?

A No.

Q And you've certainly never been employed in a utility's resource planning department, have you?

A No.

Q And you've never been retained as a consultant by an electric utility to perform research planning analyses, have you?

A No.

Q And you've never performed an electric utility load forecast.

A Not for an electric utility, no.

Q Okay. And you've never performed an LOLP analysis.

A No.

Q You attached to your testimony a Duke Energy Carolinas 2012 generation reserve margin study. You

didn't perform that study, did you?

A No.

Q And you didn't participate in the drafting of that staff study, did you?

A No.

Q And you've not performed a reserve margin study comparable to that Astrape Consulting study for any electric utility, have you?

A No.

Q And you haven't been asked by an electric utility or a regulatory commission to perform a reserve margin study comparable to the Astrape study that you attached to your testimony, have you?

A No.

Q And you haven't been asked by SACE to perform a reserve margin study comparable to the Astrape study, have you?

A I'm not sure whether I can answer that with a yes or no.

Q That's all right. You've not performed for FPL a reserve margin study comparable to the Astrape Consulting study that you attached to your testimony, have you?

A No.

Q Okay. Now before you started work for SACE in

2007, you had no job experience as a utility resource planner, did you?

A No. I did not work as a utility resource planner, as I previously answered.

Q Okay. So in contrast, Dr. Sim has worked as a utility resource planner since 1991; correct?

MR. WHITLOCK: Objection. Calls for speculation.

MR. GUYTON: He can answer whether he's aware or not. That's certainly been in the testimony.

CHAIRMAN GRAHAM: You can answer the question if you know or not.

THE WITNESS: I don't recall at what year Dr. Sim began his employment as a utility resource planner. I'm sorry. I'm happy to review his testimony, if you'd like me to obtain it.

BY MR. GUYTON:

Q That's all right. I think it's in the record.

You've never worked for the FRCC, have you?

A No.

Q And you've never served on the FRCC's Resource Working Group that performs reliability analyses for peninsular Florida, have you?

A No.

Q Dr. Sim has, hasn't he?

A I'm aware of Dr. Sim's involvement with FRCC, but I don't recall the specifics at this moment.

Q Do you recall whether he's the current chair of the FRCC Resource Working Group?

A As I just stated, I don't recall his specific roles at this moment. I'm happy to review that, if you'd like me to obtain his testimony.

Q What's the role of the FRCC regarding the reliability of the Florida grid?

A My understanding is that it assesses the -- whether the utilities are going to meet its established reliability standards and is part of the process that rolls up to the North American Electric Reliability Council.

Q And you've not worked for the FRCC. Have you ever worked for any other regional planning entity?

A I have not been employed by any regional planning entity related to electric utilities in the southeast.

Q Have you ever served as the chair of the Southeastern Electric Exchange Task Force as Dr. Sim has?

A No.

Q Have you ever worked for the NERC?

A No.

Q Have you ever worked for the FERC?

A No.

Q What is the responsibility of the FERC regarding grid reliability?

A The responsibility of the FERC regarding grid reliability?

Q Yes, sir.

A It is responsible for implementing the federal Public Utilities Resource Act, if I've stated that correctly, and the federal Power Act, and both of those relate to partial responsibility for the grid through markets, through ensuring interconnection standards, through a variety of things. Its responsibilities over the grid are incomplete and are shared with this Commission and with a number of other private responsibilities that are administered through NERC.

Q What's the responsibility of this Commission regarding Florida grid reliability?

A The responsibility of this Commission is to review the utilities' proposals for how they will maintain grid reliability and ensure that it agrees that those are satisfactory under ***Florida Statutes***.

Q Is such -- is that all your understanding of the Commission's responsibility for grid reliability?

A I don't have a copy of the statutes in front

of me, but I have reviewed them in the past.

Q Okay. You've never worked as a utility system operator, have you?

A No.

Q Okay. Mr. Wilson, is part of SACE's advocacy its publication of its blog Clean Energy Footprint?

A Yes.

Q And that's part of the technical and regulatory advocacy that you supervise?

A No, I do not -- I'm not directly responsible for the contents of the blog as a whole.

Q But you have served as a contributor to that blog.

A Yes. I've served as a contributor, but I'm not responsible for the entire blog.

Q Okay. I'm going to ask you about one of those entries, but we're going to pass this out for the benefit of the Commission first.

(Pause.)

CHAIRMAN GRAHAM: Mr. Guyton, I guess we'll give this No. 78 .

MR. GUYTON: Thank you, Mr. Chairman.

(Exhibit 78 marked for identification.)

BY MR. GUYTON:

Q Mr. Wilson, if you would direct your attention

to what's been identified as Exhibit 78. That's a -- the blog entitled "Driving Energy Efficiency Too Slow."

A Yes, sir.

Q You're familiar with this, aren't you?

A It is a blog that I authored.

Q Yes. Would you please read the first sentence of the blog below the traffic ticket there?

A "Florida energy regulators have been in the slow lane dragging out the implementation of a 2009 law mandating stronger energy efficiency programs."

Q And then several programs below that you state that SACE has filed an appeal arguing that the Commission's decision violated 366.827 in rolling back the DSM goals it established?

A I recall that we filed such an appeal, yes.

Q Okay. And how did the Supreme Court rule on that appeal?

A I understand that our standing was denied because of unspecified reasons.

Q Okay. Would you turn to the last paragraph of your blog here?

A Yes.

MR. WHITLOCK: Mr. Chairman, I'm going to object to this line of questioning. I don't see how it has any relevance to this proceeding. This is -- we're

here about a need determination for a natural gas plant, and this is -- he's questioning Mr. Wilson on his opinions on actions SACE took over four years ago in regards to 2009 DSM goals. I just completely fail to see any relevance.

MR. GUYTON: The witness has addressed whether or not there's additional DSM and renewable energy that would be available to FPL. That's part of his testimony. I'm just simply trying to lay the context for what he's commented about the Commission's implementation of FEECA and DSM.

CHAIRMAN GRAHAM: I'll allow it.

BY MR. GUYTON:

Q Would you read for the Commission your last paragraph of your blog beginning "ironically"?

A "Ironically on the same day that the Florida Public Service Commission argued that helping customers save energy was too expensive, it also approved a program that will require existing customers to subsidize the energy bills of new businesses, but the Commission did not examine the costs and rate impacts of that program. Deeply hypocritical and misguided as energy efficiency promotes job growth and helps existing businesses manage their bottom line."

MR. GUYTON: That's all we have. Thank you,

Mr. Wilson.

CHAIRMAN GRAHAM: Thank you. Staff.

EXAMINATION

BY MS. AMES:

Q Good morning, Mr. Wilson.

A Good morning.

Q I'm going to be referring to your direct testimony. If you could turn to page 12.

A I'm on page 12.

Q Okay. On the bottom of page 12 and to page 13 you discuss a high load event experienced by FP&L in January of 2011; correct?

A Yes, ma'am.

Q If FP&L had planned to a 15 percent reserve margin, would FP&L have met its load requirements during this high load event?

A I believe it would have, if I recall correctly. But I don't have the exhibit in front of me that would present that.

Q Okay.

A They lost about -- under that event -- yes, I believe they had sufficient DSM capability available under the high load event to meet the need, if I recall correctly. But I would need to look at the exhibit that you're referring to.

Q And that's assuming they had planned for a 15 percent reserve margin?

A I believe that the other concern was that the -- that FPL was selling power to another utility during that period. So they had sufficient capacity during that event to meet their load. They also had an approximately 1,900 megawatt outage of power that hasn't been explained. I've reviewed numerous documents. So they had -- so the contributing factors to that event were that they were supplying power to another utility, that they had a very large unexplained outage, and there was a high peak event. And when you take all those factors into consideration, they had adequate resources under a 15 percent or a 20 percent reserve margin to meet their need during that time period in my opinion.

MS. AMES: Staff has no more questions.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Commissioners.

Redirect.

MR. WHITLOCK: No redirect. Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. WHITLOCK: Mr. Chairman, at this time SACE would ask that Exhibits JDW-1 through JDW-4 marked on the Comprehensive Exhibit List as Exhibits 28 through

31 be moved into the record.

CHAIRMAN GRAHAM: If no objections, we'll enter Exhibits 28 through 31 into the record.

(Exhibits 28 through 31 previously admitted in Volume 1.)

MR. GUYTON: Florida Power & Light Company moves Exhibit 78.

CHAIRMAN GRAHAM: If there's no objections, we'll enter Exhibit 78 into the record.

(Exhibit 78 admitted into the record.)

Any other exhibits? I don't think so.

Okay. Does she [sic] want to be excused? Does your witness want to be excused?

MR. WHITLOCK: Sorry, Mr. Chairman. Yes, please.

CHAIRMAN GRAHAM: Sure.

THE WITNESS: Excuse me.

(Laughter.)

CHAIRMAN GRAHAM: Okay. ECOSWF.

MR. MARSHALL: ECOSWF calls Karl Rábago to the stand. And, Mr. Chairman, I would note that the witness has not been sworn.

CHAIRMAN GRAHAM: Sir, if you'd raise your right hand. Do you hereby swear or affirm that the testimony you're going to give today is true?

THE WITNESS: I do.

CHAIRMAN GRAHAM: Thank you.

THE WITNESS: A great many trees suffered in this case.

Whereupon,

KARL RÁBAGO

was called as a witness on behalf of the Environmental Confederation of Southwest Florida and, having first been duly sworn, testified as follows:

BY MR. MARSHALL:

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

A My name is Karl Rábago. I work at the Pace Energy and Climate Center at the Pace Law School in White Plains. I'm at -- which is located at 78 North Broadway, White Plains, New York. And I'm also the principal of Rábago Energy, LLC, a New York limited liability company located at 62 Prospect Street, White Plains, New York.

Q And on whose behalf are you testifying today?

A I'm testifying on behalf of the Environmental Confederation of Southwest Florida, ECOSWF.

Q Mr. Rábago, on October 14th, 2015, did you prepare and cause to be filed direct testimony and Exhibits KRR-1 through KRR-9 in this docket?

A Yes, sir.

MR. MARSHALL: And for the record, on the Comprehensive Exhibit List those would be Exhibits 34 through 58.

CHAIRMAN GRAHAM: Duly noted.

BY MR. MARSHALL:

Q Do you have that testimony and those exhibits with you today?

A They are present here, yes.

Q Do you have any changes to your prefiled testimony or exhibits?

A Yes. I have one typographical correction. I want to thank Mr. Feldman from the company for pointing out that on page 12 of my testimony, I believe at line 20, I used the word "pollution" when I -- he pointed out that I used the word "pollution." I want to point out that I should have used the word "population."

Q And other than that correction, if I asked you the same questions today, would your answers be the same as in your prefiled testimony?

A Yes, they would.

MR. MARSHALL: Mr. Chairman, at this point I'd like to have Mr. Rábago's prefiled direct testimony entered into the record as though read.

CHAIRMAN GRAHAM: That's pronounced Rábago?

THE WITNESS: Rábago, yes, sir.

CHAIRMAN GRAHAM: We will enter Mr. Rábago's prefiled direct testimony as corrected into the record as though read.

INTRODUCTION

Q. **Please state your name, business name and address, and role with The Environmental Confederation of Southwest Florida.**

A. My name is Karl R. Rábago. I am the principal of Rábago Energy LLC, a New York limited liability company, located at 62 Prospect Street, White Plains, New York. I appear here in my capacity as an expert witness on behalf of The Environmental Confederation of Southwest Florida.

Q. **Please summarize your experience and expertise in the field of electric utility regulation and the renewable energy field.**

A. I have worked for more than 25 years in the electricity industry and related fields. My previous employment experience includes Commissioner with the Public Utility Commission of Texas, Deputy Assistant Secretary with the U.S. Department of Energy, Vice President with Austin Energy, and Director with AES Corporation, among others. A detailed resume is attached as Exhibit KRR-1.

Q. **Have you ever testified before the Florida Public Service Commission or other regulatory agencies?**

A. Yes. In the past three years, I have submitted testimony, comments, or presentations in proceedings in Florida, Virginia, New York, Hawai'i, Georgia, Minnesota, Michigan, Missouri, Louisiana, North Carolina, Kentucky, Arizona, Wisconsin, California, and the District of Columbia. A listing of my recent previous testimony is attached as Exhibit KRR-2.

Q. **What materials did you review in preparing this testimony?**

A. I reviewed applicable sections of the Florida Statutes and Administrative Rules, the Application of Florida Power & Light ("FPL" or "Company"), and other materials and information cited.

SUMMARY OF TESTIMONY

Q. **Please summarize your testimony in this matter**.

A. In this testimony, I review the Company's legal and regulatory requirements and how it addressed the standard of proof. I find that the Company has not met the requirements of the law because it has not demonstrated that the proposed Okeechobee power plant is needed. I specifically note that the Company has adopted a standard for when to propose new generation that is, in practice, a one-part test relating to a reserve margin percentage that is untested against actual impacts on system reliability and integrity, or adequacy of supply. I point out that the Company has created a system with outrageously low Loss of Load Probability ("LOLP") values, guaranteeing that customers are paying for an overbuilt system that unfairly burdens customers with unnecessary costs. I provide evidence drawn from the Company's application that deficiencies in the Application are not adequately addressed and materially impact the quality of the Application. I review the Company's evidence about forecasts of the drivers of need for generation capacity and show how the proposal in this Application is out of step with the Company's forecast data. Finally, I review the Company's assertions of potential harm associated with denial or delay in approval of this Application, and find that the Company has not substantiated these assertions with any data. Based on all this evidence and analysis, I recommend that the Commission deny the Company's Application. I recommend that the Commission direct the Company to take a hard look at system reliability and integrity as well as the costs of its generation construction plans prior to the submission of any subsequent application.

THE COMPANY'S RESPONSIBILITY UNDER THE LAW

Q. **What is your understanding of the Company's obligations under the Florida law in meeting its burden of production and persuasion in securing a determination of need for its**

Next Planned Generating Unit ("NPGU")?

A. Florida law requires that the Company submit competent and sufficient evidence to support a determination by the Florida Public Service Commission ("FPSC" or "Commission") that the proposed plant is needed. Under Florida Statute 403.519,[1] the evidence must enable the Commission to make a determination that adequately accounts for:

- "the need for electric system reliability and integrity,
- The need for adequate electricity at a reasonable cost,
- The need for fuel diversity and supply reliability,
- Whether the proposed plant is the most cost-effective alternative available, and
- Whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available."[2]

Q. **What is the Company ultimately required to produce for review in this proceeding and what does it seek from the Commission?**

A. The Company is obligated to produce an application that justifies a determination of need, taking into account the factors for decision. The Company seeks a determination of need for its NPGU, what it calls the "Okeechobee Clean Energy Center Unit 1."

THE COMPANY'S APPLICATION FOR A DETERMINATION OF NEED

Q. **Have you reviewed the Company's application for a determination of need for its NPGU?**

A. Yes. Company witness Sim outlines the application in testimony supported and amplified by Company witnesses Kingston, Feldman, and Stubblefield. My testimony addresses issues raised by the testimony of all of these witnesses except Stubblefield.

[1] § 403.501, et seq. Florida Statutes.
[2] *Id.*

Q. **What does the Company propose in this application?**

A. Basically, the Company proposes to construct, own, and operate a 1,622 MW 3 x 1 Combined Cycle natural gas-fired greenfield power plant to be sited in the northeast corner of Okeechobee County.

Q. **How does this proposal compare with the plant addition contemplated in the Company's 2014 Ten Year Site Plan ("TYSP")?**

A. The proposed NPGU is 353 MW larger[3] than that contemplated in the 2014 TYSP—a 28% larger plant reflecting an increase in capacity of 5.5% per year in the planned unit size over the time from 2014 to 2019. FPL's 2014 TYSP is attached as Exhibit KRR-3N[4]. This significant increase in the already planned growth in generation stands in stark contrast to forecasted growth rates for customer population, load, and household income over the same period.

Q. **How does the current proposal compare with projections in 2013?**

A. According to Table 1 in the Commission's Order No. PSC-13-0505-PAA-EI in Docket No. 130198-EI, issued on October 28, 2013, this plant was not even needed just two years ago. In that case, the evidence was that the Company would not need any generation between 2016 and 2022. This order is attached as Exhibit KRR-4.

Q. **What is the foundation of the Company's basis for its application?**

A. The Company ultimately rests its entire application on the manner in which it employs what it terms the "three reliability criteria to project the timing and magnitude of its future resource needs." (Sim, p. 12, l.16 through p. 13, l.4) These criteria are the 20% minimum total Reserve Margin ("RM") test, the 10% minimum generation-only reserve margin, and the maximum loss of load probability standard of 0.1 day per year.

[3] Page 91 of the 2014 site plan shows a 1269 MW coming online in 2019.
[4] Composite Exhibit KRR-3 is a set of Florida Power and Light's 10-year site plans for 2001-2015.

Q. **How does the Company apply these tests?**

A. The Company's approach is quite simplistic. If, under the latest forecast, the Company expects not to meet any one of these criteria in a given year, then additional resources are deemed necessary in that year.

Q. **How does the Company forecast LOLP?**

A. It does not. As a result, the LOLP test really has no practical meaning in this application.

Q. **What factors drive LOLP?**

A. In general, LOLP is in practical terms, the risk of a blackout due to inadequate generation capacity. Specifically, LOLP measures the annual probability of loss of firm load events over a single year. LOLP improves, or is reduced, as the system operator diversifies the risk probability through the construction of more and smaller generating units, and through the modernization of the generation fleet.

Q. **What does this suggest about the LOLP that you would expect for FPL?**

A. As Company witness Kingston sets out in her testimony, the Company has been aggressively building new combined cycle generation since the year 2000 (Kingston, Exhibit JKK-2). This suggests that the Company system LOLP should have improved substantially over the past 15 years.

Q. **Does the Company provide any information about how the proposed NPGU impacts LOLP?**

A. Not in this Application. The Company provided LOLP calculations in response to a request from Staff in Docket No. 130199-EI, which I have attached as Composite Exhibit 5.[5] The Company provided data that showed that under its projections in place at the time of that Docket, it anticipated an LOLP value of 0.000387 days per year in 2015[6], and an LOLP of 0.007782 in

[5] Docket No. 130199-EI, Staff's Second Set of Interrogatories, Interrogatory No. 55, Including Affidavit of Sim and Attachment No. 1.

[6] Exhibit KRR-5A, Table marked as Plan without 10% Generation Only RM, LOLP for 2015

2018[7], on the eve of the intended operation of its NPGU.

Q. **What should the Commission understand from these numbers?**

A. The LOLP numbers are enormously lower than the LOLP standard of 0.1 days per year that the Company asserts is required to maintain system reliability:

- The 2015 number is 258 times smaller, or less than one half of one percent of the LOLP threshold set by the Company. The Company standard is the equivalent of one system outage day per year every ten years. In contrast, FPL's 0.000387 LOLP in 2015 is the equivalent of a blackout risk of 9.3 hours per 1,000 years. That risk is comparable to the risk of death caused by a falling meteor.[8]
- The LOLP rises to 0.007782 by 2018—still a massive difference from the 0.1 day LOLP standard the Company claims to use.
- An LOLP of 0.007782 is the equivalent of about 19 hours of outage per 100 years. These outage years do not include "acts of God," such as hurricanes. This number indicates that the proposed NPGU is not required in order to maintain system reliability or integrity.

Q. **Are you suggesting that the 0.1 day LOLP standard is inappropriate?**

A. Absolutely not. As reported in "The Economic Ramifications of Resource Adequacy White Paper" produced by Astrape Consulting for the Eastern Interconnection States' Planning Council and the National Association of Regulatory Utility Commissioners ("EISPC/NARUC"), attached as Exhibit KRR-7, the 0.1 day standard for Loss of Load Event ("LOLE") is common in North America, is generally used interchangeably with the LOLP term, and is generally applied in conjunction with reserve margins of 12% to 16%. What I am pointing out is that the Company applies its reliability criteria in such a way that it implements much higher reliability at much

[7] Exhibit KRR-5A, Table marked as Plan without 10% Generation Only RM, LOLP for 2018.
[8] Exhibit KRR-6 includes an estimate of the risk of being killed by a falling meteor.

higher cost than is required. As detailed in the EISPC/NARUC White Paper, economic analysis techniques for electric system reliability standard setting and evaluation have evolved considerably over the past several decades, offering important opportunities to reduce costs while maintaining system reliability and integrity.

Q. **How did the Company predict reserve margins would change during the period of 2013 through 2025 in Docket No. 130199-EI?**

A. The table in Exhibit KRR-3-M and provided by the Company in that case shows that when reserve margins near the 20% level, the Company proposes to add new generation. That is the position the Company takes in this Application as well. Overall system reserve margin drives the Company's proposals to build new capacity, without regard for actual system performance.

Q. **Where does the 20% RM test come from?**

A. The test is a legacy of a settlement reached in Commission Docket No. 981890-EU, and spelled out in Commission Order No. PSC-99-2507-S-EU, issued on December 22, 1999. Attached as Exhibit KRR-8.

Q. **Where does the 10% GRM test come from?**

A. I cannot tell from the application. I assume that it is a standard designed to ensure that at least half of the RM is met with generation assets, as opposed to interruptible load or other demand side resources. The Company points out that this factor is not significantly different in impact in light of the impact of the single-criteria standard and the forecasting that the 20% RM will not be met in 2019. (Sim, p. 16, l. 14-21)

Q. **Is the 10% GRM test, alone or in conjunction with the 20% RM test, still appropriate?**

A. This is an issue that should be investigated thoroughly by the Company in a public proceeding conducted by the Commission. Just as the Commission had to initiate the proceeding in Docket No. 981890-EU because of concerns about capacity adequacy, the evidence about

outrageously low LOLP values and the steep increase in capacity additions and reliance on natural gas suggests that the Company is now out of control when it comes to power plant construction. A sequential review of the Company Ten Year Site Plans (TYSP) since 2000 demonstrates the way in which essential expansion and modernization of the generation fleet has transformed into an unnecessary and expensive building spree. I have attached these TYSP documents as Exhibits KRR-3A through KRR-3-O. In all, the factors suggesting a need to reexamine both the RM and GRM tests include:

- The increase in the rate of capacity additions since 2000, as I will describe.
- The dramatically low LOLP assessments for the FPL fleet.
- The potential for increased reliance on other generation in the Eastern Interconnection.
- The fact that 15 years has elapsed since the Commission undertook the inquiry in Docket No. 981890-EU.
- The dramatic improvements in load management, load control, and demand response that have occurred in the electricity industry over the past 15 years.
- The dramatic improvements in distributed generation and storage that have occurred over the past 15 years and the prospect of continued improvements in the economics and performance of these technologies (and other demand-side measures and technologies) when operating together, especially in microgrid configurations.
- The improvement and growth in analytical techniques to assess optimal and most economic reserve and reliability measures described in the EISPC/NARUC White Paper at Exhibit KRR-7.

Q. **Taken together, what do these factors demonstrate?**

A. As a whole, these factors and facts demonstrate that the standard of proof under Florida law is not satisfied merely by adherence to a 20% RM test or the 10% GRM test. Quite

separately from the 20% RM test, the advances and availability of reliable demand response resources, above and beyond those selected through the FEECA process, suggests that the 10% GRM may be too high and too expensive to be economical.

Q. **Doesn't the Company's program of capacity expansion mean that customers save money?**

A. Not necessarily. The improved efficiency and incremental economics of modern generation must be tested against the added revenue requirements of an unamortized plant, increased amortization expense, and the customer net bill consequences of load building through measures like economic development rates and limits on energy efficiency improvements. In short, the Company should conduct an objective and quantitative assessment of the ratepayer impact measure of its generation construction program over the past fifteen years in order to honestly claim customer benefits.

Q. **How does the application of these tests ensure that the statutory requirement of system reliability and integrity is met?**

A. The Company submits no evidence to meet that requirement other than reciting the test. Specifically, the Company:

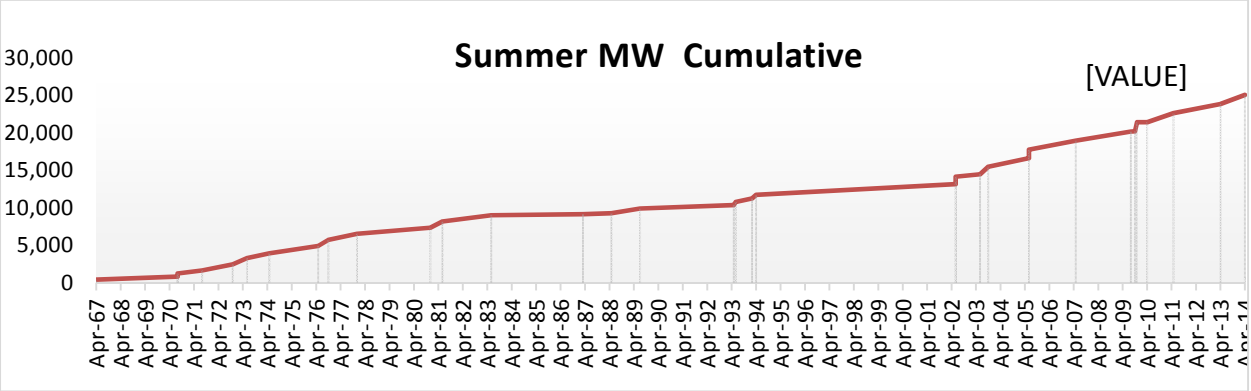
- Provides no evidence on the past, current, or forecasted LOLP,
- Provides no evidence of how the settlement-based 20% RM test ensures system reliability and integrity,
- Provides no foundation to explain the need for or value of the GRM test set at 10%, and
- Provides no explanation as to why not meeting any one of these tests is sufficient justification for requiring customers to pay for new Company-owned generation.

Q. **How would you characterize the Company's approach to this application based on your review of the testimony and supporting exhibits?**

A. The Company application is characterized by results-oriented arguments that use the reserve margin criteria as the vehicle for justifying a power plant building campaign. That is, rather than engage in a genuine search for the best alternatives to meet the need for energy services in a reliable and economic fashion, the Company appears to have recently decided that they would like to have another generating unit operating by 2019, and they built a case to support that conclusion. This campaign appears to have accelerated around the year 2000, when the 20% RM was adopted. The chart below, utilizing data from the Company Ten Year Site Plan, visually depicts this trend.

Figure 1. Summer Cumulative MW Capacity

Source: FPL Ten Year Site Plan 2015



Q. **Do you think that approach is problematic?**

A. Yes. I believe it is inconsistent with the spirit of the requirements of Florida Statute 403.519 to seek out only the most economic and beneficial resources when there is demonstrated need for those resources. While this might be beneficial to the Company's shareholders as long as the Commission approves such applications, the result is likely excess capacity that imposes long-term burdens on customers and the electricity market in Florida.

Q. **How do you believe the Commission should evaluate the Company's assertions of**

the need for more generation to support system reliability and integrity?

A. The Company enjoys a monopoly position as a provider of electricity in its service territory at a rate of return that provides substantial, almost guaranteed returns to investors. Customers end up paying for the Company's investments whether they are needed or not, so the Commission has the responsibility of ensuring that the Company has fully demonstrated the need for every investment in capacity.

Q. **Does the 20% Reserve Margin standard ensure that generation capacity is needed?**

A. No. The evidence in this case is that slavish adherence to the 20% Reserve Margin has, in effect, a single-factor criterion that has resulted in costly and unnecessary overbuilding of the Company system. This Application demonstrates that overbuilding. The 20% Reserve Margin adopted by Commission settlement may have been the right solution at a time when it appeared that the Company capacity planning and construction was not keeping pace with load growth and contingencies in its service territory. But now, the 20% Reserve Margin, unbalanced by a consideration of actual impacts on reliability, is excessive and unnecessarily expensive.

THE COMPANY FORECASTS OF GROWTH AND NEED

Q. **How does the proposed NPGU size compare with forecasts of growth and need?**

A. Company witness Feldman sets out the forecasting process. He explains that in order to forecast customer growth, net energy for load, and peak demand, the Company looks at forecasts of ~~pollution~~ population &B, economic conditions, the weather, and codes and standards. (Feldman, p. 8, l. 9-19)

Q. **What rate does the Company forecast for customer growth?**

A. The Company forecasts the number of customers to grow by 1.3%, on average, between 2015 and 2024. (Feldman, p. 10, l. 1-3).

Q. **What rate of household disposable income growth does the Company assume during the 2015-2024 period?**

A. The Company assumes a 2% average annual growth rate in household disposable income during that period. (Feldman, p. 12, l. 10).

Q. **What rate of summer peak demand growth does the Company expect during the period 2014-2024?**

A. The Company expects summer peak demand growth at a rate of 1.6% per year during this period. (Feldman, p. 17, l. 23).

Q. **What is the probability and magnitude of potential deviation from this expected rate of demand growth under the Company's risk-adjusted procedure?**

A. The Company estimates that there is a 25% chance that the summer peak demand could grow at a rate of 2.1% per year, instead of 1.6%. (Feldman, p. 20, l. 12).

Q. **What is the probability and magnitude of potential downward deviation from the expected rate of demand growth under the Company's risk-adjusted procedure?**

A. There is a 75% chance that the growth in demand will be less than the base forecast, but the Company does not report the magnitude of that potential deviation. (Feldman, p. 20, l. 1-4)

Q. **Does the risk-adjusted analysis suggest the potential for over-building of capacity?**

A. Yes. The analysis suggests a 25% chance that demand could be 1,143 MW higher in 2019 than currently forecast. If the 75% probability that demand will be lower has equivalent impact, the demand requirement underpinning this application disappears entirely.

Q. **Does this suggest that the Company should do nothing?**

A. Absolutely not. Given the significant probability that the current NPGU will represent overbuilding, it would be reasonable in light of the Florida statutory directives to evaluate approaches to mitigate this risk with a more modular and just-in-time approach to meeting demand.

Q. **The Company forecast seems to indicate that all major drivers of demand and demand itself are likely to grow at an average rate of 2% or less during the period of 2015 -**

2024. What is the rate of capacity increases the Company has implemented?

A. The Company has increased capacity at a rate of about 5% average annual growth since 2000, when the Reserve Margin settlement order was issued. The NPGU in this Application would continue that trend of growth.

Q. **Witness Sim asserts that the Company undertook an "extensive evaluation process." (Sim, p. 7, l. 5). Do you agree?**

A. The extensive evaluation process only describes how the preferred plant design was chosen. After reviewing the evaluation process, I come to the conclusion that the entire process was ultimately designed to select the chosen NPGU because that solution is the one that meets the reserve margin requirements. That is, reserve margin requirements, and not the factors cited in the Florida Statute and Rules seem to be deciding how generation is added to the FPL system.

Q. **How does the application address the issue of fuel diversity?**

A. The NPGU will not increase fuel diversity. (Sim, p. 10, l. 4). In fact the NPGU will increase the Company's already extensive reliance on natural gas as a fuel. The risk of this excessive dependence on natural gas is significant for customers, who bear any and all fuel price risk. The Company asserts that other initiatives will reduce the risks of this reduction in fuel diversity, but does not quantify the added risks to which customers are exposed compared to a no-plant alternative. Of course, the gas price volatility risk benefits of the other mitigation measures will be far more effective if 1,622 MW of natural gas generation is not added to the fleet in 2019.

Q. **Does the Company's dependence on natural gas stand out as excessive?**

A. Yes. According to Schedule 6.2 (attached as Exhibit KRR-3-O) of the Company's 2015 Ten Year Site Plan, the proposed NPGU in this Application would increase the Company's dependence to nearly 70% of total generating capacity. As a whole, Florida was recently singled out as the State most at risk for overreliance on natural gas in a study by the Union of Concerned

Scientists.[9]

Q. **Does the Company address efficiency and resulting environmental benefits**?

A. Company witness Kingston states that the NPGU will be 35% more fuel efficient than a conventional steam plant of the same size. (Kingston, p. 9, l. 20-22) However, there is no serious proposal for the construction of a conventional steam plant. The proposed NPGU will perform at about the same level of efficiency as other combined cycle plants of recent vintage, similarly configured. The Company does not directly report gross emissions in tons from the proposed NPGU. (Kingston, p. 17-18) The Company asserts that the plant will improve the system heat rate, but offers no quantitative data. (Kingston, p. 9, l. 22-23)

Q. **How does the application address the option to deploy demand side resources ("DSM") to meet the need?**

A. The Company evaluates the DSM resource option solely for its ability to meet *all* of the increase in forecasted need. This approach is unrealistic, does not consider matching an increase in demand side resources coupled with a smaller NPGU. While I understand that additional demand side resources would not clear the RIM test hurdle in the recent FEECA proceeding, it is important to note that the proposed new plant in this application will, in fact, increase rates and costs for all ratepayers. Options not considered include sufficient demand side resources to defer the NPGU for a single year, for example. Instead, the Company constructs a hyperbolic hypothetical in which 800 MW of new DSM must be obtained solely through increases in the residential air conditioning control program.

Q. **How does the application square the fact that the proposed NPGU is significantly larger than the identified need in 2019?**

A. As applied by the Company, the reserve margin tests appear to serve only as a floor for

[9] "Rating the States on Their Risk of Natural Gas Overreliance," Union of Concerned Scientists (October 2015). Available at www.ucsusa.org/naturalgasoverreliance. Attached as Exhibit KRR-9.

resource sizing. In this proposal, the maximum need in 2019 is 1,052 MW. And yet the Company is proposing 1,622 MW. This seriously tests the common sense definition of "need," and seems to confirm that the Company is primarily focused on building rate base.

Q. **How does the Company evaluate renewable utility scale solar photovoltaic generation as a resource?**

A. First, as with DSM, the Company only evaluated the solar PV option for its ability "to supply all, or a substantial portion, of the needed 1,052 firm MW of Summer capacity." (Sim, p. 23, l. 7-10). The Company also finds too many other uncertainties associated with development of solar PV that could be resolved by the 1st quarter of 2015.

Q. **Where did the test of the 1st quarter of 2015 come from**?

A. That is the date on which the Company felt it had to commit to its decision to pursue a natural gas-fired self-build option. (Sim, p. 23, l. 10-12). The Company does not evaluate the solar option from the perspective of the time frame required to develop that option.

Q. **Does the Company approach impact the offering of competitive bids?**

A. Yes. As detailed by Company witness Sim, the fact that the Company uses such a large, self-build NPGU size has a significant impact on dampening participation by non-utility bidders. (Sim, p. 33, l. 15-18).

Q. **What does the Company say about the potential consequences of delay in the construction of the proposed NPGU?**

A. Company witnesses Sim and Kingston both address the potential for delay in securing a determination of need in this proceeding. Witness Sim suggests that FPL customers "will face significant adverse consequences related to either system reliability or the cost of electricity." (Sim, p. 37, l. 6-8). Witness Kingston states that delay would defer operation "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."

Q. **Does the Company provide any quantitative analysis or information to support its assertions of negative consequences?**

A. No. In my opinion, the Company witnesses could quantify net heat rate savings, fuel savings, reliability benefits, LOLP impacts, and other factors to support their assertions. The lack of this evidence weakens their assertion of need.

FINDINGS AND CONCLUSIONS

Q. **What are your findings in this case?**

A. My findings can be summarized as follows:

- The Company reliance on the 20% Reserve Margin criteria drives this application, and, in fact, has driven a substantial amount of generation construction for the Company.
- The Company reliance on the 10% generation-only reserve margin is also a significant factor in the Company's justifications for building new capacity.
- The reliability standard of a maximum loss-of-load probability (LOLP) of 0.1 day per year is not a significant driver of generation planning and proposals. The Company does not quantitatively address the reliability status of its system or the impacts of its proposal on reliability.
- The Company rate of historic and proposed growth in power plant construction significantly outstrips the forecasted rate of growth in population, household income, and electricity consumption.
- The high rate of plant construction, in large plant unit sizes, appears to have the effect of almost eliminating independent power plant development in the Company's

service territory.

- The Company pays little or no attention to the risk of overbuilding, despite the potential economic impacts on customers.
- The Company has not quantified either the asserted risks or the potential benefits of delay in building the NPGU.

Q. **What do you conclude based on your findings?**

A. In light of the statutory background described above, and the information submitted in the Company's application, I conclude that the Company's application for a determination of need for its NPGU is materially deficient in the following respects:

- The Company's application does not adequately establish the need for the NPGU to maintain system reliability and integrity.
- The Company proposal does not consider the risks and impacts of overbuilding, and therefore fails to properly address the requirement for adequate and affordable electricity service.
- The Company proposal does not improve and in fact worsens the Company position in terms of fuel diversity, and exposes customers to greater fuel supply risk and costs in the future.
- By failing to consider the potential for overbuilding, the Company constrains its examination of alternative methods to meet the demand for energy services, and therefore has not demonstrated that its proposal is the most cost effective alternative.

RECOMMENDATIONS

Q. **In light of your findings and conclusions, do you offer any recommendation to the Commission?**

A. I recommend that the Commission deny the Company's application for a determination

of need for its NPGU.

Q. **Do you have any further recommendations?**

A. Yes. I recommend that the Commission direct the Company to ensure that in any subsequent application for need filing, the Company fully and quantitatively analyze the impact on system reliability and integrity that drives the application. In particular, the Company should report the current state of the LOLP assessment and how that metric is impacted by any NPGU.

Q. **Do you have any recommendations regarding analysis of resource options in any subsequent application by the Company?**

A. Yes. The Commission should direct the Company to explore ways to increase the reliance on demand side resources and third-party owned generation resources as part of an effort to diversify risk to customers. In particular, the Commission should direct the Company to examine reliability issues in light of the Port Everglades Unit 5 plant and planned capacity additions by other utilities operating in the Florida peninsular system. In addition, and above and beyond the FEECA process, the Commission should direct the Company to explore "extreme" or "fast response" demand response resources specifically designed to provide reliability support. The Company should compare the short- and long-term costs of these options against any self-build power plant proposals. Finally, the Commission should direct the Company to quantitatively assess in any future application the risks of over-building in terms of costs to customers, potential stranding of investments, and impacts on demand-side and third-party owned resources.

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

A. Yes.

BY MR. MARSHALL:

Q Mr. Rábago, did you prepare a summary of your testimony?

A Yes, I did.

Q Would you please go ahead and give us that summary?

A Yes. In my testimony I indicate that I have worked for more than 25 years in the electricity industry and related fields. My previous employment experience includes as a commissioner of the Public Utility Commission of Texas; a Deputy Assistant Secretary with the U.S. Department of Energy; a Vice President with Austin Energy, the municipal electric utility for Austin, Texas; and as a Director of Regulatory Affairs with the AES Corporation, among others. I also indicated in my testimony that I reviewed applicable sections of the ***Florida Statutes*** and administrative rules, the application of Florida Power & Light in this case, in this matter, and other material that I cited in my testimony.

In summary, in my testimony I reviewed the company's legal and regulatory requirements and how the company addressed the burden of -- or standard of proof that it faces. I find that the company has not met the requirements of the law because it has not demonstrated

that the proposed Okeechobee power plant is needed.

I specifically note that the company has adopted a standard for when to propose new generation that is in practice a one part test relating to reserve margin percentage that is untested against actual impacts on system reliability and integrity or adequacy of supply.

I point out that the company has created a system with outrageously low loss of load probability values guaranteeing that customers are paying for an overbuilt system that unfairly burdens customers with unnecessary costs. I provide evidence drawn from the company's application that deficiencies in the application are not adequately addressed and materially impact the quality of the application. I review the company's evidence about forecasts of the drivers of need for generation capacity and show how the proposal and the application is out of step with the company's forecast data.

Finally, I review the company's assertions of potential harm associated with denial or delay in approval of this application and find that the company has not substantiated these assertions with any data. Based on all this evidence and analysis, I recommend that the Commission deny the company's application. I

recommend that the Commission direct the company to take a hard look at system reliability and integrity as well as the cost of its generation construction plans prior to the submission of any subsequent application.

MR. MARSHALL: We tender the witness for cross-examination.

CHAIRMAN GRAHAM: Thank you. Mr. Rábago, welcome.

Florida Power & Light.

MR. COX: Thank you, Chairman Graham. As FPL notified ECOSWF's counsel prior to the Thanksgiving holiday, we have no questions for Mr. Rábago.

CHAIRMAN GRAHAM: Okay. Staff.

EXAMINATION

BY MS. AMES:

Q Good morning, Mr. Rábago. If you would please refer to page 19 of your direct testimony.

A Yes, ma'am.

Q And specifically lines 11 through 13.

A Yes, ma'am.

Q Okay. Here you recommend that the Commission direct FPL to examine reliability issues in light of the Port Everglades Unit 5 plan and planned capacity additions by other utilities in Florida's peninsular system; is that correct?

A Yes, ma'am.

Q So it's your opinion that FPL's reliability requirements should take into consideration impact of other utilities within peninsular Florida; correct?

A Yes.

Q Okay. And if you'd please turn to page 15 of your direct testimony, and specifically lines 14 to 15.

A Yes, ma'am.

Q Here you state that additional demand-side resources would not pass the RIM Test; is that correct?

A I'm sorry. Which line again? Oh, yes. Where I state, "While I understand that additional demand-side resources will not clear the RIM Test hurdle in the recent FEECA proceeding," yes.

Q Would reducing FPL's reserve margin reduce the cost-effectiveness of demand-side resources when considering the RIM Test?

A I'm trying to think -- I'm trying to put the pieces together for that. If the reserve margin was reduced, additional capacity would not be built. It depends on -- in this hypothetical it depends on the effect of the new capacity in the 15 to 20 percent range and whether that lowers the overall cost of avoided energy. So it could reduce the cost-effectiveness of resources to lower it to 15 percent under some scenarios

and it actually might not under others. So it really depends on the resources that you're talking about adding in that space and their cost and the effect on the overall cost plus the calculation of lost revenues and other factors that are accounted for in the utility's costs when it considers whether energy efficiency is cost-effective.

MS. AMES: Thank you. Staff has no further questions.

CHAIRMAN GRAHAM: Commissioners?

Okay. Redirect.

MR. MARSHALL: We have no redirect.

CHAIRMAN GRAHAM: All right. Exhibits.

MR. MARSHALL: At this time I'd like to enter Exhibits 34 through 58 into the record.

CHAIRMAN GRAHAM: If there's no objections to Exhibits 34 through 58, we'll enter those all into the record.

(Exhibits 34 through 58 previously admitted in Volume 1.)

MR. MARSHALL: At this time we'd ask that the witness be excused.

CHAIRMAN GRAHAM: There's no other exhibits, so, Mr. Rábago, thank you very much. Travel safe.

THE WITNESS: Thank you. Thank you.

CHAIRMAN GRAHAM: Okay. Rebuttal time.

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

Whereupon,

RICHARD FELDMAN

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

EXAMINATION

BY MR. GUYTON:

Q Please state your name and business address, Mr. Feldman.

A My name is Richard Feldman. My business address is 700 Universe Boulevard, Juno Beach, Florida.

Q And did Florida Power & Light Company file as part of its rebuttal case rebuttal testimony from you consisting of six pages?

A Yes, that's correct.

Q If I were to ask you today the same questions that appear in your prefiled rebuttal testimony, would your answers be the same?

A Yes, they would.

MR. GUYTON: Chairman Graham, we request that Mr. Feldman's rebuttal testimony be inserted into the record as though read.

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

BY MR. GUYTON:

Q Mr. Feldman, did you also submit an Exhibit RF-9 as part of your rebuttal testimony?

A Yes, I did.

Q And is the information in RF-9 true and correct to the best of your knowledge and belief?

A Yes, it is.

MR. GUYTON: Commissioners, I believe that's been identified as Exhibit 67 on staff's Comprehensive Exhibit List.

CHAIRMAN GRAHAM: Okay.

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 (FPL or the Company), 700 Universe Boulevard, Juno Beach, Florida 33408.

Q. Did you previously submit direct testimony in this proceeding?

A. Yes.

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

A. Yes. I am sponsoring the following rebuttal exhibit:

- Exhibit RF-9: Winter Peak Weather Impact

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to address misstatements about the load forecast made by the Environmental Confederation of Southwest Florida's witness Rábago. I will also address the Southern Alliance for Clean Energy witness Wilson's comments that the 1999 stipulation was in part the result of an outdated evaluation of historical weather anomalies.

Q. Please summarize your rebuttal testimony.

A. My rebuttal testimony addresses incorrect statements made in witness Rábago's testimony regarding the probability of occurrence of FPL's base case and risk-adjusted forecasts. Additionally, I'll examine data that shows extreme weather conditions, such as the "1989 Christmas experience," are not one-time anomalies that no longer present a risk. Indeed, these extreme

weather events have occurred periodically since the 1980s and continue to pose a risk to the forecasted load values and, therefore, to FPL system reliability.

II. RISK-ADJUSTED FORECAST

Q. Does witness Rábago's testimony demonstrate an accurate understanding of FPL's base case and risk-adjusted load forecasts and how each forecast is used?

A. No. Witness Rábago makes a number of misstatements regarding FPL's base case and risk-adjusted load forecasts. I address each of these below.

Q. On page 13, lines 9-10, witness Rábago states that there is a 25% chance that the summer peak demand could grow at a rate of 2.1% per year. Is this statement accurate?

A. No. The correct interpretation of the risk-adjusted forecast is that there is a 25% chance that the summer peak demand could grow at a rate of 2.1% per year *or higher (emphasis added).* Accordingly, as discussed on pages 19 and 20 of my direct testimony, there is a 25% chance that the 2019 summer peak will be 26,188 MW or higher.

Q. On page 13, lines 13-14, witness Rábago states that, "There is a 75% chance that the growth in demand will be less than the base forecast..." Is this statement correct?

A. No, it is not. There is not a 75% chance that growth in demand will be less than the base case forecast. As I've stated in my direct testimony on page 19, lines 8-10, the base case forecast is designed such that there is a 50% chance that growth in demand will be less than the base case forecast and a 50% chance that growth in demand will be more than the base case forecast. Moreover, and as I've stated in my direct testimony, the capacity need addressed in this case is based on the base case forecast and not on the risk-adjusted forecast.

Q. Are there any other inaccuracies in witness Rábago's testimony, as it relates to references to your testimony?

A. Yes. On page 12, lines 18-20, witness Rábago summarizes my testimony as follows: "in order to forecast customer growth, net energy for load, and peak demand, the Company looks at forecasts of pollution, economic conditions, the weather, and codes and standards." This is incorrect. In my direct testimony I identified population growth, not pollution as a factor in FPL's forecasts.

III. EXTREME WEATHER

Q. Referring to witness Wilson's testimony at pages 4 and 5, he outlines four statements of the Staff's position in selecting a 20% reserve margin. One statement refers to "unpredicted severe weather," specifically the "1989 Christmas experience." Has FPL experienced any other "unpredicted severe weather" events since 1989?

A. Yes. There have been a number of extreme weather events since the "1989 Christmas experience." Exhibit RF-9 presents the top 10 winter peak weather impacts since and including the "1989 Christmas experience" along with an important weather variable that drives the winter peak, specifically the cold buildup from the prior day up until the morning of the peak expressed in heating degree hours. The 2009 – 2011 winters had colder weather during the days leading up to the peak day than did the "1989 Christmas experience." In fact, the winter peak of 2009 – 2010 had a weather impact in excess of 4,400 MW, which is almost 1,000 MW more than the weather impact associated with the "1989 Christmas experience."

Q. Does this conclude your testimony?

A. Yes.

BY MR. GUYTON:

Q Mr. Feldman, would you please summarize your rebuttal testimony for the Commission.

A Yes, I'd be happy to.

Good morning, Commissioners. The purpose of my rebuttal testimony is to clarify mistakes made about FPL's load forecast by ECOSWF witness Rábago. I also want to address misleading comments by SACE witness Wilson that the cold weather event in 1989 no longer reflects reality.

Witness Rábago confuses the summer peak base case and risk adjusted forecasts to how they are used in our planning processes. He states that there's a 75 percent chance that the growth in demand will be less than the base case forecast. There's actually a 50 percent chance that the growth in demand will be less than the base case forecast. The base case forecast presents the most likely forecast in that there's an equal probability of over forecasting as under forecasting. The need for the Okeechobee unit is based on analysis using our base case forecast.

Witness Wilson represents the 1989 Christmas experience as a condition that no longer reflects reality. This, however, was not a one-time event. In fact, this type of extreme weather has occurred on a

number of occasions since 1989, as recently as the winters of 2009/2010 and 2010/2011. During both of these winters the cold build up leading up to the peak day exceeded that experienced in 1989. In fact, the January 2010 winter had a larger weather impact in terms of megawatts than the 1989 event, and, therefore, extreme weather still poses a risk to the forecast. This concludes my summary.

MR. GUYTON: We tender Mr. Feldman for cross.

CHAIRMAN GRAHAM: Okay. Mr. Feldman, welcome back.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: SACE -- I'm sorry. OPC.

MS. CHRISTENSEN: No questions.

CHAIRMAN GRAHAM: ECOSWF.

MR. MARSHALL: Thank you, Mr. Chairman.

EXAMINATION

BY MR. MARSHALL:

Q Hello again, Mr. Feldman.

A Good morning.

Q The 2009 -- if I could direct your attention to Exhibit RF-9. Do you have that in front of you?

A Yes.

Q The winter with the highest weather impact that you have on here in terms of megawatts was the

2009/2010 winter event.

A Yes, that's correct.

Q And that would include the January 11th, 2010, date that has been discussed.

A Yes.

Q The weather impact of that event in terms of megawatts was almost 1,000 megawatts higher than the next highest winter weather impact event.

A Yes, that's correct.

Q And to your knowledge, FPL was able to meet all firm load that day and during that event despite the 4,410 megawatt weather impact.

A I'm not certain whether we were able to meet it. That's not my area.

Q Okay. So you don't know?

A I don't know.

MR. MARSHALL: All right. Thank you. No further questions.

CHAIRMAN GRAHAM: SACE.

MR. WHITLOCK: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WHITLOCK:

Q Good morning, Mr. Feldman.

A Good morning.

Q Mr. Feldman, in your testimony on page 6 and I

guess moreover in your summary this morning, you've characterized SACE witness Mr. Wilson's testimony as stating that the 1989 Christmas event no longer reflects reality.

A Yes.

Q Can you point -- do you have Mr. Wilson's testimony there with you?

A Yes, I do.

Q Can you point me to where he states that?

A What I was referring to is page 5 of this testimony. It was actually excerpts from the docket. It was staff's testimony and recommendation where I pulled that from.

Q And which docket are you referring to?

A I'm sorry?

Q Which docket are you referring to?

A This was Docket 981890-EU, the one he quotes in his testimony.

Q Okay. And then in the question on page 6 of your testimony, it says, "One statement refers to unpredicted severe weather, specifically the 1989 Christmas experience." Correct?

A That's correct.

Q Okay. And which one of the four statements Mr. Wilson quoted is that referring to?

A It was actually a combination of the second and third statement where they talk about over the last few years -- over the last few years have occurred during offpeak maintenance periods when unpredicted severe weather forced outages, and I was looking at that in relation to similar circumstances in the next bullet where he talks about the 1989 Christmas experience.

Q So it's not one statement. You've combined two statements --

A That's correct.

Q -- to make that point.

A Correct.

Q Okay. So you mischaracterized Mr. Wilson's testimony in that regard; correct?

A No, I didn't. No, I didn't. He was talking -- it was -- the next statement talks about similar circumstances, and similar circumstances referring to the severe weather.

Q Okay. Well, now show me where he states the 1989 Christmas event no longer reflects reality in his testimony.

A Okay. If you'd just give me a moment. Okay. On page 10, in lines 6 and 7, he talks about "The 20 percent reserve margin is based on a 1999 staff evaluation of historical conditions which no longer

reflect reality, including but not limited to."

Q "The improved operating reliability of existing and new FPL power plants."

A Correct.

Q Okay. And where does it reference the 1989 Christmas event there?

A Well, he says in his statement "included but not limited to," so he's implying there are other reasons.

Q No, Mr. Feldman. What that says is, "These reasons include: The 20 percent reserve margin. One, it's based on a 1999 staff evaluation of historical conditions which no longer reflect reality, including but not limited to the improved operating reliability of existing and new FPL power plants." The including but not limited to modifies reality. Do you understand that?

A Well, I took that to mean including these items but not limited to these items. So that's why I interpreted that as meaning the weather -- severe weather events.

MR. WHITLOCK: No further questions, Mr. Feldman.

THE WITNESS: Okay.

CHAIRMAN GRAHAM: FIPUG.

MR. MOYLE: Thank you, Mr. Chairman. We don't have any questions.

CHAIRMAN GRAHAM: Staff.

MS. AMES: Staff has no questions.

We would just like to note, I believe that Mr. Feldman's Exhibit RF-9 is actually hearing Exhibit 72.

CHAIRMAN GRAHAM: Yes.

MS. AMES: Okay. Thank you.

CHAIRMAN GRAHAM: Commissioners?

Redirect.

MR. GUYTON: FPL has no redirect. We move Exhibit 72.

CHAIRMAN GRAHAM: Okay. If there's no objections, we'll move Exhibit 72 into the record.

(Exhibit 72 previously admitted in Volume 1.)

Mr. Feldman, thank you very much.

MR. GUYTON: And he is excused.

CHAIRMAN GRAHAM: He is excused.

MR. GUYTON: Thank you.

CHAIRMAN GRAHAM: It looks like a good time to take a ten-minute break. So we'll come back -- we'll call it 11:00 by that clock in the back of the room.

If you guys have handouts for Dr. Sim, I ask you to get them ready, please.

(Recess.)

CHAIRMAN GRAHAM: Okay. I've got 11:00 and I have a quorum.

MR. COX: FPL calls its next witness, its final witness for this hearing. It's rebuttal witness Dr. Steven Sim.

Whereupon,

STEVEN R. SIM

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

EXAMINATION

BY MR. COX:

Q Good morning, Dr. Sim.

A Good morning.

Q Could you state your name and business address for the record, please.

A Steven R. Sim. Business address, 9250 West Flagler Street, Miami, Florida.

Q And were you sworn in yesterday?

A I was.

Q Who is your employer, Dr. Sim?

A Florida Power & Light Company.

Q And what is your position with Florida Power & Light?

A Senior Manager of Integrated Resource Planning in the Resource Assessment and Planning Department.

Q Did FPL have prefiled in this case your amended rebuttal testimony consisting of 54 pages?

A Yes.

Q If I were to ask you the same questions today that are contained in your amended rebuttal testimony, would your answers be the same?

A Yes.

MR. COX: Chairman Graham, we ask that Dr. Sim's amended rebuttal testimony be inserted into the record as though read.

CHAIRMAN GRAHAM: We will insert Dr. Sim's amended rebuttal testimony into the record as though read.

MR. COX: Thank you.

BY MR. COX:

Q Dr. Sim, did you prefile with your amended rebuttal testimony Exhibits SRS-6 through SRS-11?

A Yes.

Q Is the information contained in your prefiled amended rebuttal exhibits true and correct to the best of your knowledge and belief?

A Yes.

MR. COX: Commissioners, Witness Sim's

exhibits attached to his amended rebuttal testimony have been identified as Exhibits 65 through 70.

CHAIRMAN GRAHAM: Duly noted.

Q. Please state your name and business address.

A. My name is Steven R. Sim, and my business address is Florida Power & Light Company, 9250 West Flagler Street, Miami, Florida 33174.

Q. Have you previously submitted direct testimony in this proceeding?

A. Yes.

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

A. Yes. I am sponsoring the following 6 exhibits that are attached to my rebuttal testimony:

Exhibit SRS – 6:	Incorrect and/or Misleading Statements Made in the Testimonies of Witnesses Rábago, Wilson, and Mims;
Exhibit SRS – 7:	Commission Proceedings Approving or Applying 20% Reserve Margin;
Exhibit SRS – 8:	Duke Energy Progress, North Carolina Integrated Resource Plan (Annual Report), September 1, 2015;
Exhibit SRS – 9:	Relevant Testimony from FPL Witness Rene Silva in the Petition to Determine Need for Riviera Plant and Cape Canaveral Plant (Docket Nos. 080245-EI and 080246-EI);
Exhibit SRS – 10:	A Look at January 11, 2010 If FPL Had Planned to a 15% Total Reserve Margin Criterion;

Exhibit SRS – 11: The Need for a 3rd Reliability Criterion for FPL: A Generation-Only Reserve Margin (GRM) Criterion; and,

Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony discusses and/or responds to the three intervenor witnesses in this docket: Mr. Karl Rábago (Environmental Confederation of Southwest Florida (ECOSWF)), Mr. John Wilson (Southern Alliance for Clean Energy (SACE)), and Ms. Natalie Mims (SACE).

Q. How is your rebuttal testimony structured?

A. My rebuttal testimony contains 5 main parts. Part I provides an overview in which I first summarize key points of FPL's filing in this docket that the three intervenor witnesses do not contest. I then summarize my view of the key points in each of the intervenors' testimonies. Then my testimony examines problems inherent in each of their testimonies. I begin with ECOSWF's witness, Mr. Rábago (Part II), and then review the testimonies of SACE's witnesses, Mr. Wilson (Part III) and Ms. Mims (Part IV). In Part V, I offer my conclusions that their collective testimonies: (i) seek to shift the discussion away from the facts of this docket and disregard Florida Public Service Commission (FPSC) decisions and basic principles of resource planning, (ii) offer recommendations that, when examined critically, would not be in the best interests of FPL's (and peninsular Florida's) customers, (iii) repeatedly attempt to convey the impression that the FPSC is not doing its job, and (iv) contain a number of other incorrect and/or misleading statements. I conclude

that these witnesses' testimonies are unreliable and should not be given serious consideration in this docket.

Part I: Overview of Key Points

Q. Please provide a concise summary of key positions in FPL's filing.

A. FPL's filing includes the following three key positions:

- Based on two of the three reliability criteria (20% minimum total reserve margin, and 10% minimum generation-only reserve margin or GRM) that FPL utilized in 2014 (when the bulk of FPL's analyses were performed) and in 2015 (when analyses were completed and FPL's filing for a determination of need for OCEC Unit 1 was made), FPL projects a significant resource need of 1,052 MW starting in the year 2019, and this projected resource need increases in subsequent years.
- The most cost-effective self-build generation option identified by FPL with which to meet that need is the OCEC Unit 1 combined cycle (CC).
- No non-FPL generating option was submitted in response to FPL's March 2015 capacity request for proposals (RFP) solicitation that met the RFP's Minimum Requirements. Thus, no viable market alternatives to OCEC Unit 1 were offered.

Q. Do any of the intervenor testimonies contest the results of FPL's analyses based on FPL's existing reliability criteria that project this large resource need beginning in 2019?

A. No.

Q. Do any of the intervenor testimonies contest the results of FPL's analyses that led to the selection of OCEC Unit 1 as the most cost-effective self-build generation option with which to meet this need?

A. No.

Q. Do any of the intervenor testimonies contest the fact that no viable market alternatives to OCEC Unit 1 were offered in response to FPL's capacity RFP solicitation?

A. No.

Q. Please summarize your view of the intervenors' testimonies.

A. The following points summarize their testimonies:

1) The intervenors attempt to shift the focus of the discussion away from the facts of the case by disregarding FPSC decisions and basic principles of resource planning.

2) Mr. Rábago's testimony has as a main theme that FPL has a *"campaign"* to build new power plants that is "out of control" and that this alleged campaign has been in place for several decades. In an attempt to justify this contention, he presents deeply flawed statements that attempt to compare load growth first with a pattern of power plant construction and second with a change in the size of FPL's 2019 CC unit. In addition, by

making his unsubstantiated claim of a long *"campaign"* of building power plants Mr. Rábago fails to recognize that the FPSC has conducted numerous hearings analyzing the need for, and the economics of, new power plants before approving the need for, and cost recovery for, these plants.

3) Mr. Wilson's testimony attempts to avoid the reality of FPSC precedent and prudent utility resource planning practice by stating that OCEC Unit 1 would not be needed if FPL's reliability criteria were simply ignored. He then offers a recommendation that FPL's reliability criteria be replaced with the Florida Reliability Coordinating Council's (FRCC) lower 15% total reserve margin criterion. In making this "change the rules after the game (*i.e.*, the analyses) is over" recommendation, he appears willing to accept that this would result in lower reliability not only for FPL's customers, but also for all utility customers throughout peninsular Florida, and would automatically lower the cost-effectiveness of all demand side management (DSM) options on FPL's system. Mr. Wilson fails to consider prior Commission decisions confirming that a utility's need determination proceeding is not the appropriate forum for consideration of the existing total reserve margin criterion that applies to all of peninsular Florida's investor-owned utilities (IOU). Mr. Wilson's claim that FPL has done no analyses justifying its 20% total reserve margin criterion is incorrect. Analyses addressing the merits of a 20% reserve margin versus a 15% reserve margin have been performed, and two such analyses are

attached as exhibits to this rebuttal testimony. Each of these analyses shows that FPL's system would be significantly less reliable if his recommended 15% criterion were used. Mr. Wilson also attempts to convey the impression that the stipulation that led to the establishment of a minimum 20% total reserve margin criterion for the three IOUs was something that was established by the FPSC with very little consideration. He ignores the fact that the docket was initiated by the FPSC due to significant concerns regarding electric system reliability in Florida and that an extensive investigation was conducted regarding this issue. In regard to FPL's GRM criterion, Mr. Wilson is open to such a third reliability criterion as long as it addresses only load management (LM), not energy efficiency (EE). He mischaracterizes FPL's analyses which led to the establishment of the GRM criterion as not addressing both LM and EE, when the results of the actual analyses, after using optimistic-for-EE assumptions, clearly show the need for the GRM criterion which accounts for both LM and EE.

4) All three intervenor testimonies attempt to leave the impression that the FPSC is not doing its job. Each witness' testimony includes claims of: (i) a long-standing "*campaign*" to build new power plants that has been ignored by the FPSC, (ii) a reliability criterion stipulation that was approved by the FPSC after only minimal consideration and/or (iii) mistakes in a recent docket. These claims, either directly or indirectly, suggest that the FPSC is not providing oversight of Florida utilities

including FPL. These testimonies do not acknowledge the extensive evidentiary hearings that the FPSC has conducted regarding resource option decisions, both generation and DSM, in Florida and for FPL.

My rebuttal testimony will examine each of these points. In addition, I will also discuss a number of incorrect and/or misleading statements made in the intervenor testimonies. After considering the problematic points in the intervenors' testimonies summarized above, and the incorrect and/or misleading statements, I conclude that the intervenor testimonies are unreliable and not worthy of serious consideration by the FPSC in this docket.

Part II: Mr. Rábago's Testimony

Q. What is the main theme in Mr. Rábago's testimony?

A. The main theme is that FPL is somehow manipulating its reliability criteria as part of an on-going campaign to build new generating units. This is indicated by the following statement in his testimony:

> *"The Company application is characterized by results-oriented arguments that use the reserve margin criteria as the vehicle for justifying a power plant building campaign."* (Page 11, Lines 1 & 2)

Q. On what basis does Mr. Rábago make this claim?

A. Mr. Rábago appears to base this claim on a comparison over time of percentage growth in capacity built by FPL with forecasted growth in load. He states the following in his testimony:

> "Q. *The Company forecast seems to indicate that all major drivers of demand and demand itself are likely to grow at an average rate of 2% or less during the period of 2015 - 2024. What is the rate of capacity increases the Company has implemented? A. The Company has increased capacity at a rate of about 5% average annual growth since 2000, when the Reserve Margin settlement order was issued. The NPGU in this Application would continue that trend of growth."* (Page 13, Line 24 through Page 14, Line 4.)

Q. What is your interpretation of this passage?

A. Mr. Rábago appears to be indicating that something is amiss because FPL is building capacity faster than load is growing.

Q. Is such an occurrence out of the ordinary?

A. Not at all. In fact, it is to be expected. The increase in a utility's load is almost never the only factor in determining how much generation is needed. Other factors that are completely unrelated to load, such as cost-effective retirements of existing generating units and the end of power purchase agreements, also increase the amount of new generation that is needed. Mr. Rábago ignores this fundamental fact about utility resource planning.

Q. Does Mr. Rábago make any other statements about generation capacity growth compared to load growth?

A. On page 5, starting at line 5, Mr. Rábago makes the following statement:

> *"Q. How does this proposal compare with the plant addition contemplated in the Company's 2014 Ten Year Site Plan ("TYSP")? A. The proposed NPGU is 353 MW larger[3] than that contemplated in the 2014 TYSP—a 28% larger plant reflecting an increase in capacity of 5.5% per year in the planned unit size over the time from 2014 to 2019… This significant increase in the already planned growth in generation stands in stark contrast to forecasted growth rates for customer population, load, and household income over the same period."*

Mr. Rábago apparently believes that the increase in the size of the projected 2019 CC in FPL's 2014 Ten-Year Site Plan (TYSP or Site Plan) to the ultimately selected 2019 CC (OCEC Unit 1) is or should be tied to load growth. Once again Mr. Rábago demonstrates a lack of understanding of utility resource planning as well as a failure to review FPL's filing documents. His mistake would have been evident if he had more carefully reviewed FPL's filing to see that FPL's projected resource need in 2019 was 1,052 MW, which might have been met by any generating unit of 1,052 MW or larger, including the 1,269 MW CC listed in FPL's 2014 Site Plan. Then a review of the petition and my direct testimony in this docket would have shown that the

1,622 MW OCEC Unit 1 was selected because it was the most cost-effective self-build generating unit identified by FPL. The smaller CC unit provided in the 2014 Site Plan was a reasonable placeholder at the time FPL was in the midst of conducting extensive analyses to determine its best self-build generating option. Those analyses selected a larger CC unit included in this filing as the most economic choice to serve FPL's customers.

Q. Is there evidence that rebuts Mr. Rábago's contention that FPL has a campaign to build new power plants?

A. Yes. One has to look no further than FPL's DSM actions to-date. As of the end of 2014, FPL had implemented approximately 4,793 MW of DSM. After accounting for FPL's 20% total reserve margin criterion, this amount of DSM is equivalent to approximately 5,752 MW of equivalent power plant capacity that has been avoided by DSM. Stated another way, FPL's DSM activities through 2014 have avoided the construction of the equivalent of 14 new power plants of 400 MW each. These actions are hardly consistent with those of a utility which is conducting a *"campaign"* to build new generation.

Q. Please discuss the subject of loss of load probability (LOLP) in regard to Mr. Rábago's testimony.

A. Mr. Rábago's testimony makes a couple of LOLP-related statements in regard to FPL and its LOLP reliability criterion that include the following:

- *"Q. How does the Company forecast LOLP? A. It does not."* (Page 6, Lines 5 & 6)

- *"The* (FPL's) *LOLP numbers are enormously lower than the LOLP standard of 0.1 days per year that the Company asserts is required to maintain system reliability…The LOLP rises to 0.007782 by 2018—still a massive difference from the 0.1 day LOLP standard the Company claims to use. The Company provided data that showed that under its projections in place at the time of that Docket, it anticipated an LOLP value of …0.007782 in 2018[7], on the eve of the intended operation of its NPGU."* (Page 7, Line 3-11)

These two statements in Mr. Rábago's testimony are again problematic. First, the two statements are clearly contradictory. On the one hand, he states that FPL does not forecast LOLP. Then, he immediately quotes FPL projections of LOLP values. Clearly one of his statements cannot be correct. The reality is FPL annually projects LOLP as part of its ongoing resource planning work, and these LOLP values are supplied to the FPSC each year in response to the FPSC Staff's Supplemental Data Requests as part of the Ten-Year Site Plan filing process.

There are also at least two problems with his second statement. First, he appears to believe that as long as the LOLP reliability criterion is met, then a utility system is automatically reliable. He ignores the fact that both LOLP and reserve margin criteria are commonly used as complementary perspectives in evaluating utility system reliability. Both perspectives are valuable.

Second, and related to his first problem, he believes that a relatively low LOLP value is an indication of an unnecessarily overbuilt generation system. He refers to FPL's projected LOLP values as *"outrageously low"* (Page 3, Line 9). He fails to understand that LOLP projections are not infallible, which is why multiple reliability criteria are regularly used in utility resource planning.

An example may help. Later in my rebuttal testimony, I discuss a recent and very difficult day for FPL's system operators. The day was January 11, 2010. Load was higher than expected, and a higher-than-normal amount of FPL generation was either out-of-service or operating at less than full capacity. Other utility systems in Florida were also experiencing difficulties, and FPL provided support by implementing a significant portion of its load management capability to assist at least one other utility.

The good news is that FPL's system operators were able to serve all firm load customers that day, although it was a struggle. However, there is bad news for someone who believes, as Mr. Rábago appears to do, that a projected LOLP value even modestly below the LOLP criterion of 0.100000 essentially ensures system reliability. In FPL's 2009 LOLP analyses, the projected LOLP for the next year of 2010 was 0.002255, an even lower LOLP value than Mr. Rábago refers to in his statement.

Therefore, even with this "*outrageously low*" LOLP projection for 2010, there was a struggle at FPL (and at other Florida utilities) to keep the lights on. This is a prime real-life reminder that no single reliability criterion is infallible. It is for this reason that there is value in using multiple reliability criteria.

Q. Are there any other problematic statements in Mr. Rábago's testimony?

A. Yes. Mr. Rábago made a number of other incorrect and/or misleading statements in his testimony. These are presented in Exhibit SRS-6. I will discuss several of the more problematic statements.

Q. What is the first statement of Mr. Rábago that you will discuss?

A. On page 9, stating on line 10, Mr. Rábago states the following as a rationale for why he believes FPL should re-analyze its reliability criteria:

> *"The potential for increased reliance on other generation in the Eastern Interconnection."*

With this statement, it appears that Mr. Rábago does not recognize that:

- Florida is different from most states in that it is a peninsula into which assistance from out-of-state entities to meet Florida's power needs can essentially only come from one direction: from the north through Georgia;
- There is only limited transmission capacity access into Florida from Georgia and much of this is already committed;
- The bulk of FPL's load is located at the southern tip of the long peninsula. Consequently, any assistance that might be possible from outside Florida would be economically challenged by wheeling rates and higher

transmission losses that would occur not only to get capacity and energy to Florida, but also down the Florida peninsula to FPL's main load center;

- In addition, there would have to be a generation supplier with excess capacity that they would be willing to sell on a firm basis at a price competitive with OCEC Unit 1. No such viable proposals were received in response to FPL's capacity RFP; and,
- FPL's reliability analyses already account for the projected amount of firm capacity available through the transmission ties with Georgia.

Based on these facts, it is evident that there is no viable significant untapped firm capacity from the Eastern Interconnection that can realistically be projected to meet FPL's projected capacity needs that begin in 2019.

Q. What is the next problematic statement from Mr. Rábago's testimony that you will address?

A. Mr. Rábago makes the following statement on page 15, beginning on line 12:

"The Company evaluates the DSM resource option solely for its ability to meet all of the increase in forecasted need. This approach is unrealistic, does not consider matching an increase in demand side resources coupled with a smaller NPGU… Options not considered include sufficient demand side resources to defer the NPGU for a single year, for example. Instead, the Company constructs a hyperbolic hypothetical in which 800 MW of new DSM must be obtained solely through increases in the residential air conditioning

control program."

There are several problems with this passage. First, FPL does not view DSM cost-effectiveness in the context of this need determination docket "…*solely for its ability to meet all of the increase in forecasted need"* as he claims. FPL evaluates DSM options versus the planned generating unit on a per kW basis. For example, if a DSM measure is projected to reduce load by 1 kW, it is compared to 1.2 kW of the planned generating unit and assumes (optimistically-for-DSM) that the cost per kW of that generating unit is unchanged by "shrinking" the unit to a 1.2 kW size power plant. This provides the best opportunity for DSM measures to pass economic screening analyses versus generation.

Second, the hypothetical Mr. Rábago refers to from my direct testimony was included merely to provide an example of the huge amount of additional, cost-effective DSM that would be required to fully meet the need at a time when it is likely that some of the DSM approved in the 2014 DSM Goals docket, that is fully accounted for in FPL's analyses, is no longer cost-effective (as is discussed later in Part IV of my rebuttal testimony). This example is designed solely to show how unrealistic it is to claim that additional DSM would be able to cost-effectively defer or avoid the need for OCEC Unit 1.

In addition, Mr. Rábago's contention that DSM, combined with a smaller

power plant, might cost-effectively defer or avoid OCEC Unit 1 is illogical. Later in this rebuttal testimony, I point out that even the DSM that was previously projected to be cost-effective in last year's DSM Goals docket would now be projected to be less cost-effective. Therefore, additional DSM that was previously projected not to be cost-effective will not suddenly become cost-effective. The opposite will be true; the previously non-cost-effective DSM will now be even less cost-effective. And, as explained in my direct testimony, different sizes of power plants – including smaller CC and combustion turbine units – were found not to be cost-effective compared to OCEC Unit 1.

Mr. Rábago's contention that two resource options, each of which is not cost-effective versus OCEC Unit 1 (on either a per kW basis or as a large MW block), would somehow combine to be cost-effective versus OCEC Unit 1 is clearly neither accurate nor reasonable.

Q. Please address the following statement by Mr. Rábago: "*The Company reliance on the 10% generation-only reserve margin is also a significant factor in the Company's justifications for building new capacity.*" (Page 17, Lines 15 & 16)

A. I have two reactions to this statement. First, it appears that Mr. Rábago may be making this statement to attempt to support his inaccurate and unsubstantiated claim of some long-term FPL strategy to unnecessarily build new power plants. Second, in this docket, the GRM is not a significant factor

in regard to determining FPL's reliability need in 2019. As stated in my direct testimony, FPL's projected resource needs beginning in 2019 are large regardless of whether the projection is based on the 20% minimum total reserve margin criterion (988 MW) or on the 10% minimum GRM criterion (1,052 MW). On a system the size of FPL's (over 26,000 MW of total capacity), this 64 MW differential is quite small. In addition, and as also stated in my direct testimony, the 1,622 MW OCEC Unit 1 that was selected as FPL's most cost-effective self-build generating unit satisfies both of these projected resource needs and would have been selected as the most economic self-build generation option even absent the GRM criterion. Therefore, the GRM criterion is not a significant factor in this docket.

Q. Please address Mr. Rábago's statement at page 16, starting on line 12:

"The Company does not evaluate the solar option from the perspective of the time frame required to develop that option."

A. This statement is misleading because it omits key information that was explained in my direct testimony. FPL recognized that although it might be able to wait until approximately two years prior to the in-service date to place an order for the solar equipment to meet a given need, it also recognized that to do so would forego the opportunity to select a new CC unit. The latest date by which FPL could select a new CC unit as its self-build generating option, and still meet its 2019 resource need date, was approximately March 2015.

In my direct testimony, I outlined several uncertainties related to solar meeting all or a substantial portion of FPL's 2019 need. These significant uncertainties included: (i) the need to quickly acquire large tracts of land for solar and the cost of that land, (ii) problems in being able to accurately project the cost of the PV equipment this far ahead of the 2019 in-service date, and (iii) whether FPL's projections of the firm capacity value of solar were accurate enough at this time to attempt to address all or a substantial portion of FPL's 2019 need with solar.

FPL believed that these uncertainties regarding solar were too great to forego the opportunity to meet the 2019 resource need with other highly efficient generation options whose firm capacity contributions and costs were much better understood. Thus, in this instance, solar was appropriately evaluated based on the longer timetable for other generating technologies.

Q. Please address Mr. Rábago's statement at page 19, starting on line 14: ***"… the Commission should direct the Company to explore "extreme" or "fast response" demand response resources specifically designed to provide reliability support."***

A. This statement struck me as interesting for two reasons. First, Mr. Rábago appears to be unaware that FPL already has approximately 2,000 MW of fast response resources in its residential and commercial/industrial load management programs. Second, Mr. Rábago's recommendation to pursue load management programs appears directly opposed to Mr. Wilson's concerns

regarding such programs. (I will address Mr. Wilson's concerns in Part III of this testimony.)

Q. On page 13, on lines 15 and 16, Mr. Rábago states: *"Q. Does the risk-adjusted analysis suggest the potential for over-building of capacity? A. Yes."* Do you agree?

A. No. There are two problems in his statement. First, FPL did not utilize the risk-adjusted load forecast discussed in FPL witness Feldman's testimony in determining its 2019 need. FPL used its base load forecast which has a 50% probability that the actual load will be higher than the forecasted load. Second, the notion that the addition of OCEC Unit 1 is an example of *"overbuilding"* does not reconcile with reality. OCEC Unit 1 is being added because: (i) FPL's reliability analyses show a significant need beginning in 2019, (ii) all reasonably achievable, cost-effective DSM have been accounted for in the resource need projection, (iii) OCEC Unit 1 was found to be the most cost-effective self-build generating option, and (iv) a capacity RFP found no viable market alternatives to OCEC Unit 1. Thus, instead of this unit being an example of *"overbuilding,"* bringing OCEC Unit 1 into service in 2019 is exactly the appropriate resource addition for FPL's customers.

Q. Please summarize your conclusions regarding Mr. Rábago's testimony.

A. Mr. Rábago's testimony is based on a mistaken belief that FPL has a *"campaign"* to build new power plants based on his incomplete observation that power plant capacity is growing faster than load growth. However, such differentials between growth rates in generation additions and growth rates in

load are to be expected due to plant retirements and the end of power purchase agreements. Mr. Rábago's testimony is also paradoxical because he first claims that FPL develops no LOLP projections, but then he uses FPL's LOLP projected values in his testimony.

In addition, Mr. Rábago's testimony also contains a number of incorrect and/or misleading statements, as discussed in this testimony and presented in Exhibit SRS-6. With these statements, and the other previously discussed problems regarding his testimony, Mr. Rábago has demonstrated that his testimony is unreliable at best.

Part III: Mr. Wilson's Testimony

Q. What are the main themes in Mr. Wilson's testimony?

A. There appear to be four main themes in Mr. Wilson's testimony, which I will paraphrase as follows:

- If FPL's current 20% minimum total reserve margin and 10% minimum GRM reliability criteria suddenly vanished, then FPL would not have a need in 2019.
- FPL should change its reliability criterion to the same 15% total reserve margin criterion used by the FRCC for peninsular Florida.
- FPL has not performed analyses that demonstrate that a 20% total reserve margin criterion is needed.

- FPL should not be using its 10% minimum GRM reliability criterion, but should use instead a different third reliability criterion that focuses only on load management.

Q. What is your reaction to Mr. Wilson's first theme that if FPL did not have its current reliability criteria, then it would not have a resource need in 2019?

A. This is an effort by Mr. Wilson to ignore the facts. FPL does utilize both the 20% total reserve margin and 10% GRM criteria, as well as the LOLP criterion. These criteria were used in 2014 when FPL continued its analyses of the best self-build generation with which to meet resource needs beginning in 2019, and in 2015 when FPL completed its analyses and issued its capacity RFP. To pretend that these reliability criteria are not in place in the context of this need determination is illogical.

In the context of this need determination, an attempt to change the minimum 20% total reserve margin criterion applicable to all peninsular Florida IOUs is analogous to changing the rules of the game after the game (*i.e.*, the analyses) is over just to invalidate the final score. Allowing the "rules of the game" to be changed for the 20% minimum total reserve margin criterion retroactively after all of the analyses have been completed would result in great uncertainty in utility planning and decision-making, which is not a desirable outcome for a utility or its customers.

Q. Has the FPSC previously addressed the continued use of the 20% total reserve margin criterion and whether a change to this criterion should be an issue in a need determination filing?

A. Yes. Since this criterion's adoption, the FPSC has consistently and repeatedly upheld the use of the 20% total reserve margin criterion. It has also stated that a need determination docket is not the appropriate forum in which to attempt to change that criterion. Exhibit SRS-7 summarizes the FPSC's rulings and statements regarding this criterion.

Q. Mr. Wilson recommends that FPL should be instructed to use the same 15% total reserve margin criterion as the FRCC uses for peninsular Florida. Does this recommendation make sense to you?

A. No. A fundamental principle of utility resource planning is that all utility systems are different; therefore, what may make sense for one utility system will not necessarily make sense for another system. The peninsular Florida utility system is much larger than the FPL system. FPL is a subset of the FRCC system, making up roughly 50% of the FRCC system.

Therefore, there are many more generators in the FRCC system than in FPL's system. A general rule of thumb in utility reliability analyses is that, all else equal including the total MW amount of generating capacity, a utility system with more generating units is more reliable from an LOLP perspective than is a system with fewer generating units. As a result, larger utility systems, such

as the FRCC's system, may be able to operate reliably with a lower reserve margin than smaller systems, such as FPL's system, will require.

Q. Are you familiar with the FRCC's reliability analyses and, if so, are there aspects of its reliability analyses that are relevant to consideration of Mr. Wilson's recommendation?

A. Yes. I am familiar with the FRCC's reliability analyses. I have served as a member of the FRCC's Reliability Working Group (RWG) for many years and am currently serving as the chairman of the RWG. As such, I am familiar with the reliability analyses performed by the RWG on behalf of the FRCC.

One aspect of the FRCC's reliability analyses that is commonly overlooked is that although the FRCC's reliability criterion is 15% total reserve margin, the FRCC actually expects a minimum total reserve margin level of approximately 19%.

Q. Please explain.

A. The FRCC's 15% total reserve margin criterion is based on analyses that assume that peninsular Florida's three IOUs – Tampa Electric (TECO), Duke Energy Florida (DEF), and FPL – will meet their 20% total reserve margin criteria that was agreed to in a joint stipulation with the FPSC approximately 16 years ago. Together, these three IOUs comprise roughly 75% of the load and generating resources in the FRCC system. The respective percentages attributable to each IOU are roughly 50% for FPL, 20% for DEF, and 5% for TECO.

As a result of the IOUs' 20% total reserve margin criterion, these three companies alone will provide the peninsular Florida system with a total reserve margin of approximately 15% even if all other utilities in the FRCC that comprise the remaining 25% of the total load and generation contribute nothing. This is shown by the following calculation:

IOUs	Non-IOUs

(75% x 20%) + (25% x 0%) = 15% + 0% = **15%**

However, to better ensure reliability for the FRCC system, and to ensure that all utilities in the FRCC are contributing to peninsular Florida's reliability, each member utility is expected to maintain a minimum of 15% total reserve margin. As a result, what the FRCC expects the minimum total reserve margin for peninsular Florida to actually be is shown below in a revised version of the previous calculation:

(75% x 20%) + (25% x *15%*) = 15% + *3.75%* = **18.75%**

Therefore, the FRCC system is actually expecting that the effective total reserve margin for peninsular Florida will be at least 18.75%.

Q. If the FPSC were to adopt Mr. Wilson's recommendation to have FPL utilize a 15% total reserve margin criterion, would there be adverse consequences regarding the reliability of peninsular Florida?

A. Yes. The impact is shown in the new calculation below in which FPL's 50% role in the FRCC system now shifts from using a 20% criterion to a 15% criterion. The resulting change in the total reserve margin for the FRCC is as follows:

(25% x 20%) + (75% x 15%) = $5\% + 11.25\%$ = **16.25%**

As a consequence of Mr. Wilson's recommendation, the effective minimum total reserve margin for peninsular Florida would drop from 18.75% to 16.25%. This represents a significant lowering in projected reliability for all utility customers in peninsular Florida.

Q. Would there be other unintended consequences from following Mr. Wilson's recommendation to instruct FPL to lower its total reserve margin criterion from 20% to 15%?

A. Yes. All DSM options would automatically become less cost-effective on FPL's system. This is because, when analyzing the economics of 1 kW of demand reduction from DSM, DSM is now credited with avoiding at least 1.20 kW of generation. Mr. Wilson's recommendation would result in DSM now being credited with only avoiding 1.15 kW of generation.

As a result, the projected avoided costs for a number of types of generator-related costs (such as generator capital, fixed O&M, variable O&M, and capital replacement) that represent DSM benefits would automatically be

lowered. Consequently, the current trend of decreasing cost-effectiveness of DSM on FPL's system would be exacerbated by Mr. Wilson's recommendation and even less DSM would be cost-effective for FPL's customers. This result would be the same regardless of whether the rate impact measure (RIM) or total resource cost (TRC) test was used to gauge DSM cost-effectiveness, because both tests calculate DSM benefits in an identical way.

Q. Please summarize your view of Mr. Wilson's recommendation that FPL should be instructed retroactively to use a 15% total reserve margin criterion.

A. In an attempt to stop the construction of a highly efficient, low emissions power plant, Mr. Wilson's recommendation would:

- change the rules of the game after the game (*i.e.*, the analyses) is over;
- result in lower reliability for FPL's customers;
- result in lower reliability for all utility customers in peninsular Florida; and,
- result in even less DSM being cost-effective for FPL's customers.

Therefore, my view is that Mr. Wilson's recommendation should be rejected.

Q. The third main theme of Mr. Wilson's testimony deals with analyses of FPL's reserve margin criteria. He mentions that a 2010 analysis for Duke Energy Carolinas resulted in a lowering of Duke's reserve margin criterion. Please comment on this.

A. Starting on page 7, line 20, and continuing through page 8, line 10, Mr. Wilson's testimony states the following:

> *"…in 2010, the North Carolina Utilities Commission required Duke Energy Carolinas to conduct a reserve margin study… The result of Duke Energy Carolinas' reserve margin study (provided as Exhibit (JDW-2) was to reduce Duke's reserve margin from 17% to 15.5%, which had a material impact on Duke's resource plan."*

Presumably, the intent of including this passage in his testimony was to imply that an analysis of reliability criteria for a utility will likely lower those criteria, thus lowering the amount of resources (generation and DSM) that a utility would need to add.

However, what the Commission should be aware of is that Duke Energy Carolinas (DEC) has recently (2015) completed another analysis of its reliability criteria, using the same consultant, which has resulted in DEC not only increasing its Summer reserve margin criterion back to 17%, but also in DEC considering adding a new dual Summer/Winter reserve margin criterion for the first time. Exhibit SRS-8 presents this document: Duke Energy

Progress, North Carolina Integrated Resource Plan (Annual Report), September 1, 2015 which discusses this change in DEC's reserve margin criterion on pages 11 and 12.

Thus, contrary to what Mr. Wilson's testimony implies, analyses of reliability criteria can also result in increases to reserve margin criteria and corresponding increases in resource needs.

Q. In regard to analysis and setting of reliability criteria, Mr. Wilson appears to attempt to dismiss the 20% total reserve margin requirement for the IOUs as something developed by the FPSC with minimal consideration. Is that your impression as well?

A. No. Although I was not a witness in that proceeding (due in part to DSM Goals responsibilities that year), my recollection of the activity surrounding that proceeding is that it was an issue the parties took very seriously. Mr. Wilson's testimony attempts to almost dismiss the FPSC's concerns and interest regarding the reliability of the Florida electric system by quoting only four brief statements made by the FPSC from what was an extensive investigation.

However, as noted in Order No. PSC-99-2507-S-EU, the Commission expressed concerns about the adequacy of the reserve margins planned for Peninsular Florida as a result of its reviews of both the Ten-Year Site Plans that were filed in 1997 and 1998. As a result, an investigation was opened to

consider the appropriate reserve margin for Peninsular Florida IOUs. That investigation included at least one workshop, comments, and ultimately testimony filed by an array of stakeholders.

Mr. Wilson also fails to mention problems experienced by several Florida utilities who were planning to a 15% total reserve margin criterion and whose resource plans had a heavy dependency on DSM. Furthermore, the mere fact that the FPSC initiated such a docket indicates the seriousness the FPSC attached to this issue.

For these reasons, I disagree with Mr. Wilson's view that a less-than-serious look at Florida electric system reliability led to the FPSC's adoption of the 20% total reserve margin criterion for the peninsular Florida IOUs. I also view Mr. Wilson's comments regarding the continued use of the 20% total reserve margin criterion by FPL to be a criticism not only of FPL, but also of the FPSC as well.

Q. Regarding that 20% criterion, Mr. Wilson states (paraphrasing) that FPL has not recently conducted an analysis of whether a 20% total reserve margin criterion is still appropriate. Is that true?

A. No. This part of his testimony is perhaps best summarized by the following two passages from his testimony:

- *"Q. Has FPL provided any evidence in support of the need for a 20%*

reserve margin? A. No. According to the testimony of Dr. Steven Sim, FPL utilized a minimum total reserve margin of 20% for both seasons; however, his testimony contains no reference to any FPL or third-party study or substantive analysis to validate this 20% RM criteria."(Page 7, Lines 10-15); and,

- *"Q. Are you aware of any recent studies or substantive analysis conducted by FPL which would support the continued use of a 20% reserve margin? A. No. In fact, FPL witness Dr. Steven Sim testified during his telephonic deposition taken in this matter on October 8, 2015, that no such study or substantive analysis existed."* (Page 7, Lines 3-7)

The first statement is in regard to whether FPL has included a justification for its 20% total reserve margin criterion as part of this filing. FPL has not included such a justification because FPL believes such a justification is not required as part of a need determination filing. As indicated by the FPSC's statements in past need determination proceedings presented in Exhibit SRS-7, the time to question an already established reliability criterion, such as the 20% minimum total reserve margin, is outside a need determination docket, not during the docket.

The second statement is in regard to whether FPL has performed analyses regarding whether a 20% total reserve margin criterion is still appropriate. Contrary to Mr. Wilson's statement, FPL has performed such analyses. The

results of those analyses have led FPL to conclude that a 20% criterion is still appropriate for its system.

In my deposition, I was asked at several points whether FPL had conducted analyses regarding the 20% total reserve margin reliability criterion. My understanding of the intent of these questions was whether FPL had recently conducted an analysis that attempts to determine what single total reserve margin value is – at that point in time – projected to be the best total reserve margin value to use (*i.e.*, an analysis similar to the DEC analysis Mr. Wilson presents in his testimony). As I stated, FPL has not done such an analysis for many years. That is because FPL is operating under a Commission-approved stipulation, and, until FPL gets to a point where it begins to question whether that 20% reserve margin might not be appropriate, or is directed to utilize another total reserve margin criterion value by the Commission as a result of a generic proceeding, FPL will continue to plan its system based, in part, on that 20% total reserve margin criterion.

I also explained in the deposition that FPL has conducted other types of analyses designed to look at whether a 20% total reserve margin analysis is still appropriate. Such an analysis was presented in Docket Nos. 080245-EI and 080246-EI, Petition to Determine Need for Riviera Plant and Cape Canaveral Plant, by Florida Power & Light Company in the testimony of FPL witness Rene Silva. Mr. Wilson selectively chose to ignore that information

from my deposition. The relevant portions of Mr. Silva's testimony, including both his testimony text and exhibits, are presented in Exhibit SRS-9.

To further address any concerns about the continued appropriateness of FPL's 20% total reserve margin criterion, FPL has also performed a new analysis regarding this question, which is presented in Exhibit SRS-10.

Q. Please explain the analysis approach taken in Exhibit SRS-10.

A. The analysis approach starts with an earlier examination that FPL did in regard to whether a new GRM reliability criterion was needed. (Note that this earlier examination is presented later as Exhibit SRS-11 and will be discussed later in regard to FPL's GRM reliability criterion.)

The earlier examination is of the previously mentioned January 11, 2010 peak day, which was a very difficult day for FPL's system operators and other systems around Florida. Fortunately, FPL's system operators were able to continue to serve firm load that day. However, they used all of their available generating capacity, and their reserves consisted solely of a remaining portion of their load management capacity. Any combination of additional failures by FPL or third party generation, and/or higher load, that totaled slightly over 1,100 MW would have resulted in the start of feeder rotations (*i.e.*, temporarily ceasing electrical service to a designated number of customers, often on the same feeder, then resuming electrical service to those customers while sequentially temporarily ceasing electrical service to another group of

customers). In fact, a 750 MW unit failed only hours after the peak load occurred that day. Had it failed on the peak hour, FPL's remaining reserves would have been reduced to less than 400 MW. This is shown on page 1 of 2 of Exhibit SRS-10.

The key point in regard to this discussion regarding the continued appropriateness of FPL's 20% total reserve margin criterion is that FPL had planned the system to meet a 20% total reserve margin criterion in 2010, and it was able to maintain service to all firm load customers on that very difficult day. The question is whether FPL's firm load customers could all have been served on that day if FPL had been planning instead to a 15% total reserve margin criterion and the exact set of circumstances occurred.

Q. What were the results of this analysis and what conclusions do you draw from it?

A. Service to firm load customers would not have been maintained if FPL had been planning to a 15% total reserve margin criterion. As shown on page 2 of 2 of Exhibit SRS-10, FPL would have exhausted all reserves, both generation and load management, and would have been 68 MW short of firm load requirements. This would have necessitated feeder rotation at a level of approximately 40,000 customers. However, that situation could be worse. If the 750 MW unit failure had occurred at the peak hour instead of missing the peak by only several hours, then FPL would have been about 818 MW short

of firm load requirements, thus necessitating feeder rotation at a level of approximately 470,000 customers.

The conclusion that FPL draws from this analysis of a recent, real-life event is that planning to a 20% total reserve margin criterion allowed FPL to maintain service to all firm load customers through a very difficult day, but if FPL had been planning to a 15% total reserve margin criterion, it could not have maintained service to all of its customers.

Q. In regard to FPL's GRM reliability criterion, would you please discuss FPL's analysis approach and the results of those analyses that led FPL to implement the GRM reliability criterion?

A. Yes. The analysis approach, and the results of the analyses, are summarized in Exhibit SRS-11. This is a PowerPoint presentation that was provided to FPL executives in late February 2014. At the conclusion of that meeting, a decision was made to implement a new 10% GRM reliability criterion to complement FPL's existing 20% total reserve margin and 0.1 day/year LOLP reliability criteria.

As Exhibit SRS-11 shows, one of the key findings of FPL's analyses was that resource plans with identical total reserve margins are not equal in regard to system reliability if they differ in the amounts of DSM and generation that combine to get to that identical total reserve margin value. FPL's analyses showed that resource plans with higher DSM levels are projected to have

higher LOLP, and thus are projected to have lower system reliability from an LOLP perspective, than are resource plans with lower DSM levels and with an identical total reserve margin level.

Q. Is this the sole reason that FPL introduced its 10% GRM reliability criterion?

A. No. It was only one of two primary reasons. The other reason was a look at how resource plans with identical total reserve margins, but different levels of DSM and generation, would fare when it came time to actually operate FPL's system.

One of the key considerations for resource planners is that a utility's resource plan "sets the table" for the utility's system operators who must then operate that system. Consequently, FPL's resource planning and system operations groups have frequent communications. Early in 2010, FPL had experienced the previously mentioned difficult system operations day of January 11, 2010, and had recently received the FPSC's order in the 2009 DSM Goals docket (Docket No. 080407-EG), which had set much higher DSM Goals than had been set for FPL before.

The FPSC order meant that FPL's resource plans would be more dependent on DSM resources, and less reliant on generation resources, than had been the case in the past. FPL began to look at what implications for system reliability might ensue from the current (or from a future) change in the generation/DSM

makeup of FPL's resource plans. Both the resource planning and system operations groups were involved in this analysis and in an analysis of what occurred on January 11, 2010.

Q. Do FPL's system operators view DSM and generation from a different perspective than do FPL's resource planners?

A. Yes. They do so out of necessity. Whereas FPL's resource planners view DSM (both EE and LM) and generation as resource options that can be implemented in future years, FPL's system operators have to take an immediate "real time" view of resources at their disposal to manage and meet the electrical load.

Consequently, FPL's system operators are dealing with actual load from moment to moment. Any impact from EE has already occurred in the actual load they must react to. There is no "button" to activate additional EE as there is for both LM and generation resources. FPL's analyses of system reliability recognized this reality for system operators.

Q. Please describe how FPL conducted these system reliability analyses.

A. In order to perform these analyses, FPL developed a "generation-only reserve margin" (GRM) metric, which is similar in some respects to TECO's Supply-Side Reserve Margin metric that they have used for over a decade in their resource planning. FPL then constructed alternate resource plans with identical total reserve margins, but different levels of DSM and generation (*i.e.*, different GRM levels). Analyses were conducted that examined both

historical and future perspectives. The historical perspective consisted of a look at January 11, 2010. The future perspective consisted of a look at FPL's then current resource plan for both the Summer and Winter of 2021, then modified the DSM/generation mix while maintaining the total reserve margin value.

For both the historical and forecasted perspectives, FPL examined how well the system could be operated based on these resource plans given different assumptions of higher-than-forecasted load and/or generating unit unavailability. For both perspectives, the analysis results were that FPL's system operators were projected to have more reserves at their disposal with resource plans that had a higher GRM than with a lower GRM.

Thus, based on both resource planning type analyses involving LOLP projections, and on system operations type analyses involving projected levels of reserves, FPL decided to implement a third reliability criterion – the 10% minimum GRM criterion – in 2014 with a starting date of 2019. A 10% GRM value was selected as the criterion minimum value based on recommendations from FPL's system operators because it closely matched various reserve requirements projected to be needed by the operators.

Q. The fourth main theme in Mr. Wilson's testimony concerns FPL's GRM reliability criterion, and he states (paraphrasing) that FPL should not be

using its 10% minimum GRM reliability criterion, but a different third reliability criterion that focuses only on LM. Please discuss.

A. Let me start by examining Mr. Wilson's statements supporting a third reliability criterion that focuses on LM, but not EE. Starting on page 15, line 18 of his testimony, he states:

> "*I do agree with one of the reasons FPL gives for DSM programs adversely affecting LOLP relative to generation resources. Exhibit 20 JDW-3(p.7) illustrates FPL's discussion of load management 'fatigue.'*[22] *I agree with FPL's conclusion that evidence on this topic is 'inconclusive,' but nonetheless, it is reasonable for FPL to plan around this issue. While customer response to load management requests is usually quite good for the first several times, FPL reasonably concludes that there should be 'No greater than 10 events/year,' among other limitations. To the extent that a peak event repeatedly draws on load management resources, it could result in lower customer response and hence a higher LOLP associated with use of load management resources."*

In this statement, Mr. Wilson is partly correct, but mostly wrong regarding FPL's findings in its analyses of the reliability of resource plans with identical total reserve margins, but differing levels of DSM. Although FPL did examine the concept of load management "fatigue" early in its analyses, it was not

accounted for in FPL's analyses of LOLP for different resource plans or in FPL's system operations-based analyses.

As discussed in my deposition, the reason DSM options typically result in higher LOLP compared to generation options is because many DSM options can only provide a lower level of demand reduction in non-peak months compared to their contribution in peak months. Air conditioning-based DSM programs are a relevant example in Florida and for FPL. Air conditioning-based kW demand reductions are lower in Spring and Fall months than in the Summer because air conditioners run less in those months. Thus, they provide less support if the utility system has unexpected outages of generation equipment. Furthermore, such cooling system-based DSM options typically offer little or no support in the Winter months on cold days. Conversely, generating units typically provide a constant level of output during most months and an even higher level of output in Winter months due to cooler ambient air temperatures.

It is primarily for this reason that a resource plan heavily reliant on DSM options is typically projected to have higher LOLP on FPL's system than another resource plan with less DSM but an identical total reserve margin value.

However, while load management "fatigue" was not a factor in these LOLP analyses that FPL performed, FPL does agree generally with Mr. Wilson on the need for a third reliability criterion (GRM) that takes into account levels of DSM.

Q. Mr. Wilson's testimony indicates that he is willing to consider the reliability implications of LM levels. Does his testimony indicate that he is also willing to consider the reliability implications of EE levels?

A. No. This is shown by the following statement that appears beginning on page 15, line 9 of his testimony:

"FPL cites uncertainty about the performance of future EE programs, presenting a reliability risk in the form of load forecast uncertainty. This analysis is unreliable because it (1) is out of date (based on 2002 technology) and (2) is based on a simple average of program uncertainty without any evidence that averaging is the proper statistical technique, given the likelihood that there are relationships between the program outcomes.[21] *This type of analysis should be supported by a current evaluation, measurement and verification (EM&V) study conducted by an independent consultant and its novel application in this circumstance certainly requires greater scrutiny."*

Mr. Wilson has misunderstood the use of the information on the page to which he is referring. That page was simply a look at what the uncertainty range might be for FPL's then current annual DSM implementation if FPL's 2002

DSM uncertainty values still applied. The 2002 values were used by me in constructing the page simply because I had that information readily available, and it was suitable for my objective to obtain a ballpark view regarding what DSM uncertainty levels might be. And, based on the portion of Mr. Wilson's statement above referring to DSM evaluation, measurement, and verification, he clearly agrees that there is uncertainty surrounding the actual performance of DSM measures after they are installed. If there were no uncertainty, why incur all of the expense of evaluating, measuring, and verifying?

However, no attempt was made to utilize uncertainty levels surrounding the performance of DSM installations in any of FPL's previously described LOLP analyses of differing levels of DSM in resource plans that have identical total reserve margin values.

Q. Why did FPL choose to ignore uncertainty regarding the actual performance of installed DSM measures and are there other uncertainty aspects of DSM that were also not used in FPL's reliability analyses of DSM levels in resource plans?

A. FPL chose to ignore uncertainty regarding actual performance of installed DSM measures at the time these analyses were performed in order to take an optimistic-for-DSM perspective regarding DSM's impact on system reliability. In regard to the second part of the question, there is at least one other aspect of uncertainty regarding DSM that was also not included in FPL's

analyses of DSM impacts on system reliability in order to maintain an optimistic-for-DSM approach.

That aspect is the uncertainty regarding the number of DSM installations that will actually occur over the long-term. As evidenced in last year's DSM Goals docket, DSM has become increasingly less cost-effective on FPL's system. As a result, various DSM programs and their installations that may have been planned several years ago have either been cancelled or significantly scaled back due to a change in the programs' cost-effectiveness. This adds uncertainty in resource planning that looks out more than a year or two into the future.

Q. Therefore, in order to utilize optimistic-to-DSM assumptions in its analyses of the impacts on system reliability of different levels of DSM in resource plans with identical total reserve margins, is it correct that FPL chose to ignore uncertainty about both the actual performance of DSM installations and the actual versus projected levels of DSM installations?

A. Yes. FPL's analyses optimistically assumed that DSM performance was exactly as currently assumed in regard to kW reductions for any DSM installation, and FPL also assumed that all currently planned DSM installations in the future would occur exactly as projected. Even with those favorable assumptions for DSM, resource plans with higher levels of DSM – whether EE or LM – are projected to have higher LOLP values than other

resource plans with lower levels of DSM but with the same total reserve margin levels.

To put it succinctly, resource plans with identical total reserve margins are not created equal in regard to system reliability if they differ in the amount of DSM and generation that is planned to achieve that identical total reserve margin value. Resource plans with higher DSM levels are projected to have higher LOLP and thus result in lower system reliability for FPL's customers.

Q. Are there any other problematic statements in Mr. Wilson's testimony?

A. Yes. The first one I will address appears on page 21, starting on line 20:

> *"If FPL had made greater investments in energy efficiency and pursued opportunities to procure renewable energy in South Carolina, it might be possible for FPL to avoid adding any additional natural gas power plants – including the proposed OCEC Unit 1."*

It appears that Mr. Wilson has taken efficiency seriously by recycling testimony he previously filed on behalf of SACE in South Carolina. That aside, Mr. Wilson's suggestion to do more energy efficiency simply ignores the reality that there is no additional cost-effective DSM for FPL's system (as discussed in Part IV of this rebuttal testimony) and that, all else equal, greater dependence on DSM in a resource plan results in higher LOLP and less reliability for FPL's system. He appears to be advocating for higher electric

rates and lower system reliability for FPL's customers. This is another recommendation lacking any reasonable measure of support.

As for his suggestion to seek more renewable energy, FPL has already announced 233 MW more of solar will be added by the end of 2016. In addition, FPL will continue to look for additional cost-effective solar resources in its on-going resource planning work.

Q. Do you agree with Mr. Wilson's statements regarding FPL's evaluation of solar options?

A. No. Mr. Wilson made two related comments about FPL's resource planning process and FPL's evaluation of solar options. These two comments are as follows:

- *"FPL did not appear to consider solar resources as a generation alternative in its most recent ten-year site plan."* (Page 22, Lines 4 & 5); and,
- *"FPL's newest solar facilities are not the result of FPL's resource planning process as described in the ten-year site plan, but are the result of some other business development process that is not clearly described."* (Page 22, Lines 10-12)

Mr. Wilson is mistaken. Solar resources, particularly photovoltaic (PV) resources, are actively evaluated as a generation alternative in FPL's resource

planning process. Mr. Wilson appears to be misinterpreting the intent of the description of FPL's resource planning process in FPL's 2015 Ten-Year Site Plan. The intent of this portion of the Site Plan is simply to provide a description of FPL's resource planning process, not to provide a listing of all resource options that FPL is considering in that process. Furthermore, my direct testimony describes the evaluation of PV as a resource option that was considered for its potential to meet all or a substantial portion of FPL's resource needs that begin in 2019. That alone should have made it clear that FPL is actively evaluating PV as a generation option.

Q. Please summarize your conclusions regarding Mr. Wilson's testimony.

A. As with the testimonies of the other intervenor witnesses, Mr. Wilson's testimony wants to shift the discussion away from reality. He wants to ignore the results of FPL's reliability analyses which use FPL's 20% total reserve margin and 10% GRM reliability criteria so that he can claim that there would be no projected need for new resources starting in 2019. However, FPL does plan its system using these two reliability criteria (and its LOLP criterion), and it does have a significant resource need beginning in 2019 that must be addressed.

Mr. Wilson then recommends that FPL be instructed to use the same 15% total reserve margin criterion that the FRCC uses. However, Mr. Wilson does not acknowledge that FPL's system and the FRCC's peninsular Florida system are quite different, which means what may be an appropriate reliability

criterion for one system may not be appropriate for another system. Furthermore, Mr. Wilson does not understand that the FRCC's continued use of a 15% criterion is based on the expectation that the 20% total reserve margin criterion used by the three IOUs ensures that peninsular Florida will actually be served by a minimum total reserve margin of almost 19%. Mr. Wilson's poorly conceived recommendation, intended to not allow FPL to build what is projected to be the most fuel-efficient natural gas-fired generating unit in Florida, would result in a series of unintended negative consequences including: (i) lower reliability for FPL's customers, (ii) lower reliability for all utility customers in peninsular Florida, and (iii) automatically decreasing the cost-effectiveness of all DSM options on FPL's system.

Mr. Wilson incorrectly claims that FPL has not performed any analyses that demonstrate that its continued use of the 20% minimum total reserve margin criterion is appropriate. Exhibit SRS-9 presents testimony and analyses regarding this subject that FPL previously provided in a prior need filing. In addition, Exhibit SRS-10 provides a new analysis based on a recent actual event in which the FPL system, if it had been based on a 15% instead of a 20% total reserve margin criterion, would not have able to serve all of its firm load customers.

In regard to FPL's GRM reliability criterion, Mr. Wilson is open to a third reliability criterion in regard to LM, but not to EE. Not surprisingly, his

testimony seeks to avoid the analysis-based support for the GRM criterion, which shows that when analyzing two resource plans on FPL's system with identical total reserve margins, but differing levels of DSM, the results are that the resource plan with lower DSM levels/a higher GRM value will have:

- lower projected LOLP values, thus higher system reliability from an LOLP perspective; and,
- more reserves from a system operator's perspective, thus better allowing the system operators to deal with real time problems that may occur.

As an advocate for ever-higher levels of utility DSM, it is understandable why Mr. Wilson might seek to ignore the results of FPL's analyses regarding DSM levels and the reliability impact on the FPL system. However, in so doing he is providing still further evidence that he is seeking to shift the discussion in this docket away from the reality that FPL's system operators and resource planners must operate in. In so doing, Mr. Wilson makes recommendations that are clearly not in the best interest of FPL's customers.

Finally, like Mr. Rábago and Ms. Mims, Mr. Wilson's testimony also contains a number of incorrect and/or misleading statements. A few of these have been discussed on the preceding pages, and the rest are presented in Exhibit SRS-6.

With these statements and the other problems discussed above regarding his testimony, Mr. Wilson has clearly demonstrated that his testimony should not be given serious consideration by the FPSC in this docket.

Part IV: Ms. Mims' Testimony

Q. What are the main themes of Ms. Mims' testimony?

A. Her testimony briefly discusses her contention that OCEC Unit 1 does nothing to improve fuel diversity for the FPL system.

Q. What does Ms. Mims state in regard to fuel diversity?

A. Ms. Mims' view regarding fuel diversity is best conveyed by the following portion of her testimony:

> *"In fact, in FPL's 2015 Ten Year Site Plan, natural gas contributed to 68% of the Company's energy generation in 2014, and the Company forecasted that it is the only fuel type that will increase in 2016, and continue to grow from 2019 (when OCEC unit 1 is scheduled to come online) to 2024.*[2] *Ultimately, FPL anticipates that natural gas will be used to generate 73% of its energy in 2024.*[3] *However, FPL anticipates solar energy contributing about 0.5% annually from 2019 to 2024, and the amount of energy coming from nuclear declining as a percentage of total generation in the same time frame. It would seem that if FPL is truly trying to diversify its fuel*

sources, at least one of these resources would be increasing as a percent of total generation over time, not just natural gas. (Page 4, Lines 1-10)

Ms. Mims then presents her Table 1 which shows FPL's projection of fuel mix by percentage by fuel/energy type by year for the years 2015 through 2024.

Q. Are there problems with this statement and her table?

A. Yes. There are at least two problems. First, she states that gas is the "*only fuel type that will increase in 2016, and continue to grow from 2019 (when OCEC unit 1 is scheduled to come online) to 2024."* She mistakenly ignores the projection in her own table for solar that shows solar starting at 0.2% in 2015, then tripling its contribution in 2016 and continuing to contribute at least more than twice its 2015 value for the remaining years. Second, by selecting her starting year to be 2015 and her ending year to be 2024, she selectively ignores: (i) the increase in solar's contribution in 2010, (ii) nuclear energy's increased contribution that began in 2012 and 2013 when FPL's nuclear uprate project was completed, and (iii) the projected impact of FPL's new nuclear units Turkey Point 6 & 7 beginning in 2027, which will significantly reduce natural gas' percentage of FPL's fuel mix.

Q. In regard to nuclear, has SACE been supportive of FPL's efforts to enhance fuel diversity through additional nuclear capacity?

A. No. SACE has actively opposed both the nuclear uprates project and the Turkey Point 6 & 7 project. Apparently, SACE is not as interested in fuel diversity for FPL's system as they now claim to be in this docket.

Q. Does Ms. Mims' testimony discuss the fact that the OCEC Unit 1 will utilize the new gas pipeline into Florida, thus increasing diversity of fuel supply sources for FPL and its customers?

A. No. She has chosen to ignore this diversity of fuel supply benefit of OCEC Unit 1.

Q. Did Ms. Mims' testimony at least acknowledge that OCEC Unit 1, in addition to being the most cost-effective resource option with which to meet FPL's 2019 resource need, will also be the most fuel-efficient fossil fuel generating unit on FPL's system and thus minimize the amount of natural gas that will be used?

A. No. She appears to have not considered the fact that other generating options that are feasible for meeting FPL's 2019 resource need would result in higher amounts of natural gas being used.

Q. Are there any other incorrect and/or misleading statements in Ms. Mims' testimony?

A. Yes. Exhibit SRS-6 presents at least a partial listing of incorrect and/or misleading statements made by Ms. Mims and the other intervenor witnesses in their respective testimonies.

Q. Please summarize your conclusions regarding Ms. Mims' testimony.

A. In her testimony, as discussed briefly here, and presented in Exhibit SRS-6, Ms. Mims makes a number of incorrect and/or misleading statements.

Part V: Summary and Conclusions

Q. Please provide a summary of the testimonies of the three intervenor witnesses.

A. The intervenors do not contest that:

1) when utilizing FPL's existing reliability criteria, FPL projects a significant resource need (1,052 MW) beginning in 2019 and increasing in subsequent years;
2) the results of FPL's analyses concluded that the OCEC Unit 1 is the most cost-effective self-build generating option with which to meet that resource need; and,
3) no non-FPL generating option was submitted in response to FPL's capacity RFP solicitation that met the RFP's Minimum Requirements, thus no market alternatives to OCEC Unit 1 were offered.

In addition, there are inherent problems and flaws in the intervenor testimonies, most notably as follows:

1) The intervenors attempt to shift the focus of the discussion away from the facts of the case by disregarding FPSC decisions and basic principles of resource planning.
2) Mr. Rábago's testimony has as its main point a false and unsubstantiated claim that FPL has a "*campaign*" to build new power plants now running

for several decades, during which he apparently believes the FPSC has failed to review and regulate the utility appropriately.

3) Mr. Wilson's testimony attempts to avoid reality by stating that OCEC Unit 1 would not be needed if FPL's reliability criteria were simply ignored, including the 20% minimum total reserved margin criterion approved and applied by the FPSC since 1999 for all peninsular Florida IOUs.

These problems, coupled with numerous other incorrect and/or misleading statements detailed in my rebuttal testimony and exhibits, demonstrate that the intervenor testimonies are unreliable and not worthy of serious consideration by the FPSC in this docket.

Q. What would be the best decision in this docket for FPL's customers?

A. Based on multiple, appropriate reliability criteria, FPL has a large resource need beginning in the year 2019 which can only be met cost-effectively by additional generation. OCEC Unit 1 has been shown to be the most cost-effective generation option for FPL's customers. Therefore, it would be in the best interests of FPL's customers for the FPSC to grant a determination of need for OCEC Unit 1.

Q. Does this conclude your rebuttal testimony?

A. Yes.

BY MR. COX:

Q Dr. Sim, have you prepared a summary of your amended rebuttal testimony?

A Yes.

Q Could you please provide that summary for the Commissioners?

A I'll be glad to.

Good morning, Chairman Graham and Commissioners. My rebuttal testimony addresses the direct testimonies of ECOSWF witness Rábago and SACE witnesses Wilson and Mims.

First I point out that none of the three witness -- of these three witnesses contest the following facts of the case: First, analyses using FPL's current reliability criteria show that FPL has a significant need for additional generation starting in the year 2019; second, analyses show that the Okeechobee unit is the most cost-effective FPL self-build generating option; and, third, no viable market alternatives to the Okeechobee unit were offered in response to FPL's capacity RFP solicitation.

Instead, the Intervenors attempt to divert attention from the facts of this case. They have sought to change the rules of the game after the game, meaning the analyses have ended just to change the final

outcome. They strongly suggest that the Commission has not been doing its job, and they've attempted to relitigate previous decisions the Commission has made.

Specifically, Mr. Rábago claims that FPL has been on a decades long campaign to build new power plants. His attempts to justify this incorrect claim are deeply flawed and fail to recognize that new power plant additions and cost recovery for those plants are only approved after Commission hearings.

Mr. Wilson argues that there will be no need for new generation if FPL's reliability criteria were simply ignored. He also mischaracterizes the rationale for FPL's GRM reliability criteria.

In summary, these witnesses' testimonies are not reliable and are not worthy of serious consideration in this docket. Thank you.

MR. COX: Thank you, Dr. Sim. Does that conclude your summary?

THE WITNESS: Yes, sir.

MR. COX: Chairman Graham, the witness is tendered for cross-examination.

CHAIRMAN GRAHAM: Thank you. Dr. Sim, welcome back.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: Before we get started with

the cross-exam, I just want to remind you yes or no and then a short explanation.

THE WITNESS: Yes.

CHAIRMAN GRAHAM: Thank you. OPC.

MS. CHRISTENSEN: No questions.

CHAIRMAN GRAHAM: ECOSWF.

MR. MARSHALL: Thank you, Mr. Chairman.

EXAMINATION

BY MR. MARSHALL:

Q Good morning, Dr. Sim.

A Good morning, sir.

Q On January 11th, 2010, FPL faced its all-time peak load.

A Yes.

Q That was a very difficult day.

A It was for -- yes, for FPL and for a number of other utilities across the state.

Q And during this -- the highest load event ever for FPL, FPL was able to sell 526 megawatts of emergency power to another utility.

A I think the number is slightly different, but it was in excess of 500 megawatts. So the number is approximately correct.

Q Okay. Well, if I could direct your attention to Exhibit SRS-11, page 16 of 33.

A Yes.

Q Does that indicate that FPL sold 526 megawatts of power?

A It does.

Q And despite that sale of 526 megawatts of power, FPL still had 1,144 megawatts of load management available during that highest peak.

A Yes. That amount was available because we were planning to a 20 percent reserve margin.

Q So they did have 1,144 megawatts of load management available?

A Yes.

Q And FPL was able to serve all firm load that day.

A Yes.

MR. MARSHALL: Thank you. No further questions.

CHAIRMAN GRAHAM: SACE.

MR. WHITLOCK: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WHITLOCK:

Q Good morning, Dr. Sim.

A Good morning, sir.

Q Dr. Sim, on page 25 of your testimony, if I can direct you there towards the top of the page, you

testify, I believe, that -- in contradiction to SACE witness Wilson's testimony that it would not make sense to use the FRCC's 15 percent reserve margin in this docket; is that correct?

A That's correct.

Q Okay. Now FPL has previously advocated in front of this Commission for the use of the FRCC's 15 percent reserve margin; correct?

A Are you referring, sir, to the 1999 docket?

Q I am, yes, sir.

A The answer is yes and no. We originally testified that 15 percent was adequate, but ultimately we walked away from that point and agreed to a 20 percent reserve margin criterion.

Q Okay. So, Dr. Sim, I'll ask you my question again. FPL has previously advocated for using the FRCC's 15 percent reserve margin in front of this Commission; correct?

A Yes, at one time.

Q Thank you. Moving over to pages 29 and 30 of your testimony, there you're referencing Mr. Wilson's reference to Duke Energy Carolinas performing a reserve margin study in 2010 and it resulting in the lowering of its reserve margin. Are you familiar with that? Do you recall that testimony?

A Yes.

Q Okay. And then you note accurately that Duke did do -- have another reserve margin performed, I believe, in 2015, and that resulted in Duke raising the reserve margin back up; correct?

A Yes, back to the 17 percent. And in addition, for the first time, studying a dual summer/winter reliability criterion as well.

Q So between 2010 and 2015, Duke had two comprehensive reserve margin studies conducted; correct?

A Yes.

Q And as we established yesterday, FPL has not had a comprehensive reserve margin study like this conducted in at least 16 years; correct?

A Yes, because we have not seen the need for it.

Q Now on line 16 of page 30, you state, "Thus, contrary to what Mr. Wilson's testimony implies, analyses of reliability criteria can also result in increases to reserve margin criteria and corresponding increases in resource needs." Correct?

A Yes, sir.

Q Okay. Now because FPL hasn't had a study done in 16 years or 20 years or however long it's been, whereas Duke had two done in a five-year period, you don't know what the results of that study would be for

FPL, do you? You don't know if it would result in a higher reserve margin or a lower reserve margin; correct?

A Are we referring to an analysis based on the Astrape method?

Q Not necessarily.

A Then I'd answer the question as it is correct, I do not know what direction it would go. But my anticipation is that we would remain at or perhaps above a 20 percent reserve margin.

Q But you don't know because you haven't had a study done; correct?

A That is correct. Our internal studies point us to 20 percent.

Q I didn't ask about an internal study, but thank you for that editorial, Dr. Sim.

Dr. Sim, on page 31 of your testimony you talk about your recollection of the 1999 Commission proceeding. Do you see that testimony?

A I'm sorry, sir. Which page?

Q 31.

A Okay.

Q Line 6. You state, "No" -- your answer starting on line 5, "No, although I was not a witness in that proceeding due in part to DSM goals

responsibilities that year, my recollection of the activities surrounding that proceeding is that it was an issue the parties took very seriously." Do you see that?

A Not on line 6 of page 31 of my copy.

CHAIRMAN GRAHAM: I don't see it either.

MR. WHITLOCK: I don't know if I'm looking at a previous copy or what, but that's what I'm showing here.

THE WITNESS: I believe the reference you're referring to is -- on my copy is on page 30 with -- on line 8. The question reads, "In regard to analysis and setting of reliability criteria, Mr. Wilson appears to attempt to dismiss the 20 percent total reserve margin requirement for the IOUs as something developed by the FPSC with minimal consideration. Is that your impression as well?"

Q That's where I'm trying to point you to, Dr. Sim. Thank you.

A Yes, sir.

Q Okay. And then in your response you reference your recollection of the activity, your knowledge of the Commission's concerns and interest regarding reliability of the Florida electric system, et cetera; correct?

A Yes, sir.

Q Okay. Now yesterday I asked you a question or two about that proceeding, and you told me you had no knowledge whatsoever about the proceeding; correct?

A About the details of the proceeding, that's correct.

Q Okay. So I guess I'm wondering now, you're testifying here about your knowledge about the proceeding; whereas, yesterday you said you had no knowledge. So can you clarify for the Commission, do you have knowledge about the proceeding or do you not?

A I do not have knowledge about what went on in the proceeding. The statement here is my recollection of the time that our two witnesses, Mr. Vilar (phonetic) and Mr. Denis, spent in preparing for the hearing and the amount of time they met in regard to writing testimony. They were simply out of pocket during that time period while I was off doing -- working on other things. But I recall quite distinctly how much time that they were putting into that docket.

Q And it's your testimony that FPL took that docket very seriously?

A That is certainly my impression, yes.

MR. WHITLOCK: Okay. Mr. Commissioner, I'm going to have an exhibit based on that answer. I apologize.

CHAIRMAN GRAHAM: Sure. It's okay.

MR. WHITLOCK: Mr. Commissioner, I believe we're at No. 79.

CHAIRMAN GRAHAM: That's correct.

MR. WHITLOCK: Thank you. We'll mark this as Exhibit No. 79 for purposes of identification.

CHAIRMAN GRAHAM: We'll do that.

MR. WHITLOCK: Thank you.

(Exhibit 79 marked for identification.)

BY MR. WHITLOCK:

Q Dr. Sim, I'd represent to you this is the rebuttal testimony of Roberto Denis. Am I pronouncing that name right?

A Yes, sir.

Q Thank you, sir. Submitted in Docket 981890 on behalf of Florida Power & Light Company. Is that what it appears to be to you?

A Yes.

Q Okay. And I'd ask you to look over on page 5. And do you see the highlighted portion at the bottom of the page?

A Yes, I do.

Q Would you mind reading that into the record, please.

A It reads, "In summary, I believe this

investigation is inappropriately directed at enforcing a yet-to-be-identified standard, overly broad in its scope, and I would go so far to say that what we have here is a solution in search of a problem."

Q Okay. So FPL viewed the docket as a solution in search of a problem; correct?

A Mr. Denis' testimony would indicate that at that point in the proceedings that was his opinion, and he was representing the company.

Q Okay. And let's go -- in regards to -- while we're looking at this, in regards to a question I asked you earlier, let's go over to page 2 of this testimony, please, sir.

A Mr. Denis' testimony?

Q (Nods affirmatively.)

A I'm there.

Q Okay. And there's a highlighted section there, and I'll read it for you. And these are -- this is under the heading, the purpose of his testimony, and he states, "Second, staff's analysis and conclusions regarding the FRCC's 15 percent reserve margin are flawed. The analysis fails to demonstrate either that the 15 minimum reserve margin proposed for peninsular Florida by the FRCC is inappropriate or why a 20 percent reserve margin criterion proposed by staff is

appropriate." Correct?

A That's what it reads.

Q So as I asked you earlier, though, you criticized Mr. Wilson for advocating that the Commission utilize the FRCC 15 percent reserve margin in this docket. FPL, in fact, back in the 1998 or '99 docket advocated for the FRCC 15 percent; correct?

A Yes and no. At this point in the docket --

Q At this point in the docket did FPL advocate for the use of the FRCC 15 percent, yes or no?

A Yes, in Mr. Denis' testimony.

Q Thank you, sir.

MR. WHITLOCK: I'm sorry, Mr. Chairman. I'm going to try to find what hopefully is the correctly numbered version of Dr. Sim's testimony.

BY MR. WHITLOCK:

Q Now, Dr. Sim, the bottom of page 31 of your rebuttal testimony, line 17, does that -- the version you have in front of you, does that line 17 start with the question, "Regarding the 20 percent criterion"?

A Yes, sir.

Q Okay. And then going over to page 32 -- well, first, why don't we back up there and just -- the question there that was posed of you on line 17 of page 31 was "Regarding the 20 percent criterion, Mr. Wilson

states, paraphrasing, that FPL has not recently conducted an analysis of whether a 20 percent total reserve margin criterion is still appropriate. Is that true?" Did I read that correctly?

A That's correct.

Q Okay. And your answer is, "No, this part of his testimony is perhaps summarized by the following two passages from his testimony." Correct?

A Yes.

Q And then going over to page 32, line 6, and you're quoting a question and answer from Mr. Wilson's testimony; correct?

A Yes.

Q Okay. And the question is, "Are you aware of any recent studies or substantive analyses conducted by FPL which would support the continued use of a 20 percent reserve margin?" And Mr. Wilson answered, "No. In fact, FPL witness Dr. Steven Sim testified during his telephonic deposition taken in this matter on October 8th, 2015, that no such study or substantive analysis existed." Correct?

A Yes.

Q Okay. But going back to page 31, your answer on line 20, you disagree with Mr. Wilson's testimony there; correct?

A That's correct.

Q Okay. Do you have your deposition in front of you, Dr. Sim?

A If you'll give me moment, I will turn to it. I'm there.

Q Okay. Let's go to page 54 of your deposition.

A I'm sorry. Which page?

Q Page 54, please, sir.

A Yes, sir. I'm there.

Q Okay. And look -- and see the question I asked you. And what it says is, "Can you identify for me any recent specific study or substantive analysis or analyses by FPL that support the continued use of a 20 percent reserve margin?" Do you see that?

A Yes.

Q Okay. And is that not the exact same question on page 32, line 6, of your testimony that you quote that was asked of Mr. Wilson in his testimony?

A Would you refer me back to that page and line in the rebuttal testimony, please?

Q Sure. Page 32, line 6.

A And, again, what was the line in the -- on page 54?

Q Page 54?

A In the deposition.

Q Line 14.

A Yes, it appears to be the same thing.

Q Okay. You disagree with it now, but in your deposition your answer to that question was, "No, there have been no recent studies that would either show that a 20 percent reserve margin is needed or is not needed." Correct?

A That's correct.

Q Okay.

A However, in my deposition there was further discussion of studies looking at reliability criteria, and we discussed it several times that FPL had performed internal studies that had looked at the appropriateness, the continued appropriateness of the 20 percent reserve margin.

Q Thank you, Dr. Sim. And also over on page 55, line 7 of your deposition, in response to an answer you gave, I asked you, I said, "Well, but I'm not talking about the GRM, Dr. Sim. I'm talking about your total RM. And you just told me there's no recent studies that support the continued use of it; correct?"

Line 11, "Answer: There are no what I would call detailed studies such as were likely done in the '90s that have looked at this that I'm aware of that have recently been done by FPL, and I think I would

know." Correct?

A That's correct.

Q Thank you.

A And my impression of the question was had we done a study on the order of the Astrape study. We had not. We had done internal studies that had confirmed to us the continued appropriateness of the 20 percent reserve margin. And as we discussed yesterday, we just saw no need for such a study such as Astrape had performed for Duke.

Q But I think we established yesterday it's good utility practice to do such a study, correct, like the Astrape study or have another consultant do such a study?

A I don't think we established that.

Q Oh, okay. Well, let me -- I'll go ahead and ask you again. Is it good utility practice to have a third-party consultant do a reserve margin study once every 15 years?

A If the utility believes that the current criteria is no longer applicable, then, yes, it might be appropriate to do so. But that wasn't FPL's position. It still isn't.

Q So, Dr. Sim, it's your testimony that good utility practice is that it is up to a utility to decide

whether or not it needs to have its reserve margin evaluated once every 20 years or not by an outside entity?

A I don't believe it is necessary to require an outside party to perform an analysis. A utility may wish to bring in an outside party if it begins to question the appropriateness of its reliability criteria, but it may well be able to satisfy that by doing its own analyses. After all, it's the utility that's responsible for the reliable service to its customers.

Q And certainly having an independent third party come in and look at that could offer a helpful point of view, correct, in addition to the utility's point of view?

A It might if you believe the third party would bring something to the question and use the methodology that you believe.

CHAIRMAN GRAHAM: Let's move on. We've asked and answered this one a billion times.

MR. WHITLOCK: Yes, sir. Thank you, Mr. Chairman.

BY MR. WHITLOCK:

Q Okay. Mr. Sim, moving on, page 34 of your testimony I believe -- well, let me get the right page

here. On page 34 of your testimony you discuss Exhibit SRS-10; correct?

A Yes.

Q And that exhibit, page 1, it's a two-page exhibit, and page 1 of that exhibit is a look at January 11, 2010 -- or it's -- I'm sorry. That exhibit is entitled "A Look at January 11, 2010, If FPL Had Planned to a 15% Total Reserve Margin Criterion." Correct?

A That's correct.

Q And page 1 is what actually occurred with FPL planning to a 20 percent total reserve margin; correct?

A Yes.

Q And page 2 is what it projected to have occurred if FPL had planned to a 15 percent; correct?

A That's correct.

Q Okay. Now ECOSWF's counsel asked you a couple of questions about this earlier, but just talking about that date generally, FPL kept all firm customers served; correct?

A Yes.

Q In common parlance, you didn't have to black out any customers; right?

A That's correct, with a 20 percent reserve margin.

Q You sold approximately 525 megawatts to Duke that day in emergency power; correct?

A The exhibit shows 561.

Q I believe the 561 was your load management that you utilized; am I correct?

A That is correct, to free up that amount of capacity to sell to another utility.

Q SRS does not show the 526 that you -- SRS-10 does not show the 526 that you sold to Duke. You do show it on SRS-11; is that correct?

A Yes. But regardless of whether it's 526 or 561, it was slightly in excess of 500 megawatts were -- we implemented load management for to sell to another utility. I agree on that.

Q And you could have recalled that -- what you sold to Duke that day if needed to serve FPL customers; correct?

A Yes, we could have. But with a 15 reserve margin criteria, if we had been planning to that, that meant that we would avoid --

MR. WHITLOCK: Mr. Chairman, if Dr. Sim would just answer my questions, this would go a lot quicker.

CHAIRMAN GRAHAM: Dr. Sim, we can cover the rest of that on your redirect.

THE WITNESS: Yes, sir.

BY MR. WHITLOCK:

Q And as shown on row -- or column 7, row 8, of page 1 of 2 of SRS-10, FPL still had 1,144 megawatts of total reserves; correct?

A Yes.

Q Okay. And there has not been another day like this since January 11th of 2010; correct?

A That is correct.

Q Okay. Now, Dr. Sim, if we look over on page 2 of 2 of SRS-10, if I could ask you about column 1, row 5, the 1,980 megawatt adjustment. Could you explain to me what that was, please, sir?

A Yes. This was FPL and/or power purchase capacity that was not available on that day.

Q Okay. And could you give me some more detail on that?

A Can you be more specific as to what you're --

Q Was it FPL plants offline for maintenance? What exactly was it?

A I believe --

Q I mean, that is a significant amount of capacity offline, is it not?

A It is a significant amount, yes.

Q And it is going to make -- your testimony is had you planned to a 15 percent reserve margin, you

would have been 68 megawatts short; correct?

A That is correct.

Q And here we have 1,980 megawatts that you've just said were -- of capacity that's not available, and I think the Commission needs to know exactly why it wasn't available. Was it plants that were offline for maintenance during winter -- during cold weather during the winter? What was this?

A My recollection of this, Commissioners, is that it was a combination of both PPAs and FPL-owned units that were unavailable primarily due to breakage at least for the FPL units. The PPAs were simply unavailable. I do not have a breakdown between the FPL-owned and the PPAs.

In January we typically do not take units out for scheduled maintenance, so therefore the primary reason was breakage of units. They'd been running hard for several days and, therefore, the breakage was, while not unusual, it was high. We have had such breakage at other times certainly during a series of peak load days.

Q So you say the primary reason was breakage. Was there any scheduled maintenance?

A To my knowledge, no, because we typically do not schedule maintenance in January or in August.

Q Can you think of any other time in recent

history where FPL has had one -- had almost 2,000 megawatts of generating capacity unavailable because of breakage?

A I can't name a specific date. But when we were working with the system operations department and we were putting together this analysis, the question was asked, "Is this something that's unique?" And the answer is it's certainly not usual but it's not unique. We simply have occurrences on times, particularly during extreme weather, where unit breakage is higher than normal.

Q Do you know what units -- can you tell me what units you had breakage on that day that constitute this 1,980 megawatts?

A No. I do not have that information with me.

Q I mean, Dr. Sim, you've thoroughly analyzed this day in two exhibits, SRS-10 and SRS-11, and it's your testimony today that you're not prepared to tell the Commission what constitutes this 2,000 megawatts of capacity that was unavailable in your -- when it's your testimony that if you were planning to a 15 percent reserve margin, the -- you would have been 68 megawatts short?

MR. COX: Chairman Graham, I object. This question has been asked and answered I think three or

four times over now.

CHAIRMAN GRAHAM: I agree.

BY MR. WHITLOCK:

Q Dr. Sim, Exhibit SRS-10 is just not even -- it's not -- it doesn't reflect any realistic conditions, does it?

A I disagree. It's what actually happened on FPL's system on that day.

Q But FPL doesn't usually have 2,000 megawatts of generating capacity offline, does it?

A Typically no.

Q Thank you.

A But, again, it's not unique.

Q Looking at SRS-11, Dr. Sim, Exhibit SRS-11, I think it's page 20 of 33.

A I'm there.

Q You talk about FPL's goal is to maintain approximately 2,650 megawatts of operational generation reserves to cover the following operational situations. Do you see that?

A Yes.

Q And then your first hashmark there, expected unavailable generation, 687 megawatts; correct?

A Yes. That's an annual average per day.

Q Okay. So that is what -- that is FPL's

expected unavailable generation would be per day, 687 megawatts?

A Yes. That was the estimate at the time we did this analysis.

Q But in January 11, 2010, you had 1,980 megawatts unavailable.

A That is correct.

Q And then the next hashmark says, "The generation loss of the largest" -- the largest, I guess that's a typo there, "unit, 1,515 megawatts." Correct?

A Yes.

Q So that 1,980 megawatts that was unavailable on January 11, 2010, is equivalent -- is larger than being equivalent to the generation lost of FPL's largest unit. I didn't phrase that very well. I apologize.

A I understood the question.

Q Thank you.

A But, yes, it's -- the 1,980 is bigger than the 1,550.

Q Okay. So, in essence, FPL's largest unit plus was offline on January 11th, 2010.

A The equivalent, yes.

Q Thank you. Okay. Sticking with SRS-11, I believe you stated either in your testimony or somewhere this was a PowerPoint that was presented to FPL

executives on late February -- in late February 2014; correct?

A Correct.

Q And then the decision was made at the conclusion of this meeting after the presentation -- after this presentation to adopt the 10 percent generation-only reserve margin as a reliability criterion; correct?

A Yes. And shortly after that it appeared as one of our criteria in our April 1, 2014, site plan.

Q Okay. Could I ask you to look at page 5 of 33 of Exhibit SRS-11, please, sir?

A I'm there.

Q Okay. And this is a comparison, a monthly breakdown of loss of load probability values with a 5 percent GRM versus a 10 percent GRM plan; correct?

A That's correct.

Q Okay. And what this notes is there's an annual LOLP -- and let me back up. I apologize. These are values for -- projected for the year 2021; correct?

A Yes.

Q Okay. And with a 5 percent GRM you came up with .0358 days a year; correct?

A Yes.

Q Okay. And then over on page 6, if you, quote,

unquote, flip that, that comes -- that turns out to one day every 27.9 years before FPL would not be able to meet firm load; correct?

A That's correct.

Q Okay. And then with the 10 percent GRM, it's .0257; correct?

A Yes.

Q And, again, if you want to, you can reference page -- or page 6 of 33, but that equates to one day every 38.9 years before FPL would not be able to meet firm load; correct?

A Correct.

Q Okay. So the -- obviously the obvious conclusion FPL made was we can meet firm load for 11 more years with a 10 percent GRM as compared to a 5 percent; correct?

A Yes.

Q Okay.

A Given two resource plans with equal reserve margins, total reserve margins, but with more dependency on DSM in one and less dependency on DSM in the other.

Q Okay. Well, let's back up a little bit. The industry standard and the FPL standard for LOLP is 0.1 days per year; correct?

A Correct.

Q And anything lower than that suggests a system is reliable; correct?

A From an LOLP perspective, yes.

Q That was my question. Thank you. And only if that figure is higher is system reliability considered to potentially be in question; correct?

A I wouldn't agree with that. As discussed yesterday, as you begin to approach the .1 level, I would say the system from an LOLP perspective is edging towards not being reliable. So anything that moves you closer to .1 is making your system less reliable. And that was the sole purpose of this evaluation, that more dependency on DSM, all else equal, identical reserve margins, moves you less reliable from an LOLP perspective.

Q Okay. FPL would not come to the Commission asking for a determination of need unless its LOLP was higher than .1 days per year; correct?

A No. We could come to the Commission, as we have in this docket, if our other reliability criteria were --

Q Dr. Sim, I think you know what my question is. I'm talking solely about LOLP. FPL would not come to this Commission for a determination of need for new generation based solely on an LOLP that was not higher

than 0.1 days per year; correct?

A With that clarification that our only reliability criteria in play was LOLP, that would be correct.

Q Like you're not in this proceeding; right? Your LOLP criterion is significantly below 0.1. You're not asking for need based on that; correct?

A That is correct.

Q Okay. So these LOLP values that we just looked at, .0358 with a 5 percent GRM and .0257 with a 10 percent GRM, they would not warrant a reliability need for new generation; correct?

A That's correct, but that wasn't the intent of this analysis.

Q Thank you. Yes or no is fine, Dr. Sim. Thank you.

So what FPL is doing, while these figures would not warrant need for new generation, FPL is asking the Commission to approve a new reliability criterion based on these values; correct? Yes or no?

A Repeat the question, please.

Q FPL is asking the Commission to approve a new reliability criterion that FPL created, a generation-only reserve margin, based on these LOLP values; correct?

A Yes, in part.

Q Thank you. However, as we just established, these LOLP values would not in and of themselves serve as the basis for a generation of need; correct?

A Correct. Again, not the purpose.

Q Okay. So we've got some circular logic here. You can't rely on these numbers to get a determination of need, but you're trying to rely on them to get a new criterion upon which you ask for a determination of need; correct?

A I disagree with the premise that it's circular logic.

Q Okay. What about the rest of the question?

A If you would repeat the rest of the question.

Q Okay. I'm happy to walk you back through it.

These LOLP values on page 5 of 33 of Exhibit SRS-11 in and of themselves would not warrant a new reliability need; correct?

A Based solely on LOLP, that's correct.

Q But you're asking the Commission to approve the creation of a new reliability criterion based on these values; correct?

A Not solely. There were two aspects of the GRM which are discussed at length in my testimony. One was the realization for the first time by FPL that two

resource plans with identical reserve margins could have different LOLP values, and from an LOLP perspective they would -- one plan would be less reliable than the other.

Q Dr. Sim, that's the exact question I'm asking you.

A And I'm trying -- I said there was more than one aspect of this.

MR. COX: Objection, argumentative. And counsel keeps basically testifying here. I mean, I don't know, he's not even letting him answer yes or no. It's gone on for a while, and I think he needs to be a little more respectful of the witness and allow him to answer the question.

MR. WHITLOCK: If he -- Mr. Chairman, if he'd -- respectfully, if he'd answer my questions yes or no and not play games, I think this would go quicker.

CHAIRMAN GRAHAM: Actually I do not think the witness is trying to play games. I'm not going to testify for the witness. Ask the question again.

MR. WHITLOCK: Thank you, sir. Thank you, sir.

BY MR. WHITLOCK:

Q Dr. Sim, you had some testimony in response to Mr. Wilson's testimony about the ment makeup of a GRM criterion, specifically load management versus energy

efficiency; correct?

A Yes.

Q Okay. Would you agree with me that a comprehensive reserve margin study would look at those elements and would take those into account?

A Not necessarily.

Q If you requested -- if FPL requested that the study look at those and take them into account, would you agree with me that it would?

A It's possible if the vendor could do that analysis if you're referring to a third-party study.

MR. WHITLOCK: Mr. Chairman, those are all my questions. Thank you, Dr. Sim.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: FIPUG.

MR. MOYLE: I have a few questions, but I think lunch looks promising, so I'll try to be --

CHAIRMAN GRAHAM: You have about 45 minutes before lunch.

MR. MOYLE: Okay. The task sometimes takes the time allotted to it, but I'll -- anyway.

EXAMINATION

BY MR. MOYLE:

Q Good morning, Dr. Sim.

A Good mornings, sir.

Q Is this a -- I'm going to ask you a yes or no, but we've been here for a couple of days and there's been a lot of discussion, but is this in your view a fair characterization of where things stand, that using a 20 percent reserve margin and a 10 percent generation-only criterion, FPL decided that it has a need for the Okeechobee generating center, would like to have the Okeechobee generating center in place by the summer of 2019?

A Let me, if I may, restate it. We determined that we had a resource need of a 1,052 megawatts based on GRM and the total reserve margin criteria. We didn't have a need for Okeechobee based on those reliability criteria. The decision for Okeechobee came later with economic analyses of all available self-build options and the results of the RFP. It ended out that the best selection was Okeechobee based on those two criteria.

Q Okay. So I think the difference from my statement that you clarified is just a matter of timing; correct? You initially said, okay, we have this need, you went through a process. But as we sit here today, you would agree my statement with respect to Okeechobee is correct because you went through the process and said Okeechobee is best.

A Again, I would rephrase slightly. Based on

reliability analysis that identified a need, an economic analysis that identified the best selection, yes, we ended up with Okeechobee in 2019 as the best selection for our customers.

Q And that's what this case has been about.

A In large part, yes.

Q You prepared your testimony; correct?

A Yes.

Q So the words are yours?

A Yes.

Q Okay. You would agree with the proposition that words matter?

A Yes, I do.

Q What is -- what's your understanding of the word "mislead"?

A My understanding of that word is someone is leading one to an incorrect perception, for example.

Q Is it synonymous with misrepresent in your mind?

A I think they're close, probably related. I don't know if they have the exact same meaning.

Q You use the word "mislead" quite a bit in your testimony and exhibits; is that right?

A In the rebuttal testimony that word is used, yes.

Q Okay. And you specifically have an exhibit, No. 6, right, where you have this chart about incorrect or misleading statements?

A Yes.

Q Okay. So let me just refer to you page 2 of 14 of that chart under item 6.

MR. COX: Chairman, could we correct that? Is it page 2 of 14 or page 2 of 9?

CHAIRMAN GRAHAM: 2 of 9.

MR. MOYLE: Okay. I got my copy off the Internet version that was filed. So I think if we have a problem, we'll --

CHAIRMAN GRAHAM: If we get confused over nine, then we'll come back.

BY MR. MOYLE:

Q Would you -- are you there on No. 6?

A I'm on No. 6.

Q All right. Would you read into the -- what's the document entitled?

A "Incorrect and/or Misleading Statements Made in the Testimonies of Rábago, Wilson, and Mims."

Q Okay. And No. 6, would you read that for the record, please?

A Which part? The --

Q The part that you are saying Mr. Rábago made

an incorrect and misleading statement.

A I'd be glad to. Quote, The company appears to have recently decided that they would like to have another generating unit operating by 2019, and they built a case to support that conclusion.

Q And you characterize that as misleading.

A I characterized it as incorrect and misleading.

Q Okay. Do you know that Mr. Rábago has been a member of the Texas Bar for decades?

A I do not know the length of time he has been there, but my understanding is, yes, he's --

Q And that he served as a Deputy Commissioner for the -- I think the Department of Energy. You heard his summary?

A I did.

Q And you're of the belief that he -- a member of the Bar for that many years would come down here and mislead or misrepresent to the Commission?

A I stand by my statement that I believe that this is incorrect and misleading. Whether that was his intention or not, I'm not trying to pass judgment on that. But the statement itself, I believe, is both incorrect and misleading.

Q So let's look at that. Has the company

decided that they would like to have another generating unit operating by 2019?

A They've decided that they need one by 2019. His statement reads, and I quote, the company appears to have recently decided they would like to have another generating unit operating by 2019.

Q Well, is that not true? You have this need you've identified. You don't want to have it? You wouldn't like to have it?

A We feel that in the best interest of our customers to maintain reliability most cost-effectively that that is the best solution, but we did not set out to say, well, by golly, we probably want to build another unit by 2019. And, as he says, they built a case to support that conclusion.

Q But he doesn't say that you set out to do that. He just says --

A That's my interpretation. And his testimony throughout talks about a campaign to build power plants.

Q Well, I've been a member of the Florida Bar for longer than I care to count, and when someone is suggesting misleading or misrepresentation, it's offensive and --

MR. COX: Objection. He's mischaracterizing his statement. He said misleading. He did not say

misrepresentation.

CHAIRMAN GRAHAM: I'll allow him to continue.

BY MR. MOYLE:

Q You don't view this situation as people having different views of facts and advocating different views of facts as part of what this process is about? I mean, doesn't that in your mind make more sense with respect to, you know, his statements as compared to your conclusion that he's trying to mislead the Commission?

A I think your very question there leads to the conclusion that people can look at facts and come to different conclusions. But in my interpretation of his statements and how he tried to support this are -- they have incorrect statements in there. We do not have a campaign to build power plants by a given year. We let the facts take us where they need to go.

And I think not only is it incorrect, it's misleading the way that he stated it here. Because I read it as if we decided to have a power plant by a certain year and we artificially created a case to get there. That's my interpretation of what his testimony says.

Q He doesn't talk about a campaign in his testimony, does he?

A Yes.

Q In that sentence?

A Not in this sentence.

Q Have you heard of the North Florida saying about the caught dog barks?

A That the what dog?

Q The caught dog barks?

A Probably not.

Q You're a Miami guy; right?

A Among other places.

Q Okay. Your comment about people viewing facts differently, you can agree people can view facts differently; correct?

A Absolutely.

Q And that's the job of this Commission, to look at the facts, weigh the facts, and decide is FPL right or the Intervenors right?

A Right.

Q And as a part of that process you would agree that people can look at facts differently and form different opinions.

A That's correct. But going back to one of your earlier statements that words mean things, his statements repeatedly that FPL is on a campaign to build power plants and is using the process to justify that I find to be completely incorrect. I've been in resource

planning since 1991.

Q Look, I just wanted to pick up these statements. I don't want to get into a big debate with you on it. But you've characterized certain statements as misleading, and I just -- I take objection to it and offense.

Let me move on to another question. What's your current position with the FRCC?

A I'm the chair of the Resource Working Group.

Q And I asked you yesterday whether those meetings are public; is that right? Are those meetings public?

A I don't recall the exchange, but to answer your questions, the meetings that we have are generally not public.

Q So as the chair of the group, do you guys look at reserve margin?

A We do. We look at LOLP as well as reserve margin as well as other metrics.

Q Okay. And how do you determine who could be a member of that group?

A Each member utility is entitled to have one or more members that attend the meetings.

Q Do you think that having different viewpoints on a committee sometimes helps the committee make good

decisions?

A Within reason, yes. And we have a wide variety of viewpoints in those meetings from the different member utilities.

Q Are all the people in the meetings utilities?

A Typically, yes.

Q And they're not open.

A The meetings that I have attended have not generally been open. There have been invitations to other parties to attend on certain circumstances -- certain situations.

Q Would you -- could I be a member of that group? I mean, do you invite third parties? Your lawyer said to Mr. Wilson, "Mr. Wilson, you're not a member of that group." He couldn't be a member of that group; correct?

A I'm a bit out of my expertise in what the FRCC bylaws are, but my understanding is it would be unusual at best to have a nonutility member be on one of those working groups.

Q Well, you're the chairman. Would you support such an effort to have a nonutility member participate on a discussion about reserve margin?

A I'd consider it. But I don't know if the bylaws of the FRCC would supercede anything that a --

one of their operating committees or working groups are open to do.

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

CHAIRMAN GRAHAM: Staff?

EXAMINATION

BY MS. CORBARI:

Q Good morning, Dr. Sim.

A Good morning.

Q If you could to page 38 of your amended rebuttal testimony dated November 15th -- November,sorry, 25th, 2015.

CHAIRMAN GRAHAM: Could I get you to pull your mike down a little bit?

MS. CORBARI: Sure.

BY MS. CORBARI:

Q Your testimony is that resource planners view generation and DSM, both energy efficiency and load management, as resource options to serve future demand; correct?

A Yes. They are resource options which could be put in a resource plan to meet certain reliability criteria.

Q Okay. Now switching from resource planners to system operators beginning at line 12, you state that,

"FPL's system operators deal with actual load moment to moment and have to take a real-time view of resources available to meet electric load." Is that accurate?

A That is accurate.

Q You also state there is no button for system operators to activate additional efficiency as there is for load management and generation resources. Could you please explain what you mean by that statement?

A Yes. What I mean is the system operator is operating the system on a second-to-second, minute-to-minute basis. Whatever impact energy efficiency has had on that load, they can do, the system operator can do nothing about instantaneously getting more energy efficiency. It's in the load that they're having to deal with.

In contrast, power plants and load management, they essentially have figuratively a button that they can press to turn up or turn down a generator or to turn on or turn down load management. In their world, energy efficiency has happened before they have to react, where load management and power plants are things that they react with. So therefore, system operators look at energy efficiency differently than they do either load management or generation.

Q Okay. Thank you. Please turn to page 27 of

your testimony beginning at line 15. You state that a 15 percent reserve margin would cause DSM options to become less cost-effective; is that correct?

A Yes. All else equal, they would definitely be less cost-effective than they are with a 20 percent reserve margin.

Q Can you briefly explain the impact of a lower reserve margin on the cost-effectiveness of DSM?

A I'll attempt it. When we look, say, at one kW of DSM, we view that it is -- under a 20 percent reserve margin it's avoiding one times -- 1.20 or 1.20 kW of generation. And, therefore, the cost associated with 1.2 kW of generation is going to be higher than if it were 1.15, which is what it would be avoiding under a 15 percent reserve margin. So it is lowering the cost that is avoided by generation simply because you're assuming it's avoiding less generation under a 15 percent than a 20 percent.

Q So generally lowering a reserve margin lowers the cost-effectiveness of DSM?

A All else equal, yes.

Q Thank you. Beginning at line 21, you state that, "If FPL lowered its reserve margin from 20 percent to 15 percent, the projected avoided cost for a number of generator-related costs that represent DSM benefits

would automatically be lowered." That's correct?

A Yes.

Q And yesterday I believe you testified that FPL's current natural gas fuel price forecast is lower than the fuel price forecast used in FPL's initial filing; is that correct?

A I believe -- I don't recall us discussing that verbally yesterday, but it is, I believe, in my testimony.

Q Okay. And that the lower fuel price forecast has reduced the projected cost-effectiveness of the proposed unit when compared to a combustion turbine alternative.

A Can you repeat the question again, please?

Q Sure. That the lower fuel price forecast has reduced the projected cost-effectiveness of the proposed unit when compared to a combustion turbine alternative; is that correct?

A If I may ask a clarifying question. You're referring basically to our updated analyses?

Q Yes.

A Then that is accurate. It -- the Okeechobee unit is still substantially more cost-effective than a combustion turbine but the gap between them has shrunk. But still there's a 70 odd million CPVRR advantage to

the combined cycle unit as compared to a combustion turbine.

Q Okay. So generally speaking, how would a lower fuel price forecast impact the cost-effectiveness of demand-side management, specifically energy efficiency programs?

A It would impact it in terms of the avoided cost of kilowatt hours of reduction of energy efficiency. For example, if your fuel cost, to make up a number, was $5 per MMBtu, you would get one level of benefits from DSM. But with the fuel cost lowering to $4 per MMBtu, for example, you would have less value for each kilowatt hour you took off the system, and that directly lowers the benefits and lowers the cost-effectiveness of DSM.

Q Okay. Thank you. Okay. I gave you a courtesy copy of an excerpt from Witness Wilson's testimony. It's Page 8, lines 15 through 17. In that testimony SACE witness Wilson quotes the testimony of an FPL witness in Docket No. 981890-EU, which is the generic investigation into the aggregate utility reserve margins planned for the peninsular Florida. In the quoted testimony, the FPL witness testified that a 15 percent reserve margin properly balances system reliability versus cost. Do you agree that whatever

reliability criteria FPL uses should still balance system reliability versus cost?

A Yes.

Q Thank you.

A Cost would be a consideration in it. But I don't view reliability as solely an economic matter, but it's a factor that can be considered in it, yes.

Q By you -- would you agree that it's prudent to balance reliability versus cost, generally speaking?

A I'm not sure we would have the same definition of balance. I would say it is fair to state that it should be a consideration in it.

Q Okay.

A I think balancing is a subjective term.

Q Okay. Thank you. SACE witness Wilson and SACE counsel spoke at length about the Duke Carolina reserve margin study. Do you recall that --

A Yes.

Q -- those conversations? Do you know whether Duke Energy Florida or any of its predecessors have conducted a reserve margin study in the last ten to 15 years?

A I do not for non-FPL utilities in this state.

Q Thank you. Okay. Now I would like to refer you to the excerpt of hearing Exhibit 63, which is FPL's

corrected response to staff's interrogatory number 83, 83B, the table, and it's Bate's No. 00144.

In staff's interrogatory, staff requested FPL perform an analysis delaying the in-service date of the proposed Okeechobee Clean Energy Center Unit 1 as well as all FPL future capacity additions by one year. Were you the author of FPL's corrected response to staff's interrogatory No. 83?

A I at least coauthored it, yes, so I'm familiar with it.

Q Okay. Would you agree that the results of FPL's analysis demonstrated that FPL's reserve margin falls below 20 percent in multiple years?

A That page isn't included in my handout, but, yes, my recollection is in a number of years it falls below 20 percent.

Q Okay. Would you also agree that the economic analysis table attached demonstrates there are potential savings in possibly delaying the proposed unit and future capacity additions by one year?

A With a slight correction, it was not just the Okeechobee unit. It was everything after the Okeechobee unit gets delayed one year.

Q Correct.

A The table shows that, yes, there are savings

that are possible as -- which is no surprise. If one is willing to live with lower reliability, one would expect that there would be lower costs.

Q And these potential savings are approximately $2 million.

A I believe it's closer to 238 or 237 CPVRR million dollars.

MS. CORBARI: Okay. Thank you. Thank you. Staff has no more questions.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Commissioners?

Redirect.

MR. COX: Thank you, Chairman Graham. A few redirect questions for Dr. Sim.

EXAMINATION

BY MR. COX:

Q Dr. Sim, do you recall in your discussion earlier with counsel for SACE where you started to describe some internal studies that FPL had done on the 20 percent reserve margin?

A Yes.

Q Could you explain to the Commission what the nature of those studies were and what was included in those?

A I'll do my best and try to keep it short.

We did several studies looking at whether the system would be projected to be reliable with a 15 percent reserve margin versus a 20 percent reserve margin, because in the circumstances we were facing, the suggestion was to go back to a 15 percent reserve margin. One of the studies that appears as an exhibit to my rebuttal testimony looks at an analysis that was done several years back and presented by Witness Silva of FPL, and it points out that at a 15 percent reserve margin our reserves would be considerably lowered, which is inadequate in light of the fact that most reliability studies assume the load forecast as a given. And one part of that is that it always assumes that the peak comes in August where we do no scheduled maintenance. And part of Mr. Silva's analysis says that we have a number of occurrences -- in fact, it's approximately one out of every three summers the peak occurs in June or July, and in those months we do schedule maintenance. So the -- you could have a number of units out on scheduled maintenance in addition to forced outages that would leave you highly at risk with a 15 percent reserve margin. That was a looking forward analysis.

Other examples of that is the look ahead at -- or, excuse me, looking back at the January 2010. We show that we would have -- we were able to meet firm

customers' load on that day because we had been planning to a 20 percent reserve margin. But if we hadn't been planning to that and had been planning to a 15 percent reserve margin instead with the exact same conditions, we would have either come to a situation where we would have been 68 megawatts short of meeting firm load while still providing assistance to another utility, which would have been a blackout of roughly 40,000 customers, if I recall correctly, or we would have been in a situation where we would have recalled the load management assistance we were giving them and their customers would have faced blackouts.

Q And, Dr. Sim, the situation you just described, was that described in SRS-10 in your rebuttal, amended rebuttal testimony?

A Yes. So those were the two studies that I referred to in my rebuttal testimony, and one of those had been discussed in my deposition as well.

Q Do you recall also when SACE counsel was discussing with you a previous FPL testimony in Docket 981890-EU regarding the case where there was a stipulation on the 20 percent reserve margin?

A Yes.

Q And I think your answer was cut off. So you had said initially FPL's position was 15 percent. What

was its final position in the case?

A The final position was that FPL agreed to the stipulation and had come to the conclusion that a 20 percent reserve margin was preferable to a 15 percent reserve margin, and we have stuck to that view since that time.

Q Do you also recall some discussion on the exhibit I think attached to your testimony, I believe it's the final exhibit attached to your amended rebuttal testimony, and that's SRS-11, regarding the need for a third reliability criterion for FPL?

A Yes.

Q Okay. And I think you started to describe the basis of the GRM, but I don't think you were allowed to compete your answer in terms of the primary reason supporting the GRM. Could you explain that?

A Yes. And, again, I'll attempt to concisely.

There are two reasons we decided a GRM was needed. One was based on circumstances we were discussing yesterday that after the 2009 goals docket we realized that there was certainly a possibility and at that point in time it was the projected reality that we would be facing a situation where we were much more dependent upon DSM than we had been in the past for reliability, which caused us to pose the question if we

can build resource plans that hit the exact same reliability mark, whether it's 20 percent or 20.5 percent or whatever, and in one resource plan we have a much higher level of DSM resources meeting -- allowing us to get to that identical reserve margin versus another resource plan that has less DSM and more generation to get to that same identical reserve margin, are those two resource plans identical in terms of reliability?

Well, we've already agreed by design that they meet that one identical reserve margin. So we flipped the question and said from an LOLP perspective are they identical? And the answer through all of our analysis was clearly, no, they're not. With a higher dependency on DSM and less on generation, that plan will have a higher LOLP projection than will the opposite one with more generation and less DSM.

So one of the basis for our GRM was the realization that resource plans with identical reserve margins are not equal in reliability. More generation and less DSM are better from an LOLP perspective.

The other basis for the GRM was looking at what had happened back on that very high load day in 2010, and we began to look at why we ran into such problems and how would that day have been affected by

resource plans with -- from the operator's perspective of identical reserve margins and a lower GRM, more dependency on DSM versus a higher? And we found that the operators would have several hundred megawatts minimum more operating reserves with a higher GRM, less dependency on DSM than they would if it were a lower GRM, and, again, with identical reserve margins going forward.

So both from an LOLP perspective, which has been championed heavily by the Intervenors in this case, the resource plan with the GRM set at 10 percent, more reliable from an LOLP perspective, it provides the operators more resources to work with if they face unexpected conditions such as high load or a high level of unit breakage or unavailability on a particular day. Those are the two bases.

CHAIRMAN GRAHAM: I'm glad you decided to make that a brief answer.

(Laughter.)

BY MR. COX:

Q Thank you, Dr. Sim. In terms of analysis that was done comparing the value, the capacity value of generation versus the various DSM programs, including load management, load control, energy efficiency, has FPL in this proceeding provided any analysis supporting

the value of generation versus those various DSM programs?

A Yes. In the exhibits that were presented to the Intervenors from my deposition there were four or five pages that we provided which explained why DSM -- or a heavier dependency on DSM leads to a higher LOLP value.

MR. COX: Chairman Graham, we'd like to have marked as an exhibit this information that he's referring to. It's not been included in any of the exhibits to date so far, and we'll pass that out.

MR. MOYLE: This is maybe not unprecedented but maybe it is unprecedented. We're on redirect of a rebuttal witness and we have new exhibits coming in?

MR. COX: It's not new information. It's been provided through the deposition process.

MR. MOYLE: But you're supposed to put all your stuff together in your direct case.

MR. COX: Could I finish my comment?

CHAIRMAN GRAHAM: Sure.

MR. COX: It's responding specifically to questions that were raised today both by counsel for SACE and counsel for staff regarding comparisons of DSM to generation resources.

MR. MOYLE: I'm just going to object. I don't

necessarily with respect to the information, but as a matter of process and sticking with the process that this Commission employs, I don't think it's proper to put in exhibits when you're the petitioner and you've got all the obligations in the Prehearing Order about filing your direct testimony and your exhibits and your rebuttal and, you know, and then kind of at the last minute here comes, you know, a new exhibit. So I think it violates the Prehearing Order, due process, and ought not to come in. We would just object on those grounds.

MR. COX: Chairman Graham, if I could respond briefly.

CHAIRMAN GRAHAM: Hold on. Hold on.

MR. WHITLOCK: SACE echos FIPUG's objection, Mr. Chairman.

MR. MARSHALL: As does ECOSWF.

MS. CHRISTENSEN: As does the Office of Public Counsel, especially since, you know, this information has not been subject to cross-examination by the Intervenors, and that's why it would be unfair to enter it at this point in the proceeding.

MR. COX: First of all, the information has been made available. We had numerous discussions today of the deposition of Dr. Sim. This was an exhibit to that deposition. The topics have been raised by both

the questions from SACE and staff, and we think we deserve an opportunity to discuss it with Dr. Sim.

CHAIRMAN GRAHAM: Let's do it this way.

MR. WHITLOCK: Mr. Chairman, could I just say --

CHAIRMAN GRAHAM: No. Let's do it this way. If this stuff was brought up during testimony and cross-examination, let's deal with it that way. I don't think we're going to bring this exhibit in, but you can go ahead and ask the questions of Dr. Sim.

MR. COX: Okay. Yeah. I can just ask the questions. That will be fine.

CHAIRMAN GRAHAM: Thank you.

MR. COX: That will be fine.

BY MR. COX:

Q So, Dr. Sim, has FPL done analyses of comparisons of DSM programs to generation resources in terms of determining the capacity value of DSM versus those generation resources?

A Yes. To set the stage for it, once we determined that resource plans with higher levels of DSM had higher LOLP values and, therefore, led to a less reliable system, the question was why? And in looking at these pages on this exhibit --

CHAIRMAN GRAHAM: No, we're not looking at the

exhibit.

THE WITNESS: We're not looking -- all right. So I will try to verbally explain.

CHAIRMAN GRAHAM: There you go.

THE WITNESS: And, again, it's not real short -- there's not a short way to explain this without digress.

CHAIRMAN GRAHAM: Dr. Sim, that's okay. Go ahead.

THE WITNESS: Thank you. If you look at a generating unit and what its monthly contribution is, you would -- and you had a Y axis and an X axis and across the bottom were all 12 months and you looked at what megawatt level you were achieving, say, in August, let's put it on a 1 megawatt basis, you would see an August -- a summer capacity of 1 megawatt. You would see that essentially stay flat for all months until you got to cold weather months. Then because of the cooler air temperatures, the capacity of the unit goes up. So you're at 1 megawatt for all months except for cold weather, then you're slightly above it.

What does DSM do? Well, using the analyses that we have done regarding the monthly contribution of DSM, and again going back to the point where you can reach an identical summer reserve margin with high

levels of DSM or with generation. Let's assume that you've got a DSM program that also gives you 1 megawatt in August. So from a summer reserve margin they're identical. What typically happens is, whether it's load management or energy efficiency, it stays pretty close to 1 megawatt through the summer months and then they typically drop off. You get for, say, an air conditioning program, as cooler weather comes in in the spring and the fall, you get less contribution from an air conditioner. So it's less than 1 megawatt of demand reduction. As you get to cold weather months, air conditioners typically do not operate, so you're essentially down to zero contribution in winter months.

And it's the monthly contribution of the demand-side management programs as well as the generator that drives your LOLP results. And each one of the DSM programs does not match the generator line, which is straight across at 1 megawatt and then increases in the winter. They're all reasonably consistent through the summer, and then the DSM programs fall off in the other months, and that's what drives the difference in LOLP.

MR. COX: Thank you, Dr. Sim. Just one last question, Chairman Graham.

CHAIRMAN GRAHAM: Sure.

BY MR. COX:

Q Dr. Sim, I think staff counsel had asked you a question about interrogatory -- was it 83, I believe -- where FPL assumed a deferral of the Okeechobee unit and subsequent units one year. That was the underlying assumption and the premise of the question in that analysis that was requested in the interrogatory; is that right?

A Yes, sir.

Q Is FPL recommending the deferral of the Okeechobee unit only one year? I'm sorry, by one year. By one year.

A No. FPL is not recommending that because we would miss our reliability criteria and would not be -- not have as reliable a system for our customers.

Q And the analysis also asked to defer other units by one year; is that correct?

A That's correct.

Q Is FPL recommending deferral of the other units by one year?

A No, for the same reason. We would have a system that was significantly less reliable than the one where we meet the 20 percent reserve margin and the GRM each year.

MR. COX: Thank you. No further questions.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. COX: Chairman Graham, FPL would ask that the amended rebuttal testimony exhibits, which are identified as Exhibits 65 through 70 for Dr. Sim, be moved into the record.

CHAIRMAN GRAHAM: If no objection, we will move Exhibits 65 through 70 into the record. And we did strike 71; is that correct?

(Exhibits 65 through 70 previously admitted in Volume 1.)

MR. COX: Yes, we withdrew -- we withdraw that formally for the record.

MR. MOYLE: Which -- do we give it a number or no?

MR. COX: I don't know if the Chairman identified it with a number. I think you did it --

CHAIRMAN GRAHAM: No, no. This is before we even got started we had struck 71.

MR. COX: Oh, I'm sorry. You're referring to the amended rebuttal. Correct. I'm sorry. I was mixing up numbers.

MR. MOYLE: So I just want to be clear on that document that he passed out, it has in red letters --

CHAIRMAN GRAHAM: They never passed it out. It doesn't exist.

MR. COX: We're withdrawing that exhibit.

MR. MOYLE: Okay. Mine says "Draft Attorney/Client." I assume that they're waiving that.

MR. COX: We are because we provided it also in the deposition as an exhibit.

MR. MOYLE: Thank you.

MR. WHITLOCK: Mr. Chairman, SACE would move Exhibit 79 and ask that be entered into the record, please, sir.

CHAIRMAN GRAHAM: If no objections, we'll enter Exhibit 79 into the record as well.

(Exhibit 79 admitted into the record.)

Okay. No other exhibits?

MR. COX: No other exhibits. Thank you.

CHAIRMAN GRAHAM: Dr. Sim, thank you very much. Please travel safe.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: Staff, additional procedures so we can conclude this matter.

MS. CORBARI: Staff would like to note that hearing transcripts are -- will be made daily. Briefs shall be no longer than 40 pages total. Briefs are due on December 9th.

MS. CHRISTENSEN: Commissioner, can I ask two brief questions hopefully?

CHAIRMAN GRAHAM: Yes.

MS. CHRISTENSEN: I think we addressed the positions being 100 words. I just want to confirm that. And then the other question that I wanted to ask, and it may come with a request, is the daily transcripts, I know we should be getting the one from yesterday's hearing today. I want to know -- I was going to ask when we would be getting the transcript from today's hearing tomorrow because that may affect how much time we have with the transcript to write our briefs.

CHAIRMAN GRAHAM: Who is going to answer that question?

MS. CORBARI: Ms. Linda.

THE COURT REPORTER: I will have the transcript ready before I come into Agenda tomorrow.

MS. CHRISTENSEN: Yes, if it's available in the morning, then I think we'll be fine. I just wanted to make sure we weren't going to get it at 4:00 or 5:00 in the afternoon, and then I would ask for an additional day. But if we get it in the morning, I think we'll be fine. Thank you.

CHAIRMAN GRAHAM: Okay. Anything else?

MS. CORBARI: And to clarify Ms. Christensen's question, yes, the Prehearing Officer had allowed that the summaries be 100 words.

CHAIRMAN GRAHAM: Any other questions,

concerns, comments? All right. That all being said, this concludes this hearing. I think you all very much for your time and patience, and we're adjourned. Please all travel safe.

(Hearing adjourned at 12:30 p.m.)

STATE OF FLORIDA)
: CERTIFICATE OF REPORTER
COUNTY OF LEON)

I, LINDA BOLES, CRR, RPR, Official Commission 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 3rd day of December, 2015.

Linda Boles

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