BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 20170225-EI

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

_____/

VOLUME 3
PAGES 424 through 624

PROCEEDINGS: HEARING

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

DATE: Wednesday, January 17, 2018

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

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

REPORTED BY: ANDREA KOMARIDIS
Court Reporter

APPEARANCES: (As heretofore noted.)

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I N D E X

WITNESSES

EXHIBITS

NUMBER:		ID	ADMITTED
61	(as identified in a previous volume)		534
68	Attachment 1 of FPL's response to Sierra Club's Interrogatory No. 60		537
69	Deposition of Dr. Sim's dated December 4th, 2017	446	
70	Deposition of Mr. Sanchez, dated January 8th, 2018, Page 60	469	
71	FPL's response to Sierra Club's Fourth Interrogatory, Nos. 36 and 37	602	621

P R O C E E D I N G

(Transcript follows in sequence from Volume 2.)

CHAIRMAN GRAHAM: Mr. Sanchez, do you have that document?

THE WITNESS: Yes, I do.

CHAIRMAN GRAHAM: Okay.

CONTINUED EXAMINATION

BY MR. LENOFF:

Q So, Mr. Sanchez, do you recognize this document as one of the work papers you identified in response to Sierra Club's Interrogatory Response No. 60?

A Yes, I do.

Q And that interrogatory asked you to identify any work papers that support or relate to any rebuttal testimony filed in this proceeding, correct?

A Correct.

Q So, Mr. Sanchez, on the second sheet, in Cell P41, the text states, quote -- or -- okay. The text states, "From 2017 LFP80 NCP division peak, which corresponds to P50NCP above and in DBEC 000033, from Kevin Donaldson e-mail"; is that correct?

A I'm sorry. Could you --

Q Cell P41 on the second sheet.

A T41 [sic]. Correct.

Q So -- okay. Just to make sure we're on the same page, the last three words in that -- or the last four words in that text say, from Kevin Donaldson e-mail. Are we looking at the same cell?

A Yes, it is.

Q Okay. And the text in that cell refers to the data immediately to the left of Cell P41, correct?

A I don't know if it refers exactly to that. I -- I read the numbers.

Q Okay. That -- that text refers to data that is presented in your work paper; is that correct?

A That is correct.

Q And is Kevin Donaldson one of the attorneys in this case?

A Yes, he is.

Q And did Mr. Donaldson send you the e-mail referenced in the worksheet after you submitted your testimony?

A To be honest with you, I really don't remember. And I really didn't focus on that part of the cells.

Q Did you prepare this worksheet?

A No, I had -- other people prepared it for me.

Q Were they under your supervision?

A Not directly.

Q So, is this a work paper --

A Yes, it is.

Q -- that you produced -- that you -- this is a work paper that you used?

A Yes, it is.

Q When was the first time you saw this work paper?

A Sometime around December -- late November, early December.

Q Give me one moment.

And you -- in the FPL's declarations, in response to Sierra Club's Interrogatory No. 60, you certified this -- you -- you sponsored this response; is that correct?

A That's correct. I sponsored the numbers as being correct.

Q And so, you -- FPL has a lot of data that you could use for your analysis; is that correct?

A I would imagine, yes.

Q But you used the data that came from the attorneys; is that correct?

A I did -- well, if you're saying because it says that, I guess you could infer it came from the attorneys. I don't think the attorneys prepare what the load forecast is.

I think Witness Feldman, for example, prepares the load forecast.

Q Right. But we established that this text corresponds to the data that is in the work paper that you used, right?

A Yes.

Q Okay. Do FPL's attorneys typically provide the data that you use for your analysis?

A No.

Q When -- oh. Was that the first time that you received data from the attorneys for this case?

A I don't recall if it was the first time or --

Q So, it has happened before.

A It could have or it could have happened after.

Q And is there any message that goes along with the data that is sent to you by the FPL attorneys?

A I don't understand what you mean by "method."

Q Message. Message.

A Message? I don't know, besides an e-mail with the attachment.

Q Did you receive the e-mail?

A I received it some way. It might have been an e-mail or it might have been provided to me. I don't remember.

Q All right. So, when the data was received

from FPL's attorneys, was that the first time that you had seen the data?

A I don't remember if it was the first time I had seen the data.

Q Okay. So, you're -- thank you for that. Your testimony employs a P80 load forecast; is that correct?

A That is correct.

Q And the P80 load forecast that you used will result in a summer load forecast that is approximately 200 megawatts higher than the P50 load forecast; is that correct?

A That's correct. As I mention in my testimony, the reason, from an operations perspective, that you use a P80 is because you take into consideration the non-coincidence of the load.

For example, it may be hotter in southeast Florida than it may be in central or northern or western Florida at a particular time, due to the weather pattern. So, we still have to serve load in southeast Florida under that, you know, condition. So, therefore, we use a P80.

That still means that, 20 percent of the time, we may still be short, but it does provide, in essence, not a margin, but it -- what it says is, 80 percent of the time, I am going to be at least close to that load.

Q When you say short, you mean, have to curtail load; is that correct?

A Well, what it means is that, when I plan, operationally, I plan to serve at least 80 percent of the -- of the time. It provides me an additional margin to ensure that I could provide service to customers when I'm looking ahead.

Now, you've got to remember --

Q That's --

A -- that --

Q That's okay.

A Excuse me, if I may. You've got to remember that past, really, five to seven days, you really do not have a weather forecast, which is one of the main drivers of the load.

So, what we do is we take statistical numbers provided by Mr. Feldman and, in essence, from a P50 --

Q I -- I think you've gone way beyond my question. So, I'm just going to stop you --

A Oh, but if I could explain --

Q That's okay.

CHAIRMAN GRAHAM: Mr. -- Mr. Sanchez -- Mr. Sanchez --

THE WITNESS: Yes.

CHAIRMAN GRAHAM: Over here.

THE WITNESS: I'm sorry.

CHAIRMAN GRAHAM: When you're asked a question, our rules here, for the most part, is to answer yes or no, if you can. If you don't understand it, you can ask them to restate it or you can restate it as you understood it, and then give a brief one- or two-sentence explanation to that yes or no.

Now, I'll allow for you to editorialize as long as you want, but some attorneys do not want to hear all that extra. So, it sounds like Mr. Lenoff just wants you to answer yes or no or and then a brief summary on why it's a yes or no.

THE WITNESS: Thank you, Chairman.

MR. LENOFF: Thank you, Mr. Chairman.

BY MR. LENOFF:

Q The P50 forecast is used in, quote, "resource assessments," end quote, like that performed by Dr. Sim, correct?

A That is correct, in the long-term planning.

Q Okay. And you considered two different P80 forecasts for Broward County for your analysis in this docket, correct?

A No, it was one P80.

Q Okay. Based on that, Mr. Sanchez, I would

like you to refer back to the same document that we marked as 68, Exhibit 68. So, this second sheet -- sticking with this second sheet -- includes data on, among other things, P80 load forecasts; is that correct?

A That is correct.

Q And on the second sheet, in Row 30, do you see the heading "RAP load forecast summer non-coincident peaks-P80 (LAP)"?

A Yes, I do.

Q And underneath that heading, in Rows 41 through 43, you see load forecasts for Broward and Miami-Dade; is that correct?

A That is correct.

Q Okay. Thank you.

So, now, I would like you turn to the first page in the exhibit -- also looks like a spreadsheet. It's more-zoomed-in because it doesn't include the text that we discussed before.

In Row 28, do you see the heading, "RAP load forecast summer non-coincident peaks-P80 (LAP)."

A That is correct.

Q And that's the same heading as on the other sheet, correct?

A That is correct.

Q And sticking with the first sheet, we, again,

see load forecasts for Broward and Miami-Dade, this time in Rows 39 through 41, under the same heading, correct?

A That is correct.

Q But the load forecasts for Broward and Miami-Dade on the first sheet are different from the load forecasts on the second sheet, correct?

A That is correct.

Q Okay. So, earlier you said that you did not consider two different P80 load forecasts, and I just -- maybe I'll give you a chance to correct your answer to that because, based on -- you have two work papers that you provided to us, and they have different numbers for the P80 load forecasts. So, would you like to correct your answer from before?

A I believe the two different load forecasts -- one is P80 and subject -- maybe Dr. Sim can clarify after. The one I used is an operational one relative to weather patterns, weather being the difference.

There's another P80 that's relative, I believe, to 80th-percent probability that the forecast -- the long-term forecast could be off.

Q Okay. Well, we can maybe get into that in a moment, but why would Dr. Sim be able to explain your work papers?

A Excuse me. Could you an- -- ask that again?

Q Why would Dr. Sim be able to explain your work paper -- you told me I could maybe ask Dr. Sim. I'm asking about your work papers.

A I don't know if this was sponsored just by myself or by -- (examining document). If you could, give me a second, please.

Q Sure.

MR. DONALDSON: I -- I can actually help with this. This was sponsored by Dr. Sim.

CHAIRMAN GRAHAM: So, you're saying Dr. Sim would be able to answer this question?

MR. LENOFF: Can I -- can I --

MR. DONALDSON: That he was the -- he was the declarant for Sierra Club's Interrogatory No. 60. So, he would be able to explain whatever forecasts these are.

CHAIRMAN GRAHAM: So, Dr. Sim is the one to -- that sponsored the answer to this interrogatory.

MR. DONALDSON: Yes, sir.

THE WITNESS: Thank you.

BY MR. LENOFF:

Q Mr. Sanchez, do you normally have other witnesses sponsor your own work papers?

A I normally don't testify.

(Laughter.)

Q Neither do I.

MR. DONALDSON: Let me -- let me -- let me --

Q Is this the first time that you're seeing this first sheet of the work paper?

A Yes. I believe the second sheet --

MR. DONALDSON: I -- I apologize.

A I think --

MR. DONALDSON: I misspoke. It was sponsored by Dr. Sim and Mr. Sanchez, just for clarity of the record.

MR. LENOFF: Okay. Thank you.

CHAIRMAN GRAHAM: Okay. Go ahead.

MR. LENOFF: Thanks.

CHAIRMAN GRAHAM: I was going to say move on, but he just said it was both of them, so continue.

MR. LENOFF: Thank you, Mr. Chairman. I have only a few more questions about this.

CHAIRMAN GRAHAM: Sure.

BY MR. LENOFF:

Q I'm just trying to understand why -- first off, can -- can you explain to me why the -- you gave me this explanation about one of them has weather-normalized and one of them does not; is that correct?

A Correct.

Q Okay. The data in the second sheet is the

data that you received from Mr. Kevin Donaldson; that's -- right? We established that.

A I guess it says that -- that it was by Kevin Donaldson to -- I don't remember if it was provided to me by Kevin Donaldson.

Q And the data in the second sheet is the one that you used for your analysis, correct?

A (Examining document.)

Q I --

A If I may check --

Q Yeah, I -- I mean --

A I'm trying to give you --

Q I --

A -- calculate the numbers here to what I have here.

Q Okay. Take your time.

MR. DONALDSON: Mr. Chairman, for the sake of --

A Correct.

MR. DONALDSON: -- moving this along -- I mean, I can certainly explain --

MR. LENOFF: Mr. -- that's --

MR. DONALDSON: -- where the document --

MR. LENOFF: The -- Mr. --

MR. DONALDSON: I'm -- I'm at least talking to

the Chairman right now.

MR. LENOFF: Okay.

MR. DONALDSON: So, if you give me an opportunity to --

MR. LENOFF: Sure.

MR. DONALDSON: And then you can respond -- where the source of the document comes from, that way it can provide some clarity.

CHAIRMAN GRAHAM: I think the question he's asking right now -- and it seems to be a pretty straightforward question, to me -- was, of these sheets, Sheets No. 2 and Sheets No. 3, which one did you use for your calculation. And I think he's --

MR. DONALDSON: Okay. I thought there was a question of whether the attorney is -- is creating documents or things of that nature. And I just wanted to provide clarity on where the document --

CHAIRMAN GRAHAM: Well, no, that's fine.

MR. DONALDSON: Okay.

CHAIRMAN GRAHAM: I mean, that was -- I think that was asked and answered. Right now, he's just trying to ask him the question --

MR. DONALDSON: Okay. Certainly.

CHAIRMAN GRAHAM: -- what's on these two

sheets he used.

MR. DONALDSON: Okay.

MR. LENOFF: Thank you.

THE WITNESS: Correct. I apologize. I was going to my testimony. 10/22 -- correct.

MR. LENOFF: Okay. And that's all the questions for this.

CHAIRMAN GRAHAM: Okay.

MR. LENOFF: Thank you.

CHAIRMAN GRAHAM: OPC.

MR. LENOFF: Well, not -- not for this witness.

CHAIRMAN GRAHAM: Oh. Sorry.

MR. LENOFF: For this exhibit. Great. Thank you. Thank you. Yeah. Thank you, Mr. Chairman.

BY MR. LENOFF:

Q Okay. You are, Mr. Sanchez, unable to identify any situations in which increased generation in a particular area would have avoided the loss of power to customers arising from a hurricane, correct?

A Hurricanes have caused a lot of customer outages, so --

Q I'm not --

A I'm trying to understand what you're asking.

Q Okay. So, I'll just restate the question.

You are unable to identify any situations in which increased generation in a particular area would have avoided the loss of power to customers arising from a hurricane; so, focusing on the increased generation in a particular area.

A Relative to the 2004 and 2005 seasons and 2016 and '17 seasons, which were -- when I was involved in this, I don't recall an instance where having additional generation in this particular area would have resulted in, you know, additional customers being able to be connected.

I guess, in 2004, 2005, the customers were out for -- you know, not because of the generation issues.

MR. LENOFF: Okay. So, I'm -- Mr. Chairman, I'm not sure I got a yes or a no answer to that question.

CHAIRMAN GRAHAM: I don't think he understood the question.

MR. LENOFF: Okay.

CHAIRMAN GRAHAM: He was just trying to --

MR. LENOFF: Right.

CHAIRMAN GRAHAM: -- understand the question you asked.

BY MR. LENOFF:

Q So, you are -- I'm going to ask it and just --

you are unable to identify a situation in which increased generation in a particular area would have avoided the loss of power to customers arising from a hurricane?

A That is correct. Historically, no, I cannot identify one. I can identify a potential one, historically, which was Hurricane Mitchell last year -- or actually in 2016. Potentially, it could have come up in through -- the -- the forecast was it was going to come into Palm Beach County and continue north along the coast.

We had a -- a legitimate concern that, at that point, Dade and Broward County would have been unscathed, practically. And the resources north of Broward County and transmission lines north of Broward County would have been -- could have been damaged and we would have had challenges bringing in additional power to Dade and Broward County.

Q Okay. So, that is not an instance where increased generation in a particular area would have avoided the loss of power to customers arising from a Hurricane, correct?

A That's correct. It was a risk.

Q Okay. So, in your testimony, at Page 5, you conclude that, quote, "Constructing and Commissioning

the DBEC Unit 7 within this four-year schedule minimizes the operational risk to the FPL system in providing reliable service to customers in Miami-Dade and Broward Counties, (the southeastern-Florida region), one of the largest metropolitan areas in the U.S.," end quote, correct?

A That's correct.

Q And that is a conclusion about projected regional reliability, correct?

A Correct.

Q In your testimony, you refer to, quote, "area reliability margin," end quote, yes?

A That is correct.

Q And for purposes of your testimony, the relevant, quote, "area," end quote is southeast Florida, yes?

A Yes, that is correct.

Q And at your deposition, you and Ms. Kaplan discussed how to calculate the projected area reliability margin for southeast Florida, yes?

A Yes, that is correct.

Q And you said that the calculation starts with the sum of the projected generation within the area and the projected transmission import capability into the area, correct?

A That is the import -- that is as load-serving capability; that is not the margin.

Q That's the -- but the calculation begins with that.

A Correct.

Q And then, from that -- from that sum, FPL's projected load-serving obligations in the relevant area must be subtracted.

A That is correct.

Q And that results in the area reliability margin?

A Yes, that's correct.

Q So, as applied to southeast Florida, the calculation requires the sum of projected generation in southeast Florida, the projected transmission capacity into southeast Florida, and FPL's projected load obligations in southeast Florida, correct?

A That's correct.

Q And using that calculation, you reached your conclusion about projected regional reliability, correct?

A That is correct.

MR. LENOFF: Okay. So, I would like you to please refer to the following excerpt from Dr. Sim's December 4th, deposition.

And Mr. Chairman, I would like to mark this as Exhibit No. 69.

CHAIRMAN GRAHAM: Okay. I'll do that, but I thought you said earlier no more math.

MR. LENOFF: I hope not.

CHAIRMAN GRAHAM: Okay.

MR. DONALDSON: Well --

MR. LENOFF: Thank you, Mr. Chairman.

MR. DONALDSON: Can -- can I at least object to the use of another individual's deposition for this witness? I don't know how you use someone else's deposition, unless he's trying to use it for purposes of impeachment or things of that nature. It's not his testimony.

CHAIRMAN GRAHAM: I -- I note your objection. Let's see where he -- the question he's asked, and we can continue from there.

MR. DONALDSON: Just at least wanted to get my preliminary objection out.

CHAIRMAN GRAHAM: No, I understand. I understand what you're doing.

MR. DONALDSON: Yes.

CHAIRMAN GRAHAM: Okay. So, this is going to be No. 69, and deposition of Dr. Sim December 4th, 2017.

MR. LENOFF: Yes, sir.

(Whereupon, Exhibit No. 69 was marked for identification.)

CHAIRMAN GRAHAM: Mr. Sanchez, do you have a copy of this?

THE WITNESS: Yes, I do, Chairman.

CHAIRMAN GRAHAM: Mr. Lenoff.

MR. LENOFF: Thank you, Mr. Chairman.

BY MR. LENOFF:

Q So, Mr. Sanchez, please confirm that the transcript states the following, from Page 21, Lines 20 to 25, to Page 22, Lines 1 through 4.

Question, "So, for example, the fact that, in this document, we just identified that the non-coincident peak in South Florida in 2025 is projected to be, subject to check, 10,875 megawatts.

"You're saying that it would be inappropriate to compare that to the total available transmission capacity and generation capacity in Southeast Florida in 2025?"

Answer, "It would be inappropriate if one were trying to reach a conclusion regarding projected regional reliability."

MR. DONALDSON: So, I'm going to object to Sierra Club's attorney reading the deposition

transcript of another witness into the record. It's actually hearsay. It's not his sworn statement. And he hasn't laid the foundation of whether or not Mr. Sanchez has even read Dr. Sim's December 4th deposition transcript. So, those are the objections.

CHAIRMAN GRAHAM: Let me find out what his question is -- and we may strike this, but I want to find out what his question is --

MR. DONALDSON: Yeah.

CHAIRMAN GRAHAM: -- to Mr. Sanchez.

MR. DONALDSON: Yeah, he asked if he can confirm that that's what it says.

CHAIRMAN GRAHAM: Yes, but --

MR. DONALDSON: Okay.

CHAIRMAN GRAHAM: Is there another question other than if can he confirm what you just read?

MR. LENOFF: I have maybe one more question afterwards.

CHAIRMAN GRAHAM: Let's find out what that question is.

MR. LENOFF: Mr. Chairman, I will, you know -- assuming that I can get the answer to the confirmation that this is what the transcript says --

CHAIRMAN GRAHAM: Well, we can allow Dr. Sim to do that.

MR. DONALDSON: Right. And the -- and the OEP said that if they were going to be utilizing page and lines of deposition transcripts, they would certainly do that in advance of the deposition -- in advance of the hearing. And that hasn't been done in this particular case, unless it was going to be used for purposes of impeachment.

MR. LENOFF: Mr. --

MR. DONALDSON: That's the reason why I moved to strike this series of questions regarding Dr. Sim's deposition transcript as an exhibit, which is 6C.

MR. LENOFF: Mr. Chairman --

MR. DONALDSON: I --

MR. LENOFF: I am specifically trying to use this for impeachment. This -- this goes to the credibility of Mr. Sanchez because Dr. Sim is saying that this is not a proper way to reach a conclusion, and Mr. Sanchez earlier confirmed to me that this is how he reached his conclusion.

CHAIRMAN GRAHAM: Well, let's back up. I'm going to strike this -- what you just said, reading that in. Now, if you just want to ask Mr. Sanchez

this question to find out what his answer is, that's a different story. And he can tell you he can answer that or not answer.

What you're doing is going back, specifically, to Dr. Sanchez's [sic] question. And you -- if you want to bring Dr. Sanchez's deposition into the record, then that's what you've got to do with Sanchez. If you want to ask him a specific question -- and you can ask him the same question.

MR. DONALDSON: And -- and just -- this is just Dr. -- this is Mr. Sanchez. He's using Dr. Sim's --

MR. LENOFF: Dr. Sim.

MR. DONALDSON: -- deposition. Yes.

It's improper impeachment.

MR. LENOFF: Can I just -- just for clarification -- I'm sorry, Mr. Chairman.

(Discussion off the record.)

BY MR. LENOFF:

Q Okay. So, Mr. Sanchez, you see on Lines 20 -- or Page 21, Lines 20 to 25, to Page 22, Lines 1 through 4, there is a question and an answer.

A That is correct.

Q Do -- do you agree with the answer given by Dr. Sim?

MR. DONALDSON: Again, I'm going to object to him utilizing the deposition transcript as a means of improper impeachment. If he -- like the Chair says, if he wants to ask the question, he can certainly ask the question, but he's asking him to agree with another witness' deposition transcript. That's improper impeachment.

CHAIRMAN GRAHAM: I agree.

What you can do is ask this question that was asked in this deposition and allow him to answer it, if he can answer it.

MR. LENOFF: Okay.

BY MR. LENOFF:

Q Is it -- Mr. Sanchez, is it appropriate to reach a conclusion regarding projected regional reliability using a non-coincident peak available -- total available transmission capacity and generation capacity, in southeast Florida?

A Yes, it is.

MR. LENOFF: And just to clarify, I can't ask him if that conflicts with -- can I ask him if that conflicts with Dr. Sim's answer?

MR. DONALDSON: No, that's improper impeachment.

CHAIRMAN GRAHAM: Mary Anne?

MS. HELTON: Can I have one second, please?

CHAIRMAN GRAHAM: Sure.

MS. HELTON: I -- I told Ms. Cibula she should go home and now I'm wishing I had not done that. Just a second.

(Laughter.)

CHAIRMAN GRAHAM: Okay.

MS. HELTON: Maybe there's a different way to look at this. Are you trying to impeach Mr. Sanchez or are you trying to impeach Mr. -- Dr. Sim? If you think Dr. Sim gave the wrong answer, perhaps you should ask Dr. Sim that question when you're cross-examining him -- or whoever for Sierra Club.

MR. LENOFF: Thank you, Mary Anne. I am trying to impeach Mr. Sanchez because it's Mr. Sanchez whose area reliability margin is calculated using the same inputs that Dr. Sim says is inappropriate to reach a conclusion -- used, you know.

MS. HELTON: Well, it seems to me that maybe there is a disagreement here. Mr. Sanchez has given you his answer to the question. So, I'm not sure if you have something further to ask him, or maybe we should move on.

MR. LENOFF: Okay. I will move on.

Thank you for the clarification.

BY MR. LENOFF:

Q Mr. Sanchez, you reviewed FPL's ten-year site plans before they are finalized and after they are finalized, correct?

A That is correct.

Q And you are not aware of FPL ever using the term "area reliability margin" in its ten-year site plans, correct?

A That is correct.

Q And you're also not aware of this Commission approving any use of that term, correct?

A That is correct.

Q But you have used the term "area reliability margin" during the past ten years, correct?

A I have used it, yes.

Q And you used the term "area reliability margin" when you were director of transmission planning, then, correct?

A I believe I may have, yes.

Q Did you -- do you recall testifying that you did?

A I may have. I spent three hours in a deposition. I'm pretty used -- I'm -- I've used this

term probably in the past -- yes, dozen years.

Q Okay. And during which time you were the director of transmission planning.

A 2006 through 2009.

Q Okay. So, that is --

A Yes.

Q -- within the last 12 years.

And where is that use documented?

A I don't remember where it's documented.

Q Is it -- do you believe it's documented?

A It may still be. It's been almost ten years.

Q But -- and you have -- you continue to monitor the area reliability margin in southeast Florida today, correct?

A Yes, I have to. I have to worry about how much margin we have, not just today, tomorrow, a week from now, a month from now, a year from now. I also have to worry, in 2022, how much margin are we going to have because I have to live with this.

If I still have the pleasure of working in my position, I have to deal with this risk. So, I need to be aware of how much margin we have.

Q Okay. And currently, the area reliability margin is okay; is that correct?

A Currently, it is adequate. It's going to

become more adequate when the CSQ line comes in, Corbett-Sugar-Quarry line.

Q Okay. But you do not believe that an area reliability margin in southeastern Florida of 1,691 megawatts in '22 is acceptable -- 2022 is acceptable because it's too low; is that correct?

A I'm trying to verify your number (examining document). That is correct.

Q Do you know what the current area reliab- -- area reliability margin in southeast Florida is?

A Yes, I do.

Q Is it below 1,691 megawatts?

A One second, please. For 2018, we are forecasting to have 1,968 megawatts, almost 2,000 megawatts.

Q So, I'm asking, for 2000- -- not a forecast, but 2017 -- do you know what that number is?

A The actual turned out to be 1,244 megawatts. It was projected to be 1,500 megawatts. The load was higher than we projected it to be.

MR. LENOFF: All right. Can I use an exhibit, Mr. Chairman, that was handed out earlier? It's staff's --

CHAIRMAN GRAHAM: 61?

MR. LENOFF: If you -- if -- yes,

Mr. Chairman.

BY MR. LENOFF:

Q You have this in front of you --

A Yes, I do.

Q -- Mr. Sanchez?

And that 1,244 number that you just gave me -- 1,244 for 2017 is the same number that I see in the second column to the right of 2017?

A Yes, it is.

Q And under F- -- FPL's proposed plan in this proceeding is what's labeled "FPL Plan 2"; is that correct?

A That is correct.

Q And we see, for 2017, under that plan, the area reliability margin is 1,501 megawatts?

A That is correct.

Q Okay. And both of those are below the figure 1,691 megawatts for 2022 that you just testified is not acceptable because it is too low; is that right?

A That is correct.

Q Okay. So, an area -- would you like to change your answer about today, the -- the area reliability margin currently being not -- unacceptable?

A No, I would not.

Q Okay. So, an area reliability margin of

3,254 megawatts in 2022 is the magnitude that you consider sufficient for southeast Florida, correct?

A It's much-more robust than it -- what it is today --

Q So, is that --

A -- but --

Q Is that -- do you consider 3,254 megawatts in 2022 to be the magnitude that is sufficient for southeast Florida?

A That is the magnitude that would be available in 2022 with the Dania Beach Energy Center going in service because you get both the benefit of a 1200-megawatt unit coming in, plus the additional import capability that it results in 400 megawatts. So, really, you get --

Q Okay. Mr. --

A -- 1600 megawatts --

Q Mr. Sanchez, that's -- that's -- do you -- that is -- did you testify in your rebuttal testimony, on Page 13, from Lines 13 to 16, that an area reliability margin of 3,254 megawatts in 2022 is the magnitude that you consider sufficient for southeast Florida?

A That is correct.

Q Okay. And FPL's service obligations in

2022 --

CHAIRMAN GRAHAM: Mr. Lenoff, can you pull that mic a little closer? Thank you.

MR. LENOFF: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: I know it's getting hard for me to hear. And I'm sure the court reporter is trying to hear you and type.

MR. LENOFF: Thank you, Mr. Chairman.

BY MR. LENOFF:

Q FPL's service obligations in 2022 are forecasted to be approximately 10,789 megawatts, right?

A That is correct.

Q And as I calculate it, an area reliability margin of 3,254 megawatts -- and I apologize, Mr. Chairman, for just a little bit more math -- as I calculated, an area reliability margin of 3,254 megawatts in 2022 means that you're calling for a margin that is 30-percent above FPL's projected service obligations, correct?

A The margin that results is 3,254. I'm not calling for a margin. What happens is, when you add Dania Beach Energy Center, it automatically gives you a jump of 1600 megawatts, both the 1200 megawatts of Dania Beach Energy Center plus an additional import-capability benefit of 400 megawatts. That's a jump that you get

initially.

But as the years go by and the load continues to increase, you can see that that goes down. So, yes, the number initially is the 3,254, but you could see that that number goes down as the load continues to increase.

Q Okay. I'm positive that that was not responsive to my question. So, I'm just going to ask it again.

As I calculate it, an area reliability margin of 3,254 megawatts means that the margin you are calling for that you believe is sufficient is 30-percent above FPL's projected service obligations in 2022; is that correct?

A It's 30-percent above -- approximately 30-percent above the load obligation in 2022, yes.

Q Yeah, I -- do you have any reason --

A I believe that's sufficient, yes.

Q Do -- do you have any reason to doubt that the precise number is 30.2 percent?

A Based on your calculation, subject to your calculation.

Q Okay. Would a 25-percent area reliability margin in southeast Florida be good enough?

A I'm not here to set a reliability margin. I

can't tell you what the reliability margin should be, but I could tell you that it should be large enough to certainly cover the largest unit because a unit could break, easily, for a week or two weeks in the summer. And, for a major metropolitan area, you should be able to at least absorb another contingency.

Actually, if you read the NERC reliability standards, the planning standards under the TPL001, it actually discusses that. The preferred planning criteria is that you should be able to absorb one contingency, prepare for the other one, and continue to serve your firm customers even for the next contingency. That's the preference.

Q Okay.

A When we talk -- excuse me.

Q That's -- that's okay. That's -- all I asked was, is a margin of 25 percent good enough, so --

CHAIRMAN GRAHAM: Mr. Sanchez, you'll get -- you'll get your opportunity to add on to that for re- -- during redirect. I'm sure your attorney right now is writing that down for you.

THE WITNESS: Okay. Thank you, sir.

BY MR. LENOFF:

Q So, would you like me to just try again? Would a 25-percent area reliability margin be

sufficient?

A I'm thinking of the number 2500 megawatts. It would cover the two largest units in southeast Florida.

Q Okay. Would a --

A That range would be sufficient.

Q Would a 20-percent margin be sufficient?

A I don't know. You would have to consider in the future. Remember, we're talking about the future. So, you're worried about what resources do you have in the future, what risk profile do you have, the customer profile that you have -- considering it's one of the largest metropolitan areas in the country.

Remember, you're a hundred megawatts short -- you're talking about 20,000 customers here at risk.

Q Okay. So --

A It's not two or three.

Q So, you just -- you answered 25 percent could be good enough, but then, when I got to 20 percent, you couldn't give me an answer.

A I -- it's in that range, in the 20, 25 percent, at least.

Q Have you calculated what would be sufficient?

A I am -- at least in my mind, what I'm doing right now is I'm saying we have about 11,000 megawatts

of requirements in that area. About 20 percent of that is about 2,200, 20- -- 2300 megawatts. Your largest two units are about -- approximately that much. So, somewhere in that range and above.

Q So, have you previously calculated what would be sufficient?

A Yes, I have.

Q And where would that be documented?

A Operationally, it -- there's not a documentation -- anything that documents it. I mean, we're looking at could we --

Q But so, this is -- this is --

MR. DONALDSON: Can -- can he at least finish his answer? He was in the middle of answering a question. Thank you.

CHAIRMAN GRAHAM: Mr. Sanchez, you can continue that thought.

THE WITNESS: If I may add, we answered in interrogatory that -- I think, asked that question -- and we had the data for '15 and -- or '16 and '17, or '15 and '16. And we provided that.

And if you go to Interrogatory -- I believe it was staff -- (examining document) -- staff fourth set, Interrogatory No. 75, for 2016, it was 2,541; for 2017, it was 1,244.

BY MR. LENOFF:

Q And what was it for 2014?

A For 2014, we didn't have all the data. We couldn't -- we didn't feel certain about the calculation of the number.

Q So, you don't know -- your area of reli- -- you don't know what the area reliability margin was for southeast Florida during 2014?

A Historically, we couldn't recreate it and feel confident that we had the right number.

Q Okay. So, even though these -- this calculation is supposed to be very important for operations, you don't know where it's documented, if it's documented, and you don't have data from the past; is that correct?

A We're worried about prospectively going forward, not about what the historical was. So, there's a lot of things going inter- -- into play here. For example, we were -- such as upgrades and transmission facilities -- for example, we upgraded lines into Broward County. We added larger transformers. We retired and added new generation at Port Everglades, Turkey Point 1 and 2, and new CTs, and at Lauderdale.

So, there was lots of puts and takes throughout this period that, you know, certainly, we did

analyze up front and make sure that -- to make sure that we could operate reliably, but it's not something that we can keep historically in operation.

Remember, system operations, we're worried about really one second ahead, up to about a year, year-and-a-half ahead. So, it's not something we would keep and say, well, okay, we've got to keep this historically or anything like that.

Q Where -- was that analysis documented that you just discussed?

A We can't find where we specifically kept -- and we saw how much margin we had for that year.

Q Did you document it?

A It was calculated at some point. We did not have it available.

Q Was this a calculation that was done in your head, based on experience, or was this something that was documented on a piece of paper somewhere?

A It would have been both. You -- you've got -- you know, we've got -- as operators, we need to be concerned about where we're going to be operating in the future, whether it's 2022 or it's 2018, in the summer.

One of the things for southeast Florida that we've got to keep is how much -- what's our obligation that we expect a forecast for this summer, what is --

Q Mr. Sanchez, my question was whether this something that was on a piece of paper. So, if you would like to talk about --

A It may have. We couldn't find it and we couldn't confirm that the number we provided was a correct number.

Q Okay. Has FPL ever calculated or presented to the Public Service Commission what it believes the minimum area reliability margin should be?

A I don't believe so.

Q Your testimony discusses the reliability risk of losing a large generating unit. And I believe you just mentioned it, you know, a moment ago, as well, right?

A That is correct.

Q Yet, FPL is advocating for permission to build a generating unit with almost 1200 megawatts; is that correct?

A That is correct.

Q And that would be one of the largest generating units on the FPL's system?

A It would be a large one, but not one of the largest.

Q Okay. And at your deposition, you testified that FPL should put DBEC in service as quickly as

possible; is that correct?

A That is correct.

Q And further, you testified that, in late 2016, early 2017, you gave Dr. Sim the guidance to put DBEC in service as quickly as possible, correct?

A That is correct.

Q And you gave the guidance on a phone call?

A Yes, I believe so.

Q Did you accompany that phone call with a memorandum?

A Typically, we'll discuss stuff and we don't codify it in memorandum. Steve and I have worked together -- Dr. Sim and I have worked together for many years.

Q Did you document the phone call?

A No, I did not.

Q Do you know how many phone calls there were?

A There were probably multiple phone calls. I do remember the conversation of, you know, looking at Lauderdale, and, you know, we'd have to go ahead and do a demolition. And my response was, that's great. It's a much-larger unit, much-more efficient. We need to get it back in place as soon as we can.

Q Okay. So, you don't know how many phone calls, which was my question; is that --

A No, I don't.

Q And we're talking about, right now, the -- an input into resource planning that affected the way those -- that resource -- the resource plans were drawn up and analyzed, correct?

A That is correct.

Q And you -- did you call Dr. Sim or did he call you?

A I believe Dr. Sim called me.

Q And did you -- you did not consult any documents at the time that you gave Dr. Sim the guidance by phone call; is that correct?

A That is correct.

Q You didn't even generate any documents in providing your guidance; is that correct?

A That's correct.

Q And in your experience, is it FPL's normal course of business to rely on guidance in resource planning from people who do not refer to documents or produce documents?

MR. DONALDSON: I'm going to object. That's argumentative.

CHAIRMAN GRAHAM: I agree.

BY MR. LENOFF:

Q Okay. Your colleague, Dr. Sim, has testified

regarding two resource plans, which would delay both the retirement of Lauderdale units and the in-service date of DBEC, correct?

A That is correct.

Q And have you been in the hearing room throughout the day today?

A For the -- for Dr. Hausman's testimony, yes.

Q So, you were not here for Dr. Sim's testimony?

A I was not here.

Q Okay. Are you aware that Commissioners Brown and Clark asked questions about the -- these delay plans from FPL, which would delay both the retirement of the Lauderdale units and the retirement of -- delay retirement of the Lauderdale units and delay the in-service date of DBEC?

A Yes, I am aware of that. I was hearing the testimony, though, but I was not here.

Q Oh, you were watching it.

A Yes.

Q Nice. Thanks.

And one of these plans is referred to as Plan 4, in which the retirement of the Lauderdale units would be delayed to 2019, and the in-service date of DBEC would be delayed to 2023, correct?

A That's correct.

Q So, compared to the project proposed by FPL known as Plan 2, Plan 4 includes a one-year delay in the retirement of the Lauderdale units and the in-service date of DBEC, correct?

A That's correct.

Q And the other plan, Plan 5, would retire Lauderdale units in 2020 and put DBEC in service in 2024, correct?

A That's correct.

Q So, compared to the project proposed by FPL, Plan 5 includes a two-year delay in both the retirement of Lauderdale units and the in-service date of DBEC, correct?

A That is correct.

Q And you provided input into Plans 4 and 5 as they were being discussed or developed, correct?

A No, I provided input relative to Dania Beach Energy Center being placed in service as soon as practicable.

MR. LENOFF: Okay. So, I would like to use an exhibit, based on that, Mr. Chairman --

CHAIRMAN GRAHAM: Sure.

MR. LENOFF: -- from Mr. Sanchez's own deposition.

CHAIRMAN GRAHAM: We will give this one a

number of 70.

MR. LENOFF: Thank you, Mr. Chairman.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: We will call this deposition of Sanchez, January 8th, 2018, Page 60.

(Whereupon, Exhibit No. 70 was marked for identification.)

BY MR. LENOFF:

Q Mr. Sanchez, you have in front of you Page 60 of your deposition transcript?

A Yes, I do.

Q And do you recall the discussion that is stated on this page?

A Yes, I do.

Q Okay. And have you signed as -- have you confirmed the accuracy of this -- of this -- of the words that are on this page?

A No, I -- they must be accurate if that's what -- they were recorded.

MR. LENOFF: Okay. And if we look at Lines 4 through 11 -- I mean, if FPL's counsel doesn't have any objection, I'm going to read the statements.

MR. DONALDSON: Well, I'm going to object because that -- what you see on Line 4 was not what was asked at the hearing. So, it's improper

impeachment.

MR. LENOFF: I believe my question to Mr. Sanchez that I just asked was: You provided input into Plans 4 and 5 as they were being discussed or developed.

And I think, if we look at Line 10, he says, they were being discussed or developed. And I'm just trying to give enough context in order to be able to understand the deposition transcript.

MR. DONALDSON: Well, the -- the deposition transcript says, prior to FPL's assessment of the Plan 4 and 5.

MR. LENOFF: All right. So, let's -- let's -- so, I'm going to -- can I ask the witness the question, and if there's an objection or if the witness --

MR. DONALDSON: Well, I am objecting because it's improper impeachment.

MR. LENOFF: What's the basis of that?

MR. DONALDSON: That's not the question that you asked during the hearing.

CHAIRMAN GRAHAM: You're asking two different questions.

MR. DONALDSON: You're asking two different questions. And you're trying to impeach him with a

question that is not the question that you asked at the hearing.

MR. LENOFF: I'm trying to impeach him with his statement, but --

MR. DONALDSON: But it's impro- -- you're asking two different questions.

MR. LENOFF: Okay. So, let me use this exhibit and ask the same questions that are on this sheet. Okay?

CHAIRMAN GRAHAM: Ask the question.

MR. LENOFF: All right. Thank you.

BY MR. LENOFF:

Q So, did you provide -- did you provide your input prior to FPL's assessment of Plans 4 and 5?

A Yes, I did.

Q Did you provide it in reference -- did you provide your input when the Plans 4 and 5 were being developed?

A I remember there was a discussion of, what do you think about them being delayed -- it being delayed, and I was not in -- I said, I'm not in favor of that.

Q Okay. So, not -- not asking about the content of your statements. I'm asking about the context in which you gave it.

Did you provide your input to -- about Plans 4

and 5 while Plans 4 and 5 were being developed?

A Not while they were being developed, in the context of -- I guess they were being thought about and they asked my opinion of what I thought about it and I gave them my -- my views on it.

Q Did you provide your input when Plans 4 and 5 were being discussed?

A I don't -- I guess they were being discussed at that time because I was asked about them.

Q So, what was the state of Plans 4 and 5 when you gave your input?

A I don't know the state of it. I was asked what I thought about if Dania Beach could -- you know, could be, you know, put in service in '23 or '24 or a later date than '22, and I said, that's not a good thing.

Q And you don't remember the month, the calendar month, in which that occurred?

A No, I do not.

Q Could it have been last month?

A I don't think it was in December. I think it may have been before that.

Q Could it have been in November?

CHAIRMAN GRAHAM: Mr. Lenoff, let's move on.

MR. LENOFF: Okay.

BY MR. LENOFF:

Q Did you -- did you state, in your input about Plans 4 and 5, that you were not in favor of Plans 4 and 5?

A I'm sorry. Could you repeat that again?

Q When you provided your input about Plans 4 and 5, did you state that you were not in favor of Plans 4 and 5?

A I think it was relative -- not specifically to Plan 4 and 5 -- is, you know, what do you think about Dania Beach going in, you know, one or two years later. And I said, I'm not in favor of that. Whether, at the time, it was referred to as Plans 4 and 5, I don't remember. I don't think it was.

Q Okay. And in fact, you believe that Plan 5 includes unacceptable risk in both 2022 and 2023; isn't that correct?

A That's correct.

Q But Dr. Sim has testified, including in his testimony today, that Plans 4 and 5 -- the delay resource plans are based on your guidance; isn't that correct?

A I don't think Plan 4 and 5 are based on my guidance.

Q So, you mentioned that you been watching the

deposition -- or the testimony of Dr. Sim, the cross-examination of Dr. Sim?

A Yes.

Q And did you hear him say that the delay resource plans are based on your guidance?

A I don't recall my recommending looking at delaying four and -- or Plan 4 or 5, delaying Dania Beach. If anything, my whole recommendation was to get Dania Beach in service as soon as practicable.

MR. LENOFF: Okay. Mr. Chairman, I would like to introduce as an exhibit an excerpt from Dr. Sim's testimony where he is -- one of many, in which he is quite clear that the delay resource plans were based on guidance from system operators.

CHAIRMAN GRAHAM: Does it say based on four and five or does did it just say Dania Beach?

MR. LENOFF: I -- I can verify that for you, if you'll give me a moment.

CHAIRMAN GRAHAM: Okay.

MR. LENOFF: Mr. Chairman -- Mr. Chairman, the question asked of Dr. Sim in this deposition was based on the delay resource plans. At the time when this deposition was taken, FPL had not identified those delay resource plans as, quote, Plans 4 or 5, but we were aware there were delay

resource plans. And that is the question -- the question is about those delay resource plans.

MR. DONALDSON: I mean, I -- I'm trying to still understand where -- I think the counsel for Sierra Club is just asking an inartful question. Plans 4 and 5, that's -- I believe who -- Haus- -- Dr. Hausman is the one that termed it as that.

So, if he can ask the witness, what was your guidance that he gave to Dr. Sim, he can certainly ask that question, but I don't think he's asked that question to provide some clarity on this issue.

MR. LENOFF: I'm --

CHAIRMAN GRAHAM: Yes, sir.

MR. LENOFF: A couple -- a couple of responses to that. No. 1, it was not Dr. Hausman who termed them Plans 4 and 5. And if we -- if you were to want to take a five or ten-minute break, we could print out FPL discovery responses in which they identified them as Plans 4 and 5, but I think that's kind of an ancillary matter.

The question that I'm asking is not an ancillary matter, however. It is specific -- Mr. Sanchez has identified that these delay resource plans include unacceptable risk, but

Dr. Sim has testified here today and in his deposition, which is the only thing that I have printed out, that the delay resource plans are based on the guidance from Mr. Sanchez, so --

CHAIRMAN GRAHAM: It sounds like you're talking past each other because Dr. -- Mr. Sanchez is just talking about Dania Beach. He doesn't know what Plan 4, Plan 5 is. He's just saying, I'm against delaying Dania Beach.

Now, I don't know what you're going to ask him about what Dr. Sim says, but what he says is, I'm against Dania Beach. That's just what I -- this is what I'm understanding so far.

Now, what -- what exactly are you going to ask him? Because once again, it sounds like you're talking past -- that -- these two may be talking past each other.

MR. LENOFF: Sierra Club has tried to understand the basis for the, quote, "four-year window," or the delay of Lauderdale units, along with delaying DBEC. And what we've been told is that it was based on a phone call with system operators. We've been given nothing besides this statement that it was based on guidance from Mr. Sanchez.

That's why they have this four-year window. And they -- they use that four-year window in the delay scenarios.

CHAIRMAN GRAHAM: Okay. So, your question is --

MR. LENOFF: My -- I asked Mr. Sanchez whether he believes those delay scenarios include unacceptable risk. He said, yes, but the delay scenarios were based on his guidance. And I'm trying to --

CHAIRMAN GRAHAM: It's based on his guidance, according to Dr. Sim.

MR. LENOFF: According to his -- according to Dr. Sim.

CHAIRMAN GRAHAM: Now, he told you what he told Dr. Sim, that he's against it. Now, what are you trying to get him to do?

MR. LENOFF: Confirm for me whether the guidance that Dr. Sim is referring to is the same thing that he's talking about right now; and so, whether Dr. Sim constructed these delay scenarios based on a statement from Mr. Sim that they are -- they have unacceptable risk.

CHAIRMAN GRAHAM: Well, that sounds like a question you need to ask Dr. Sim. He told you what

he told Dr. Sim.

MR. LENOFF: Okay. Okay. I'll -- thank you, Mr. Chairman. I'll move on. Yeah.

CHAIRMAN GRAHAM: Okay.

BY MR. LENOFF:

Q So, switching gears just a little bit, the purpose of your testimony is to support the four-year window between retirement of the Lauderdale units and commercial operation of DBEC; is that correct?

A No, it's not. The purpose of my testimony is to recommend that DBEC be placed in service by 2022 or at the earliest possible date.

Q So, can we turn to Page 4, Lines 20 to 25, to Page 5, Line 1 of your testimony?

A I'm sorry. What page?

MR. DONALDSON: I'm sorry. What page?

MR. LENOFF: Page 4 to Page 5.

BY MR. LENOFF:

Q Are you there? On Lines -- are you there, Mr. Sanchez? Page 4?

A Yes, I'm on Page 4.

Q Okay. So, on Line 20, you begin -- well, Line 19, question, "What is the purpose of your testimony."

Line 20, answer: The purpose of my testimony

is to rebut Sierra Club's witness, Dr. Hausman's, claim on Page 22 of his direct testimony that, quote, there is no apparent reason why four years is any kind of magic number for the time period from retirement and demolition of Lauderdale Units 4 and 5, to the commercial operation date of the Dania Beach Clean Energy Center.

Is that correct?

A That is correct.

Q Okay. So, the purpose of your testimony is to support the four-year window between retirement of the Lauderdale units and commercial operation of DBEC?

A That's correct, but I think you need to keep on reading a little bit more where it goes on to say, specifically: Dr. Hausman does not -- does not consider a real-life operation perspective on why it's critical that DBEC Unit 7 be constructed and commissioned within the demolition and construction period of four years following the retirement of Lauderdale Units 4 and 5, beginning in late 2018.

Q Okay. So, it's your position that the only acceptable plan is retirement of Lauderdale units in 2018 and DBEC coming in service in 2022?

A It is the only plan because it's the less-riskiest plan of all, especially considering that you're

putting at risk a very large metropolitan center.

Q When you say the less-riskiest the plan, you're only referring to the four other plans that were considered by FPL in 2017 termed Plans 1, Plan 3, Plan 4, and Plan 5; is that correct?

A That is correct. I'm considering in context of what questions you've been asking me of delaying it one year or two years.

Q So, there could be alternative plans, like -- let me ask you this: If you were to add an incremental amount of generation in southeast Florida two years after retiring the Lauderdale units, would that have less risk than Plan 2?

MR. DONALDSON: Let me object. That goes beyond this witness' prefiled rebuttal testimony.

MR. LENOFF: Your -- I'm just trying to figure -- he's telling me this is the least-risky plan and this is the only plan that he thinks is acceptable. And I'm just trying to figure out if he knows there are other risky -- other plans that could be less-risky.

CHAIRMAN GRAHAM: Sir, do you know if there are any plans that could be less-risky?

THE WITNESS: I'm not aware of any other plans besides the ones that we've been speaking about.

CHAIRMAN GRAHAM: Thank you.

Let's move on.

MR. LENOFF: Okay. Thank you. Mr. Chairman.

BY MR. LENOFF:

Q The risk that we were just discussing -- have you quantified -- quantified it?

A Yes, I have.

Q Okay. But is that the quantification for which there is no documentation?

A Well, the risk is that, for every hundred megawatts of load that I can't serve, that's 20,000 customers that I can't serve. Put it into context. That's rolling blackouts of 20,000 customers every 20 minutes.

Q Okay. Okay. So, I'm just asking, is that the quantification for which there is no documentation?

A Well, there's documentation that approximately 204 megawatts equals one megawatt on the FPL system. And that's the way I equate it in my mind.

Q Have you considered probability in that assessment?

A This is not a probabilistic. This is deterministic.

Q So --

A The requirements of the NERC reliability

standards are deterministic.

Q So --

A They are not probabilistic.

Q So, you don't consider probabilities in this quantification of risk that you're discussing?

A There's always a probability that a unit could break or that a line could trip, at any given time.

Q So, are there any situations for which FPL does not overbuild its system?

A I can't answer that. I don't know.

Q Is -- is that because you're not sure?

A That because I don't know what "any" means -- "any situation" could mean and "overbuild" means.

Q But you recognize that when planning in an uncertain environment, usually probabilities are relevant, correct?

A In certain instances, they are. In relation to NERC reliability standards, they are deterministic in nature. And I am required to operate pursuant to NERC reliability standards, per federal law.

Q And so, you can't tell this Commission the probabilities associated with the risks that you're discussing.

MR. DONALDSON: Objection. Asked and answered.

CHAIRMAN GRAHAM: I agree.

Mr. Lenoff, let's move on.

MR. LENOFF: Okay. Thank you.

BY MR. LENOFF:

Q You also assert that retiring the Lauderdale units in 2020, instead of 2018, has nothing to do with the risk in 2022; is that correct?

A I guess I don't understand your -- your question. The way I look at it is, you're going to have a four-year window of demolition through in-service. As that window becomes larger, the risk increases. Or as that window moves later in time, the risk increases. And the reason the risk increases is because the load increases.

And certainly, if the window of time increases, not only does the load increase, but your window of opportunity to have an issue also increases.

Q Okay. So, thank you, Mr. Sanchez. I'm sure you recall that, during the deposition, we discussed this, but I'm trying to get an answer to a specific year and what you just gave me, I believe, if I heard correctly, was a discussion of windows.

So, I would just like you to focus on the year 2022. And you have asserted that retiring the Lauderdale units in 2020, instead of 2018, has nothing

to do with the risk in 2022; isn't that correct?

MR. DONALDSON: I'm going to object. That is actually a misstatement of his testimony, so --

MR. LENOFF: Well, I mean, I haven't even introduced anything from his testimony.

MR. DONALDSON: Well, it's not in his testimony. It's a misstatement of what he said.

BY MR. LENOFF:

Q Mr. -- Mr. Sanchez, do you believe that retiring the Lauderdale units in 2020, instead of 2018, has nothing to with the risk in 2022?

A Yes, it does because, if I retired in 2018, it's back in service by 2022 -- or Dania Beach is in service by 2022. A lot of the risk has been mitigated.

Q Do you assert that the risk in 2021 is regardless of whether you're retiring Lauderdale units in 2018 or 2020?

A You would still have 2021 without the Dania Beach Energy Center, but when you look at the total risk to the system, you have a higher-risk profile if you retired in 2019 versus -- it would be 2018 --

Q So --

A -- and construct it within the four-year window.

Q So, Mr. Sanchez, that was, I think, different

than what my question was because I asked about retiring it in 2020, not 2019. But just to get you to give me a yes-or-no answer to this question -- do you assert that the risk in 2021 is regardless of whether you're retiring the Lauderdale units in 2018 or 2020?

MR. DONALDSON: I'm going to object. That's confusing and ambiguous, vague.

CHAIRMAN GRAHAM: You ask an "or" question and you want a yes-or-no answer. You need to explain that to me.

MR. LENOFF: Okay. Can I rephrase my question?

CHAIRMAN GRAHAM: Sure.

MR. LENOFF: Thank you, Mr. Chairman.

BY MR. LENOFF:

Q Do you assert that the risk in 2021 is affected by whether you retire the Lauderdale units in 2018 or 2020?

A No. The risk in 2021 would be the same.

Q The risk in 2021 would be the same.

And how about if I retired the Lauderdale units in 2018 instead of 2020, is the risk in the year 2022 the same?

A No, it isn't.

Q Let's -- let's -- and your -- your reason for

that is the Dania Beach Energy Center coming online in 2022; is that correct?

A That and the fact that you get 400 megawatts of additional import capability into the southeast area.

Q Which -- which only come from a generation being located at that site.

A Correct, or very close proximity to that site.

Q Okay. So, let's focus on what Dr. Sim has put forward as Plan 5. And I'm only talking about the issues germane to Mr. Sanchez's testimony into -- in Plan 5, as we discussed a few minutes ago, the Lauderdale units are retired in 2020, and the Dania Beach Energy Center in service in 2024, correct?

A Correct.

Q Okay. So, under that plan, if, instead of the Lauderdale units being retired in 2020, they were retired in 2018, would the risk in the year 2023 be at all affected by the change in retirement date of the Lauderdale units?

MR. DONALDSON: I'm going to object. That is a convoluted question with moving dates and years. And I don't see how it sticks with being still Plan 5 when the dates are being changed by counsel in his question.

So, it's confusing. It's vague.

MR. LENOFF: Mr. Chairman, if FPL's counsel is suggesting that Sierra Club can only ask about the strict plans by -- that they have presented which Sierra Club's expert has shown are less cost-effective than alternative plans, then it makes it difficult for us to show, you know, that the factors in Section 403.519 are not being met.

MR. DONALDSON: May I briefly respond?

CHAIRMAN GRAHAM: Sure.

MR. DONALDSON: If Counsel would like to ask the witness about retiring Lauderdale in 2018 and having an in-service date of Dania Beach in 2024, he can be free to do so.

What is confusing about his question is he tries to do that, while, at the same token, throwing in the word "Plan 5," which means it's a delay scenario that Dr. Sim came up with where you retire Lauderdale in 2020, and you have an in-service date of Dania Beach in 2024.

So, his question is really confusing when you try and put those two scenarios together. And that's the vagueness and confusing portion of his question -- the reason why I'm objecting.

MR. LENOFF: I -- I found that objection somewhat confusing, but if you'll allow me to --

CHAIRMAN GRAHAM: Well, I think what his objection is, is you're talking about Plan 5, but then you're changing the dates that aren't part of Plan 5 around. So, you can go on and ask him a scenario or you can ask him about Plan 5.

MR. LENOFF: Okay. Thank you, Mr. Chairman.

BY MR. LENOFF:

Q So, one scenario would be retiring Lauderdale units in 2020 and putting Dania Beach in service in 2024; is that correct?

A That's correct.

Q And for the year -- under that scenario, the year 2023 would have -- we can -- we can agree that there will be some level of risk. We don't have to identify what it is, but there will be some level of risk in 2023, correct?

A That is correct.

Q Now, in an alternative plan in -- or scenario in which the Lauderdale units are retired in 2018, and Dania Beach comes in in 2024, there will also be a -- some level of risk in the year 2023, correct?

A That is correct.

Q Is there any reason to believe there is any difference in the risk in 2023, between the two scenarios, which differ only in the retirement date of

Lauderdale units?

A In isolation, no.

Q Okay. Same question for 2022. Is there any reason to believe that the level of risk in the year 2022 would be different between the two plans?

A In isolation, no.

Q Is there any reason to believe that the level of risk in the year 2021 would be different?

A In isolation, no; in totality, yes.

Q By totality, you're referring to the two different scenarios; is that correct?

A That is correct.

Q And therefore, in totality, since we've established that the risk is identical in '21, '22, and '23, the totality would be one of these earlier years, '18, '19, or '20; is that correct?

A I'm sorry. Let's go back to the original plan. One is '20 to '24.

Q Right.

A Okay. The other one is 18 through '24?

Q That's correct.

A And the other one is '18?

Q And we've established that, in the year 2021, the risk is identical between the two plans. In the year '22, the risk is identical between the two plans;

and in '23, the risk is identical between the two plans; is that correct?

A Correct, in isolation, each year, for those three years, the risk is the same.

Q Okay.

A In totality, the risk of --

Q So --

A -- '18 through '24 is more than '20 through '24.

Q And my question --

A And both of them are more-risky than '18 through '22.

Q And my question is -- is that -- therefore, the only difference would have to be in the years '18 to '20; is that correct?

A Relative to these two plans?

Q Between these two scenarios.

A Only relative to these two plans.

Q Yes.

A Relative to FPL's plan?

Q No.

A The risk would be --

Q Relative -- relative to --

A 20- --

Q -- the two scenarios -- can you give me a

yes-or- no answer? Relative to the two scenarios, the only difference could be in the years 2018 to 2020; is that correct?

A That is correct.

Q Okay. Do you agree with Dr. Sim's statement that the risk in the early years, 2018, 2019, 2020, is of less concern to FPL because load is lower during that time?

A It is a lower risk because load is lower during that time.

MR. LENOFF: Okay. Thank you.

Can I have one moment, please?

CHAIRMAN GRAHAM: Sure.

MR. LENOFF: Thank you.

Okay. That's all my questions. Thank you, Mr. Chairman. Thank you.

CHAIRMAN GRAHAM: Okay. We'll take a quick five-minute break before you start, Ms. Christensen.

MS. CHRISTENSEN: I appreciate that.

CHAIRMAN GRAHAM: Thank you.

MS. CHRISTENSEN: And I have some exhibits to hand out as well.

(Brief recess.)

COMMISSIONER BROWN: We are back on the

record. And Office of Public Counsel?

MS. CHRISTENSEN: Yes, it was brought to my attention that on the -- I passed out two exhibits. One was an excerpt from Hearing Exhibit 53, referencing Staff Interrogatory No. 75, and then the other one was for Staff Interrogatory No. 76. They were previously admitted. Apparently, the 76 is just a duplicate of 75. So, I'm just going to ask to disregard that one.

And if you would like to mark the one referenced to 75, we can. If not, it's part of composite exhibit, and we can just use it for ease of reference.

COMMISSIONER BROWN: And it's already been -- it's already --

MS. CHRISTENSEN: Yeah, it's already --

COMMISSIONER BROWN: -- entered into the record?

MS. CHRISTENSEN: Entered as part of Composite Exhibit 53.

COMMISSIONER BROWN: Okay, which has been moved already into the record.

MS. CHRISTENSEN: Correct.

COMMISSIONER BROWN: All right. We'll -- we won't label that.

MS. CHRISTENSEN: Okay. And then, in lieu of 76, I'll be referring to staff's demonstrative exhibit, which was already previously marked as 61.

I'm not sure if we moved that one into the record yet, but since I don't think anybody is objecting to it, I'll --

COMMISSIONER BROWN: Okay. So, I have three documents right now, before me. We -- I've got 76.

MS. CHRISTENSEN: We are -- which I would ask you to disregard --

COMMISSIONER BROWN: Disregard -- we've disregarded.

MS. CHRISTENSEN: Okay.

COMMISSIONER BROWN: I've got 75, and I have 78.

Commissioner Clark, do you have the same amount? Three? Two?

So, you referenced another number?

MS. CHRISTENSEN: No, I only had passed out 75 and 76. I don't know if somebody else had passed out one for 78.

COMMISSIONER BROWN: Okay. Is 76 attached to 75?

MS. CHRISTENSEN: They were separate.

COMMISSIONER BROWN: Yeah, I don't have 76.

MS. CHRISTENSEN: Oh.

COMMISSIONER BROWN: We don't have it up here.

MR. DONALDSON: I -- I -- I thought I heard Ms. Christensen say that she's just going to utilize --

COMMISSIONER BROWN: Oh, I thought --

MR. DONALDSON: -- Exhibit 61.

COMMISSIONER BROWN: She was utilize- -- okay. So, you just are utilizing one exhibit.

MS. CHRISTENSEN: Corr- -- I'm just going to use the one that's marked 75.

COMMISSIONER BROWN: Okay. I'm a little rusty here. Sorry.

(Laughter.)

MS. CHRISTENSEN: And in lieu of using 76, I'm just going to refer to the demonstrative Exhibit 61 --

COMMISSIONER BROWN: Oh, that's what --

MS. CHRISTENSEN: It's already been marked as 61.

COMMISSIONER BROWN: Okay. Okay. But you don't have a paper copy for us here.

MS. CHRISTENSEN: No, you are -- should already have 61 up there.

COMMISSIONER BROWN: Okay.

MS. CUELLO: Commissioner Brown, I just wanted to let you know that staff did pass out two papers. They're just for ease of use for whenever we do cross the witness, but they do not have a cover sheet on them.

COMMISSIONER BROWN: Thank you. We have them. All right. You may proceed.

MS. CHRISTENSEN: All right. Thank you.

EXAMINATION

BY MS. CHRISTENSEN:

Q And good afternoon, Mr. Sanchez. Can I ask you to refer to Page 8 of your direct testimony -- or I'm sorry -- of your rebuttal testimony, since that's the only testimony you filed.

A Yes.

Q Okay.

THE CLERK: Can you turn your mic on?

MS. CHRISTENSEN: It's on.

THE WITNESS: It's on.

MS. CHRISTENSEN: Oh, sorry. Wrong -- witness.

BY MS. CHRISTENSEN:

Q Okay. Referring to Lines 2 and 3 of your rebuttal testimony, you said you created a term called area reliability margin calculation for use -- that you

used in this docket, correct?

A That is correct.

Q Okay. And this calculation is a combination of the margin-reserve calculation of the load-flow -- flow analysis; is that also correct?

A It is -- one of the inputs into it is -- is a product of the load-flow analysis, which determines the import capability.

Q Okay. And that's what you testified to on Page 8 of your testimony, Line 3 and 4; is that correct?

A That's correct.

Q Okay. Now, you also would agree that, conceptually, area -- margin reserve and regional imbalance are similar; is that correct?

A Very similar, yes.

Q Okay. And I wanted to ask, for purposes of your calculation of the area margin reserve --

MR. DONALDSON: I --

Q -- you used -- I believe you discussed with Sierra's counsel the P80 load forecast; is that correct?

MR. DONALDSON: I -- I think that Mr. Sanchez has called it an area reliability margin, not an area margin reserve.

MS. CHRISTENSEN: Oh.

COMMISSIONER BROWN: Ms. Christensen?

MR. DONALDSON: I don't want the witness to be confused with the terminology.

MS. CHRISTENSEN: I'm sorry. What -- what -- how are you putting it? Because I may have it typed it in here wrong, so --

MR. DONALDSON: He calls it an area reliability margin.

MS. CHRISTENSEN: Area reliability margin. I will attempt to do my best to remember that. Area reliability margin.

COMMISSIONER BROWN: And that's what you meant.

MS. CHRISTENSEN: That is what I meant.

MR. DONALDSON: I'm -- I'm assuming that's what she meant, but I didn't want the witness to be confused.

COMMISSIONER BROWN: Okay.

MS. CHRISTENSEN: Okay.

COMMISSIONER BROWN: You got the question?

THE WITNESS: I'm good. Thank you.

BY MS. CHRISTENSEN:

Q Okay. Do I need to repeat the question? You --

A Please repeat.

Q Yes, I can repeat that. For calculating for

your area reliability reserve margin, you use -- am I using --

A Area reliability margin.

Q Area reliability margin -- I'm going to get this correct by the time we finish this cross -- you used the P80 load forecast; is that correct?

A P80 non-coincident load forecast.

Q Non-coincident. And is that -- and that has a cushion in it above the P50 non-coincident load forecast that's generally used for resource planning; is that correct?

A I wouldn't term it a cushion. It has a different probabilty because, at the end of the day, you don't get the diversity that you get in operations that you plan for.

Q Okay. But it --

COMMISSIONER BROWN: Mr. Sanchez, could you just move a little closer to the mic --

THE WITNESS: I'm sorry.

COMMISSIONER BROWN: -- please? Thank you.

BY MS. CHRISTENSEN:

Q And I just want to make sure I understand, you -- the 80-percent load probability is you're calculating to ensure that you conserve at least 80 percent of the load, and the 50-percent probability

is geared towards serving at least 50 percent of the load, based on forecast, correct?

A No.

Q All right. Am I missing something?

A Yes.

Q What am I missing?

A The 80th percentile says that the load that you're going to be able to serve, 80 per- -- there's an 80-percent probability that's going to be at that level or below.

Q Okay.

A There's still a 20-percent chance that you'll be above that load.

Q Okay. And the 50-percent would be, then?

A 50 means it could be higher or it could be lower 50 percent of the time.

Q Okay. All right. That -- I just wanted to make sure I was clear. And you're using the 80-percent probability.

A Correct.

Q Okay.

A For -- not for the entire system, just for the specific areas.

Q Okay. All right. And you would agree that, in determining regional imbalance, that the system

planners look at the entire FPL system and its ability to serve the southeast region under a variety of scenarios; is that correct?

A Yes, the transmission planner will look at, not just the entire system, but will also look at southeast Florida.

Q Okay. And you would agree that FPL does not show a regional imbalance until the year 2025, correct?

A Regional imbalance, in the way it's termed of 2025, it means that your load-serving capability -- that equation -- you've got no margin left. I've got to address risk.

Q Sir, it -- I'm -- it sounds like you're agreeing with me that the regional -- that, in fact, FPL is not showing a regional imbalance until 2025; is that correct?

A That is correct, presuming that nothing breaks.

Q Okay. Based on your calculation of the area reliability margin in 2022, the southeast region is projected to be 1,691 megawatts with the largest southeast unit out of service during the summer peak and all other generation available in import capability; is that correct?

A That is correct.

Q And this 1,691 megawatts does not include the Dania unit?

A That is correct.

Q Okay. And this would be with the Port Everglades Unit 5, which is 1,237 megawatts, and the largest southeast unit out of service; is that correct?

A That is correct.

Q Okay. And then you go on to state that there would be a remaining 454 megawatts real-time reliability of margin; is that correct?

A That is correct.

Q Okay. So, if Dania Unit 7 was not placed into service until 2024, the area reliability margin in 2023 would be 1,563 megawatts; is that correct?

A In what year? I'm sorry?

Q In the year 2023.

A That is correct, 1,563 megawatts.

Q Okay. Do you know what the 2024 area margin reserve would be without the Dania unit or other new generation being brought into service in 2024?

A Yes, I do.

Q Okay. And what is that number?

A 1,415 megawatts.

Q Okay. Now, I think you agreed that load growth over the 2022-to-2025 period is about

409 megawatts; is that correct?

A That is correct.

Q Okay. And you are not growing 420 megawatts in a single year, but about 130 megawatts, each of those three years; is that correct?

A Approximately.

Q Okay. All right. I can actually skip through that.

Let me move on to my next question. If the Dania Unit 7 is placed into service in 2024, the area reliability margin would be 2,978 megawatts in 2024; is that correct?

MR. DONALDSON: Let me just interpose a clarification. This is assuming that Lauderdale is retired in 2018; is that correct?

COMMISSIONER BROWN: Ms. Christensen?

MS. CHRISTENSEN: Correct.

MR. DONALDSON: All right.

COMMISSIONER BROWN: All right. Mr. Sanchez.

THE WITNESS: Yes, the reliability margin would be 2,978 megawatts in 2024.

BY MS. CHRISTENSEN:

Q And you would agree that the actual area reliability margin for -- and if you need to confirm, I've passed out, for convenience, FPL's response to

Interrogatory 75.

You would agree that the actual area reliability margin for 2017 was 1,244 megawatts; is that correct?

A That is correct.

Q Okay. And you would also agree that the planned area reliability margin for 2017 was 1,501 megawatts; is that correct?

A That is correct.

Q And you would agree that, in 2023, the area reliability margin of 1,563 megawatts is higher than either the actual or the planned margin reserve experienced in 2017; is that correct?

A That is correct.

MS. CHRISTENSEN: Okay. Thank you. I have no further questions.

COMMISSIONER BROWN: Thank you, Ms. Christensen.

Staff.

MS. CUELLO: Staff has a few questions.

EXAMINATION

BY MS. CUELLO:

Q Good evening, Mr. Sanchez. I'm Stephanie Cuello with Commission staff.

When discussing the area reliability margin in

your testimony, you did not include demand response such as interruptible or curtailable customers in that margin, correct?

A That is correct.

Q And can you please refer to FPL's response to staff's fourth set of interrogatories, No. 80, which is listed as Exhibit 53 in the comprehensive exhibit list? And a copy has also been circulated for your convenience.

A Interrogatory No. -- I'm sorry?

Q 80, the response.

A 80?

COMMISSIONER BROWN: It is not provided with the cover sheet, but the first page is actually Interrogatory No. 78.

THE WITNESS: Okay. I do have it. I have it right here. Thank you.

BY MS. CUELLO:

Q Okay. This lists the amount of demand response available inside the southeastern-Florida region. Would you agree that, subject to check, the sum total of demand response identified in the region is 663 megawatts?

A Subject to check, yes.

Q Okay. And would you also agree that

approximately half the capacity listed on this page has a five-year notice requirement?

A That is correct.

Q Okay. And can you please refer to FPL's response to Staff Interrogatory No. 78, a copy of which was also provided?

A Yes.

Q And can you review the question and the first line of FPL's response?

A Yes.

Q Okay. And can you give some specific examples of how you would continue to provide service in a reliable and efficient manner?

A We would continue dispatching our resources to serve load and, as contingencies occurred, we try to optimize a system such that we could continue serving the load; however, you know, we would have less -- less margin to operate it, but we would continue serving the load, same way we're doing now, and managing the risk as best we can.

Q And under your proposal, can it be guaranteed to this Commission that FPL will not have a reliable -- reliability issue in the southeastern-Florida region?

A You can never guarantee it, but certainly the higher the margin, the less the risk. Just because you

didn't have -- haven't had an issue doesn't mean the risk hasn't been there, but there's different levels of risk.

Q And under the delay sensitivity, can it be guaranteed to this Commission that FPL will have a reliability issue in the southeastern-Florida region?

A I can't guarantee whether you will or will not have a reliability issue. I can guarantee you that you will have a higher risk of a reliability issue, though.

MS. CUELLO: Okay. Those are all the questions I have. Thank you, Mr. Sanchez.

THE WITNESS: Thank you.

COMMISSIONER BROWN: Thank you.

Commissioners. Commissioner Clark.

COMMISSIONER CLARK: I just have two questions, Mr. Sanchez. I'm not sure -- I'm going to start by -- I've offered everyone else the opportunity to answer the question about where unused power goes in terms of your generating capacity.

Are you the person to answer that question?

THE WITNESS: I dispatch all the generation at Florida Power & Light, yes.

COMMISSIONER CLARK: So, in terms of what happens if you have additional capacity, do you

have the ability to sell that power on the open market?

THE WITNESS: I personally don't sell it. I am not allowed to sell it. However, Energy -- EMT, which is Marketing and Trading -- they will see how much capacity I have available. Okay. And from that, they'll try to optimize by selling it off -- off system.

COMMISSIONER CLARK: And assuming that you had 1,500, 2,000 megawatts of additional capacity, what would you normally consider selling -- I know you would sell some under firm capacity, I guess, some on the spot market, which -- how would you divide that mixture up?

THE WITNESS: We look at load forecasts, your P80 load forecasts of what we expect. We look at what generation we have out -- either planned, for example, overhauls, what transmission facilities are out, what generation facilities may be unavailable, unplanned.

And then, based on that, you have a margin of how much capacity you have leftover. Based on that capacity, we'll look at the risk of losing another generator. For example, we'll look at it system-wide and we'll look at it within the southeast-

Florida area.

For example, if the only generator I have available at capacity are the combustion turbines at Lauderdale, the southeast-Florida area, I will be much-more conservative to make sure that, if something does break, I could still cover the load; however, if the capacity I do have available also includes the capacity outside of southeast Florida, it will be available for firm.

Let alone, on top of all that, we will make capacity available on the non-firm spot market, such that it's recallable within minutes if anything were to occur.

COMMISSIONER CLARK: And the revenues that you generate from those, those go into earnings and offset customer cost; is that correct?

THE WITNESS: I apologize, Commissioner, but I do not get into that area.

COMMISSIONER CLARK: I still want to hold that question open, then.

COMMISSIONER BROWN: We will get that question answered.

COMMISSIONER CLARK: Okay. My -- my second question goes to, in your early testimony, you were asked about specific capacity requirements for the

southeast market. I'm assuming you're talking Miami-Dade and Broward County specifically there.

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: And what would happen in terms of reliability if you added additional generation capacity in that particular region? As I understand it, 44 percent of your market are those two counties. Do -- do you have exactly a 44-percent match of generation assets for that county as well?

THE WITNESS: No.

COMMISSIONER CLARK: But your answer was that new resources in that area would not help reliability in any way. I -- I kind of -- it would not prevent outages, if you had -- if you're having to import generation into that region, and you lose transmission facilities in a hurricane, how would not having additional generation assets in that county not prevent outages?

THE WITNESS: No, with respect to hurricanes, okay. The -- one of the scenarios that -- that we've always considered is a hurricane, for example, coming in, Palm Beach, Martin County, and coming, say, east to west or -- or brushing the coast, starting in Palm Beach or Martin County.

That point -- right after the Hurricane, it gets really, really hot because it -- you know, you have -- the low goes and you get the hot weather. Our concern has been that you get damage to generation and the transmission facilities that could allow that pow- -- that -- that generation that's north of southeast Florida to come down.

And then you've got Dade and Broward County completely intact with your 11,000 megawatts of generation and limited, less generation in that pocket. And now, you've got -- you need to import power and you -- and the facilities to import that power and the generation are either both or one are damaged because of the hurricane.

So, definitely, the more power you have in close proximity to that load center, the more reliable you are. I mean, it -- there's -- there's a balance of importing versus having, you know, close-in generation.

You know, when you consider southeast Florida, it's a little bit different than a lot of other major metropolitan centers in that it's at the end of a 300-mile peninsula where you have all this load.

And then, really, southeast Florida, Dade and

Broward County, are a peninsula within a peninsula. There's no way -- if we go west, we've got the Everglades, and we've got one big line crossing that. And that's it. And then everything else is to the north. We can't go to the south or to the east either.

COMMISSIONER CLARK: But you -- you indicated you had 11,000 megawatts of generation capacity. You only have 6,000 generation, and you import 5800 --

THE WITNESS: Correct.

COMMISSIONER CLARK: -- according to this; is that correct?

THE WITNESS: Yes, that is correct.

COMMISSIONER CLARK: So, if your transmission is knocked out, having generation assets in that county would increase reliability.

THE WITNESS: Absolutely. Yes.

COMMISSIONER CLARK: Okay. I -- I don't -- I did not understand you to answer that that way the first time.

THE WITNESS: Yes.

COMMISSIONER CLARK: Okay.

THE WITNESS: I'm sorry.

COMMISSIONER CLARK: Great. Thank you.

THE WITNESS: Thank you.

COMMISSIONER BROWN: One question, regarding your -- just to kind of piggy-back off Commissioner Clark's comments and questions, your FPL's 2017 annual capacity dry run that was held -- you cited it in your direct rebuttal here.

What was the shortfall of the capacity in this scenario? You participated in the -- you participated in it this year.

THE WITNESS: I led it.

COMMISSIONER BROWN: Oh, okay. So, you should have that --

(Laughter.)

THE WITNESS: It was a lot -- at one point, I believe we had several-hundred-thousand customers out that we were rotating that -- in essence, you know were having rolling blackouts through southeast Florida. It -- it is significant.

COMMISSIONER BROWN: So, irrespective of Lauderdale 4 and 5, there was still --

THE WITNESS: There -- yes --

COMMISSIONER BROWN: Because you talk about having -- Dania Beach Unit 7 would have mitigated the -- the experience incurred under this scenario.

THE WITNESS: Yes. For example, you know,

just without Dania Beach -- without Lauderdale versus Dania Beach, there's 1200-megawatts difference, which is about 240 -- 250,000-customers difference of serving; between Lauderdale 4 and 5 and Dania Beach, there's about 400 megawatts, which is approximately 80,000 customers or so.

It's about one -- it's about 200 customers per every megawatt or -- you know, and we talk -- we throw around a hundred -- a hundred megawatts like it's not a lot. It's 20,000 customers. It's a lot when you're talking a hundred megawatts.

COMMISSIONER BROWN: All right. Thank you.

THE WITNESS: Thank you.

COMMISSIONER BROWN: Redirect.

MR. DONALDSON: Yes, thank you.

EXAMINATION

BY MR. DONALDSON:

Q Mr. Sanchez, what is the -- your responsibility as director of system operations?

A Two major responsibilities. One is I operate the FPL system -- or my team does. We're responsible for making sure that, when the light switch is turned on, the lights go on, at the end of the day. It's basically that.

But there's a lot more that goes into that.

It goes into, you have to plan for that. And planning starts at the Dr. Sim level, but it goes down to what overhauls are we going to do next year, how are they going to be coordinated, to what weather profile do we expect and what load profile.

Then, it comes down to also -- when -- as it gets closer in time months ahead, okay, let's refine that plan even more. What do we think is going to happen in the month -- for example, right now, in January -- what do we think is going to happen in the summer.

As we get closer to May, okay, are the units really performing the way we expect them; is the overhaul schedules going the way we expect them; how's that going. Okay. So, all that comes into play. Are -- the transmission maintenance that's going on, is that -- is that being done on time.

So, eventually all that gets to the next day. And we actually have a group of people that worry about tomorrow and the day after. And what they do is they simulate tomorrow and the day after, such that, when that operator sits on the chair, he's got a plan of the day that's telling him, this is what to expect today. This generator is out. It's going to come back at this time. This line is out from this time to this time.

It's going to come back at this time. This is what you expect to see on your applications that tell you, if this happens, this is what's going to happen. This is what you're going to do.

It's very analogous to an airline pilot. There's a lot of practice and choreography that goes into it. And hopefully, that -- that customer will never experience anything, but those pilots are very trained in case things go wrong that are unexpected.

And we try to prepare for that ahead of time, like, for example, having this area reliability margin that we know we have levers that we could pull and make sure customers are served.

The other major responsibility that I have is reliability coordinator for Florida, one of the eight regions in the country. I'm responsible for making sure that over 50 utilities in Florida coordinate their operations.

So, for example, when we do generation overhauls and transmission-line outages, I make sure, when Duke is doing theirs and Tampa is doing theirs and Orlando, that we all coordinate such that it all comes together. And at the end of the day, the number-one goal is reliability for the state of Florida. It's not economics. It's reliability.

So, that's my other major responsibility.

Q And from a -- from a systems-operations standpoint, what type of facilities do you have command and control over in your real-time operations?

A We run one of the largest control centers in the country. It's impressive. It's a cockpit that has, in essence, a dashboard that's 188 feet long by about 20 feet high of video. There's operators 24-by-7 manning it, in addition to management. It's a 24-by-7 operation. You know, there's always something going on. It's -- you have to see it to believe it.

Q Do you control the power plants within FPL's system, meaning whether or not you're going to run them or not run them?

A Absolutely. We plan -- as I was mentioning, not just months ahead -- when they're expecting to be run so we know what fuel they're going to go into and how they come together with the transmission, but tomorrow we plan that this one is going to be out at 10:00 in the morning. It's going to shut down at 6:00 in the evening. This one is going to do this. This one is going to do that.

And then, on a real-time basis, except for the nuclear basis, we actually control them from the facility.

Q Do you control the movement of electricity over the bulk transmission lines that are throughout FPL's service territory?

A Yes, we do.

Q How do you do that?

A We have operational control, all breakers at the transmission substations, such that we could redirect power and we could turn on generation. Actually, the combustion turbines at Lauderdale and at Fort Myers -- we could turn them on within seven minutes.

The other plants, we could go ahead and, once they come online, we could go ahead and issue set points that they'll go to that set point.

Q Okay. Now, one of the things that we've been focusing on, and at least that I know that you've been asked in cross-examination from Sierra Club and from Office of Public Counsel, is this South Florida -- southeast-Florida region. Am I correct that that consists of Dade and Broward Counties?

A That is correct.

Q All right. And where is your office actually located?

A In Miami, downtown Miami.

Q All right. And how much generation capacity

do you have in Miami-Dade and Broward County right now, as of today, with Lauderdale Units 4 and 5 in service?

A It is -- I'm sorry. I don't know offhand the number, and I should. It is 5,280 without -- after Lauderdale 4 and 5 are retired. So, it's approximately 6,000 megawatts with Lauderdale.

Q Okay. And how many megawatts does Lauderdale Units 4 and 5 provide southeast Florida?

A A total of 880 megawatts.

Q All right. Now, how much transmission import capability do you have into southeast Florida?

A Today, we have 5,800.

Q All right. Is that before the Corbett-Sugar-Quarry line is placed in service in 2019?

A Yes, it is.

Q So, I guess, if we were -- Commissioner Clark was asking this question. If you add up the amount of generation, which is on Interrogatory No. 75, which is 6,164, and the amount of transmission capability currently of 5,800, you have a total amount of 11,964 megawatts of transmission and generation capability into southeast Florida; is that correct?

A That is correct.

Q And how -- what's the load of that particular area?

A Approximately 10,700 megawatts.

Q All right. And I heard -- I believe it was Commissioner Clark -- it may have been Commissioner Brown -- say that that represents about over 40 percent of FPL's total system load?

A Yes. It will vary between 43, 45, 46. It depends on weather. If you get a -- you know, two or three days of 92-, 93-degree weather in Miami and Fort Lauderdale, it will actually bump up into the 44-, 45-percent range.

Q If you were -- if you were to give an equivalent type of location that serves this type of load, what would that be?

A I always compare it to -- to New York City. It's about 13,000 megawatts, compared to about 11,000. I've heard today, it's about the size of Duke, which I guess it is about the size of Duke.

It is a -- Dade and Broward County is a very large utility, in and of itself, in the country.

Q Where is Lauderdale Units 4 and 5 located?

A Right in the heart of Broward County, in Dania Beach.

Q All right. If you were to retire Lauderdale Units 4 and 5, what is the impact of that retirement on the southeast -- on the load -- not on the load, but the

on the generation and import capability within southeast Florida?

A Well, even though --

MS. CHRISTENSEN: I'm going to object. I think Mr. O'Donnell is basically [sic] --

MR. DONALDSON: Donaldson. --

MS. CHRISTENSEN: -- doing direct -- or -- sorry.

MR. DONALDSON: That's okay.

MS. CHRISTENSEN: -- is basically doing direct instead of redirect. He's not actually asked him to respond to something that was addressed by any of the cross that was presented.

COMMISSIONER BROWN: Well, I was allowing the questions because nobody has objected, but now that -- that you raise it -- there was a lot of big scope of questions that were asked by the intervenors and the bench up here.

So, I -- I'll allow this question, but just, Mr. Donaldson, be -- be on notice here that this is redirect.

MR. DONALDSON: I -- I agree. And I'm trying to tailor it to some of the questions that Sierra Club has asked about different windows of retirement. And I want to put things in context so

that --

COMMISSIONER BROWN: All right. Let's get to it.

MR. DONALDSON: Yes, thank you.

BY MR. DONALDSON:

Q So, if you retire Lauderdale Units 4 and 5, what is the impact -- if you retire in 2018, as FPL has proposed, what is the impact on the southeast-Florida region with respect to generation and import capability, prior to CSQ coming in line?

MR. LENOFF: Can I object? It's ambiguous. I don't understand what that question is.

COMMISSIONER BROWN: Mr. -- Pardon me. Mr. Sanchez, do you understand the question?

THE WITNESS: Yes, I do.

COMMISSIONER BROWN: All right. Objection overruled. I understand it.

THE WITNESS: Okay. You actually end up losing 880 megawatts of generation and 400 megawatts of import capability.

BY MR. DONALDSON:

Q So, that's a total of almost 1300 megawatts that you would lose in southeast-Florida area?

A That is correct.

Q All right. And there have been some

discussions about the guidance that you've provided to Dr. Sim regarding these delay scenarios. I guess folks were calling it Plans 4 and 5. Can you explain in a little bit more detail what this guidance was that you provided to Dr. Sim?

A I would --

MR. LENOFF: Can I -- objection. That's asked and answered.

COMMISSIONER BROWN: I don't think it was. Objection overruled.

THE WITNESS: I really recommend not delaying Lauder- -- Dania Beach Energy Center, but by the way, if it ends up being delayed, you have less risk by not having a six-year window; having a four-year window.

But the preference and the recommendation from somebody with 32 years of experience doing this is, let's get it in service as soon as possible, especially considering the area we're talking about.

BY MR. DONALDSON:

Q With respect to the guidance that you provided Dr. Sim, did you provide any guidance on what to do with any delay scenario in the in-service date of Dania Beach? And what was that guidance with respect to what

to do with Lauderdale Units 4 and 5?

MR. LENOFF: Objection. Compound question.

COMMISSIONER BROWN: I understand the question very clearly. I don't think it was compound enough to be incomprehensible.

Mr. Sanchez, are you able to answer the question?

THE WITNESS: Yes.

COMMISSIONER BROWN: Please go ahead.

THE WITNESS: I recommended that the in-service date not be delayed, but if it was delayed, that we also delay the -- taking out the unit.

BY MR. DONALDSON:

Q The unit being Lauderdale Units 4 and 5?

A Yes, sir.

Q Okay. And -- and that was -- that was in response to a one-year and two-year push in the Lauderdale in-service dates.

MR. LENOFF: Objection. Leading.

Q -- is that correct?

COMMISSIONER BROWN: Re- -- restate.

MR. DONALDSON: Sure.

BY MR. DONALDSON:

Q What was that in response to with respect to in-service dates of Dania Beach Units -- Unit 7?

A It was in response to a delay, potentially of up to two years.

Q Okay. Did you provide any guidance on what was less-risky with respect to FPL's plan in this case, which is Plan 2, of retiring Lauderdale units in 2018, and the in-service date of Dania Beach in 2022 versus these other two delay scenarios that we've been discussing here and Sierra Club has asked you about?

MR. LENOFF: Objection. It's leading. It's a narrative. And it's discussing alternative plans in the same way that Mr. Donaldson objected previously.

COMMISSIONER BROWN: Well, I don't think it was a narrative. He was restating -- he was restating the question that you previously asked. And it is pertinent to the question that you asked, so I'm going to allow the question. Overruled.

THE WITNESS: The least-risky plan is taking advantage of the Corbett-Sugar-Quarry line as soon as we can and getting the Dania Beach generation in as soon as we can, by 2022. Any other plan that delays it past 2022 increases the risk. And as you go further in time, the risk increases.

Obviously, not only if you increased the window that the Dania Beach Energy Center is out --

not only do you increase the risk because of the load serving, but the amount of time that you don't have the 12 or 1300 megawatts of capacity to serve load in that area also adds another level of risk.

BY MR. DONALDSON:

Q And referring to staff's demonstrative exhibit, No. 61 -- do you have it in front of you?

A Yes, I do.

Q This is in direct response to Sierra Club's counsel asking you about 3200 megawatts of margin and -- under Plan 2 in 2022.

I want to refer you to Plan 1, which is FPL's Lauderdale not-retired plan. Do you see the 2019 number -- year, where you have 3,157 megawatts?

MR. LENOFF: Objection. Leading.

COMMISSIONER BROWN: Overruled.

THE WITNESS: Yes, I do.

BY MR. DONALDSON:

Q All right. Do you know why there's an increase in megawatts in 2019?

A Because Lauderdale is not retired and you have the Corbett-Sugar-Quarry line providing the additional import capability.

Q Do you see, if you compare Plan 1 for 2019, with Plan 2 for year 2022 -- do you see, between those

two years -- well, what do you see between those two years, as far as reduction in Plan 1 versus Plan 2?

A Approximately --

Q If you understand my question.

A Plan 2 results in approximately 1300 megawatts less of reliability margin relative to Plan 1.

Q All right. And Plan 2 is -- we're talking about the retirement of Dania Beach in 2018; is that right?

A That is correct.

Q Is that the window that you're talking about?

A That's exactly the window that we're talking about.

Q All right. One of the other questions that was asked by Sierra Club is this area reliability margin term that you utilized. Has the term "margin," when respect to the southeast-Florida region, been utilized before in prior dockets?

A I believe it has been.

Q Do you recall which docket it was prev- -- most-recently used in?

MS. CHRISTENSEN: I'm going to object. I'm not sure if he's using similar terminology because I think we were referring to area reliability margin and --

COMMISSIONER BROWN: Let's just get a clarification.

Mr. Donaldson, are you referring to the term at -- Mr. Sanchez's identifies called "area reliability margin" in his prefiled --

MR. DONALDSON: Yes, Chair.

COMMISSIONER BROWN: Okay. Clear? You withdraw your objection?

MS. CHRISTENSEN: As long as the question is clear as to whether or not they've used that term, "area reliability margin," in previous dockets.

COMMISSIONER BROWN: I --

MR. DONALDSON: Well, the question was --

COMMISSIONER BROWN: Mr. Donaldson.

MR. DONALDSON: Okay.

BY MR. DONALDSON:

Q Mr. Sanchez, you call -- let me -- let me do it this way: What do call the difference between the amount of load and import -- and import capability and generation for Miami-Dade County and Broward County?

A I term it "area reliability margin."

Q Okay.

A It's margin for the area.

Q All right. Has a similar type of term been utilized before in previous dockets?

MR. LENOFF: Objection. Asked and answered. I --

COMMISSIONER BROWN: We don't have a clear answer right now. He --

MR. LENOFF: I asked the question.

COMMISSIONER BROWN: There was an objection that was withdrawn. So, I'm going to allow question.

Mr. Sanchez, please proceed.

THE WITNESS: Yes, it has. I believe it's been used in the Port Everglades docket.

Southeast Florida has always been a concern for us as -- you know, I can personally tell you, since we put Turkey Point 5 and came to the Commission back in 2005, southeast Florida --

COMMISSIONER BROWN: I know you're -- you're editorializing a little bit, causing some consternation among -- thank you, though.

Mr. Donaldson.

MS. CHRISTENSEN: Can -- can I ask for clarification on his last response? He did say "we used it in Port Everglades," but he didn't actually specify what term was used in the Port Everglades docket. And that's what I was trying to get clarification on.

COMMISSIONER BROWN: Oh, just one second.

Mr. Donaldson, would you like to ask that question for --

MR. DONALDSON: Sure.

BY MR. DONALDSON:

Q What term was used in the Port Everglades need-determination docket?

A I believe the term "margin" was discussed relative to having additional reliability margin for southeast Florida.

Q And did you understand the term "margin" to be referring to the southeast-Florida region when that Port Everglades need-determination was taking place?

MR. LENOFF: Objection. Leading.

COMMISSIONER BROWN: Restate.

BY MR. DONALDSON:

Q Do you understand whether or not the term "margin" was referring to the southeast-Florida region?

A Yes, it was specifically in reference to the southeast-Florida region.

Q Okay. So, your term -- you just add area reliability margin and, in Port Everglade, they just used "margin" for the same area.

MR. LENOFF: Objection. Leading.

COMMISSIONER BROWN: Sustained.

BY MR. DONALDSON:

Q We -- we talked about with Sierra Club -- or Sierra Club talked about with you risk or operational risk. Can you clarify, when you say, "operational risk," what are you referring to?

A Operational risk is being able to serve customers' load. And when we talk about load, we've really got to remember that one megawatt is 200 customers. We're talking a hundred megawatts relative to 10,000. It doesn't seem like much, but a hundred megawatts is 20,000 customers.

That's the risk I'm talking about of whether we're going to do feeder rotation on 20,000 customers this afternoon because I don't have enough generation in southeast Florida.

COMMISSIONER BROWN: Thank you.

BY MR. DONALDSON:

Q And when you were referring to this operational risk, if you look on Pages 9 and 10 of your testimony, starting on Page 9, Line 22, through Page 10, Line 6 -- is that the operational risk that you were referring to?

MR. LENOFF: Objection. Leading.

COMMISSIONER BROWN: How is it leading?

MR. LENOFF: Because he's telling -- he's

asking him -- he's setting up the question of what is -- he's asking him, is this the type of risk that you were asking about. He's just asking him, what type of risk were you talking about on this page.

COMMISSIONER BROWN: Mr. Donaldson, can you rephrase it?

MR. DONALDSON: Sure.

BY MR. DONALDSON:

Q Does your testimony discuss what type of risk that you were referring to?

A Yes, I do.

Q On what pages does -- do your -- does your testimony discuss this risk?

A Specifically, on Page 9, Lines 22, through Page 10, Line 3.

Q And if we're looking on -- on Page 10, the contingency -- or where you state, serving capability to absorb contingency of TP3, TP4, TP5 also failing, what are you referring to?

A That I have a contingency in the system --

MS. CHRISTENSEN: Ob- -- objection. I think that this goes beyond the scope of cross-examination of either party.

COMMISSIONER BROWN: I would agree. Objection

sustained.

MR. DONALDSON: Give me one second, please.

I can come up with some other questions while --

COMMISSIONER BROWN: I do have Chairman Graham's little time clock. Unfortunately, he only has a five-minute. I -- I think we need to get a minute one.

MR. DONALDSON: Yeah, I know. Okay.

COMMISSIONER BROWN: We will be taking a break after this witness, a larger break.

BY MR. DONALDSON:

Q Okay. Specifically -- this is probably my last line of questioning. With respect to Page 4, that -- your testimony, Lines 20, you were asked about this from Sierra Club -- you're here to rebut Dr. Hausman's claim that there's no apparent reason why four years is any kind of magic number for the time period from retirement of demolition of Lauderdale Units 4 and 5 to commercial operation of Dania Beach Unit 7, and how he fails to take into account the important operational considerations.

The -- the four years that we're talking about -- what is your understanding of what that four years represents?

A 2018, when the unit is demolished, and 2022, when it comes back in service.

Q And was I correct in hearing that you -- one of your guidances to Dr. Sim was if you can get in any sooner?

MR. LENOFF: Objection. Leading.

MR. DONALDSON: Okay. Well, I can rephrase it.

COMMISSIONER BROWN: Sure.

MR. DONALDSON: Sure.

BY MR. DONALDSON:

Q What was your guidance with respect to that construction -- that four-year construction schedule?

A If we could do it sooner, it would be a lot better for the system.

Q A lot better in the sense of how --

A Reducing --

Q -- from an operational-risk stand point?

A Reducing reliability risk.

Q Okay. And if you were to delay it beyond four years, what is your professional opinion as a system operator?

A It increases the risk.

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

COMMISSIONER BROWN: All right. Thank you.

This witness has a few exhibits associated with his testimony -- that were just proffered. 61 was offered by Sierra Club, the area-reliability table.

Sierra, you also 68 and 69 and 70, but 69, I believe, we are not using. That was directed toward Dr. Sim. So, we're dealing with 61, 68, and 70.

MR. DONALDSON: I think 61 was staff's demonstrative exhibit.

COMMISSIONER BROWN: Okay. You --

MR. LENOFF: So, we would like to move it, move for 61 to be placed in the record.

And can you give us a moment for the other two?

COMMISSIONER BROWN: All right. Well, I'll have staff go -- I -- I thought it was yours, but staff, why don't we go -- 61?

MS. CUELLO: That's fine. We have no objection.

COMMISSIONER BROWN: So, we're going to go ahead and move in 61 right now, at this time.

(Whereupon, Exhibit No. 61 was received into evidence.)

COMMISSIONER BROWN: So, we're dealing with 68 and 70.

MR. LENOFF: Can you give us one moment?

COMMISSIONER BROWN: Just a moment, yes.

MR. LENOFF: So, we would like to move for Exhibit 68 and Exhibit No. 70 to be placed into the record, please.

COMMISSIONER BROWN: You would like to move 68 and 70.

Any objection?

MR. DONALDSON: Oh, I have no objection to 68 being moved into the record.

I do have an objection to 70 --

COMMISSIONER BROWN: I was anticipating that.

MR. DONALDSON: -- which, I believe, is the improper impeachment -- excerpt of Mr. Sanchez's deposition transcript. So, I don't believe they've laid a proper foundation or predicate for any kind of impeachment for entry of this particular exhibit into the record.

COMMISSIONER BROWN: Yes, Counsel.

MR. LENOFF: When I began asking Mr. Sanchez about his deposition transcripts, I believe I asked him if the pages were correct, if the -- if he has any reason to doubt the accuracy of the statements

in the deposition transcript. And he confirmed that he has no reason to doubt it, and he's -- you know -- so, can we --

COMMISSIONER BROWN: Is that all?

Counsel -- OPC, anything you would like to add?

MS. CHRISTENSEN: No, my recollection is that the witness testified to what was in the deposition transcript. So, I mean, I guess there's probably no harm in either letting it in or --

COMMISSIONER BROWN: There's no harm except for the fact that the pre-hearing order lays out reasons for providing depositions in this proceeding. And it's strictly to be used for impeachment purposes, unless it was otherwise provided within that -- that deadline, as provided in the pre-hearing order.

So, if it wasn't used for impeachment, then, Counsel -- Ms. -- Mary Anne?

MS. HELTON: My recollection is -- but my recollection is fuzzy right now -- that it was --

COMMISSIONER BROWN: I know.

MS. HELTON: That it was --

COMMISSIONER BROWN: It's that hour.

MS. HELTON: -- was not used for impeachment

purposes; that he was not successful in doing so. Then, for that reason, I would suggest that it not be admitted.

COMMISSIONER BROWN: That's where -- what -- my gut here as well. We will not move in 70, but we went ahead and moved 68 into the record.

(Whereupon, Exhibit No. 68 was received into evidence.)

COMMISSIONER BROWN: Would you like this witness temporarily excused?

MR. DONALDSON: He has no other matters before this Commission, so I would like him permanently --

COMMISSIONER BROWN: He may want to stick around for Dr. Sim.

(Laughter.)

COMMISSIONER BROWN: Mr. Sanchez, have a good night. We'll see you around here in the background.

THE WITNESS: Thank you very much.

COMMISSIONER BROWN: Thank you.

THE WITNESS: My pleasure.

COMMISSIONER BROWN: All right. It is -- the time is 6:45. My understanding -- yes, Sierra?

MS. CSANK: Madam Chair, if we may, Sierra Club has spoken with FPL's counsel. And we propose

to take a 10-, 15-minute break. I think that will enable us to significantly streamline our questions for this last witness and, hopefully, enable us to finish the hearing today.

COMMISSIONER BROWN: Okay. So, it's -- does anybody have an objection to taking a 15-minute break -- 10-, 15-minute break, get something to drink? Eat outside? All right. We're --

MR. COX: No objections.

COMMISSIONER BROWN: No objection. So, we're going to take a 15-minute break. 6:45, we'll be back here at 7:00 sharp. Thank you. We're in recess.

(Brief recess.)

COMMISSIONER BROWN: You all ready to proceed?

MR. COX: Yes, Commissioner Brown. Could FPL be heard for a moment, just briefly?

COMMISSIONER BROWN: Sure.

MR. COX: In response to the questions we heard from Commissioner Clark today, Dr. Sim is prepared, I think, to provide a more-complete answer than you've heard so far today. And we're hoping it answers your question, but in the event that it doesn't, we're willing to file a late-filed exhibit to answer more-fully, but we're going to do

our best for him to hopefully provide a little more more-full answer. He's heard what's happened today and he thinks he has a better understanding and can provide at least a little-bit-more-full answer.

COMMISSIONER BROWN: Thank you. That's excellent.

Bef- -- we are back on the record officially. Is our court -- yep.

Are there any preliminary matters to address before proceed with Dr. Sim on rebuttal here?

Okay. Seeing none, FPL.

MR. COX: Commissioner Brown, FPL calls its final rebuttal witness, Dr. Steven R. Sim.

EXAMINATION

BY MR. COX:

Q Dr. Sim, have you been sworn in for this hearing?

A Yes.

Q Could you please state your name for the record.

A Steven Sim.

Q Who is your current employer and what is your business address?

A Florida Power & Light, 700 Universe Boulevard, Juno Beach, Florida.

Q And what is your current position with FPL?

A Director of integrated resource planning.

Q Did you cause to be filed on December 22nd, 2017, 56 pages of rebuttal testimony in this proceeding?

A Yes.

Q Did you also cause to be filed on January 9th, 2018, an errata correcting your rebuttal testimony?

A Yes.

Q Do you have any other changes or corrections to your testimony at this time?

A I do not.

Q If I were to ask you the same questions today as contained in your prefiled rebuttal testimony, as corrected by the January 9th, 2018, errata, would your answers be the same?

A They would.

MR. COX: Commissioner Brown, FPL requests that Dr. Sim's prefiled rebuttal testimony, as corrected, be inserted into the record as though read.

COMMISSIONER BROWN: We'll go ahead and insert Dr. Sim's prefiled rebuttal testimony into the record as though read.

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

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for determination of need for Dania Beach Clean Energy Center Unit 7, by Florida Power & Light Company	DOCKET NO. 20170225-EI FILED: January 9, 2015

ERRATA SHEET OF STEVEN R. SIM

October 20, 2017 Direct Testimony

PAGE #	LINE #	CORRECTION
11	22	Change "that" to "than"
12	16	Change "598" to "596"
34	20	Change "Update" to "Updated"

October 20, 2017 Exhibits

EXHIBIT #	PAGE #	LINE #	CORRECTION
(No changes)			

December 22, 2017 Rebuttal Testimony

PAGE #	LINE #	CORRECTION
21	4	Change "of the both" to "of both"
23	2	Insert "target" after "…from-him"
44	14	Change "had zero" to "had nearly zero"
44	14	Change "This $0/kW" to "This nearly $0/kW"
48	15	Change "enhance increase" to "enhance"
56	9	Change "in" to "is"

December 22, 2017 Exhibits

EXHIBIT #	PAGE #	LINE #	CORRECTION
SRS-5	3 of 7	Row 12	Insert "nearly" before "zero"

Q. Please state your name and business address.

A. My name is Steven R. Sim, and my business address is Florida Power & Light Company, 700 Universe Boulevard, Juno Beach, Florida 33408.

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-5:	Incorrect and/or Misleading Statements Made in the Testimony of Sierra Club Witness Dr. Hausman;
Exhibit SRS-6:	Commission Proceedings Approving or Applying 20% Reserve Margin;
Exhibit SRS-7:	Comparison of FPL System NO_x Emissions for Resource Plans 2 and 3;
Exhibit SRS-8:	Comparison of Major Drivers in DSM Cost-Effectiveness: 2014 DSM Goals Docket Inputs and Forecasts versus 2017 Inputs and Forecasts;
Exhibit SRS-9:	Excerpt from Prior FPL Testimony in Docket No. 20080407-EG Regarding the Flaws in Using a Levelized Cost of Electricity Approach; and,
Exhibit SRS-10:	FPL Fossil Fuel Generation Fleet Performance Improvements (1990-2016).

Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony discusses and/or responds to the testimony of Dr. Ezra Hausman who is testifying on behalf of the Sierra Club in this docket.

Q. How is your rebuttal testimony structured?

A. My rebuttal testimony is structured into 7 parts. Part I provides a brief overview of FPL's filing in this docket to set the stage for examining Dr. Hausman's testimony. Part II identifies key points in FPL's filing that Dr. Hausman does not contest in his testimony. Part III discusses some of the problems in his testimony regarding such topics as reserve margin criteria, reliability, and determination of need filings in Florida. Part IV discusses additional problems with Dr. Hausman's testimony regarding his "alternative plan," the economics of that plan, his attempt to examine the "delay" scenarios, and fuel diversity. Part V offers some observations regarding his exhibits. A number of problematic statements made in Dr. Hausman's testimony that have not already been discussed are examined in Part VI. In Part VII, I summarize my reasons why I conclude that Dr. Hausman's testimony is unreliable and should not be given serious consideration in this docket.

Part I: Overview of FPL's Filing

Q. Would it be helpful to provide a summary of FPL's filing in this docket?

A. Yes. One of my impressions of Dr. Hausman's testimony is that he is trying to draw attention away from the results of FPL's analyses that show numerous and significant benefits that would accrue to FPL's customers from the addition of the proposed Dania Beach Clean Energy Center (DBEC) Unit 7 combined cycle unit. Therefore, I believe it would be helpful to summarize FPL's filing and the projected benefits of DBEC Unit 7 for FPL's customers before beginning an examination of Dr. Hausman's testimony.

Q. Would you please provide a summary of FPL's filing in this docket?

A. Yes. I will primarily focus on the resource planning aspect of FPL's filing, which can be summarized as follows:

- In mid-2016, using 2016 forecasts of load and generation, FPL projected that: (i) it would begin having system resource needs starting in 2024 and which grow significantly in subsequent years, and (ii) there would no longer be a balance between load, generation, and transmission import capability in the heavily populated and high electrical load Southeastern Florida region (consisting of Miami-Dade and Broward Counties) around the same time as the system resource need. As a result, FPL began extensive analyses in mid-2016 designed to determine the best way to address both the system and Southeastern Florida regional needs.

- In the 2016 analyses, FPL assumed 1,700 MW of additional universal solar would be sited outside of the Southeastern Florida region. This additional solar was significantly higher than the 300 MWs of universal solar FPL identified in its 2016 Ten Year Site Plan. FPL then analyzed how new combined cycle and combustion turbine unit options sited both inside and outside the Southeastern Florida region might satisfy the system and regional reliability needs. Solar and battery storage sited inside this region to support both of these reliability needs were also evaluated. FPL also evaluated demand side management (DSM), as well as new gas pipelines, and transmission facilities that would be required as a result of new generation additions and/or to increase transmission import capability into the Southeastern Florida region. In total, 33 resource plans were evaluated in the 2016 analyses.
- The key results of the 2016 analyses were that: (i) a specific new transmission line, the Corbett-Sugar-Quarry (CSQ) line, was capable of addressing the Southeastern Florida regional need through the decade of the 2020s (assuming no changes in forecasted load and/or available generation in the region), (ii) the addition of this CSQ line would allow a window of opportunity in which the existing Lauderdale Units 4 & 5 could be retired[1] and dismantled before replacement capacity in Southeastern Florida is constructed, and (iii) the projected cost of continuing to operate and maintain these existing Lauderdale units was significant.

[1] Note that the retirement of Lauderdale Units 4 & 5 would change the available generation in Southeastern Florida by removing 884 MW of capacity.

- In 2017, after a decision was made to add the CSQ line by mid-2019, FPL updated all of its key forecasts and assumptions, including the cost and performance characteristics of the resource options, and also included as an assumption FPL's current projection that an additional approximately 2,086 MW of universal solar would be implemented by 2023, representing an increase from the 1,700 MW assumed in the 2016 analyses. FPL then conducted new analyses of how best to address system resource needs while maintaining/enhancing reliability in the Southeastern Florida region. These 2017 analyses primarily focused on three resource plans that were based on the most promising resource options identified in the 2016 analysis. Plan 1 is a "status quo" scenario that assumes no retirement and continued operation of the existing Lauderdale Units 4 & 5. Plan 2 assumes retirement of the existing Lauderdale Units 4 & 5 in late 2018 and the addition of the 1,163 MW DBEC Unit 7 in mid-2022. This results in a net increase of 279 MW of generation in the Southeastern Florida region (1,163 MW of DBEC Unit 7 – 884 MW of the existing Lauderdale Units 4 & 5 = 279 MW net increase).[2] Plan 3 assumes the same retirement of the existing Lauderdale units in late 2018 as in Plan 2, but with the addition of approximately the same amount of firm capacity (approximately 1,163 MW) from a combination of solar and storage sited in the Southeastern Florida region.

[2] FPL notes that its planned addition of 2,086 MW of solar is 7.5 times greater than the net increase of 279 MW of gas-fired generation that would result from DBEC Unit 7.

- The results of the 2017 analyses were that: (i) Plan 2 featuring DBEC Unit 7 is projected to be $337 million cumulative present value of revenue requirements (CPVRR) lower cost to FPL's customers than the status quo Plan 1, and (ii) Plan 2 featuring DBEC Unit 7 is projected to be $1,288 million CPVRR lower cost to FPL's customers than Plan 3.
- In addition, the low cost DBEC Unit 7 project is projected to bring economic benefits to FPL's customers almost immediately beginning in 2018, lower system natural gas usage compared to the status quo scenario, lower system emissions, and to enhance both system and regional reliability.
- Therefore, FPL concludes that adding DBEC Unit 7 in 2022 is projected to provide a variety of significant benefits for FPL's customers, and FPL is respectfully requesting that the FPSC provide an affirmative determination of need decision for DBEC Unit 7 with a June 2022 in-service date.

Part II: Key Points in FPL's Filing That Dr. Hausman's Testimony Does Not Contest

Q. Does Dr. Hausman's testimony contest the results of FPL's analyses that show DBEC Unit 7 is projected to save FPL's customers $337 million CPVRR compared to the status quo resource plan (Plan 1) in which existing Lauderdale Units 4 & 5 are not retired and continue operating?

A. No.

Q. Does his testimony contest the results of FPL's analyses that show DBEC Unit 7 is projected to save FPL's customers approximately $1.3 billion CPVRR compared to Plan 3 that is designed to attempt to provide equivalent system and regional reliability from a combination of solar and storage resources?

A. No.

Q. Does Dr. Hausman's testimony contest the results of FPL's analyses which show that FPL's customers are projected to benefit from lower cumulative CPVRR system costs due to the DBEC Unit 7 project beginning as early as 2018, and continuing each year through the last year (2061) of the analysis period?

A. No.

Q. Does his testimony contest the results of FPL's analyses which show that natural gas usage on FPL's system is projected to be lower with the

DBEC Unit 7 compared to the status quo resource plan in which existing Lauderdale Units 4 & 5 are not retired and continue operating?

A. No.

Q. Does his testimony contest the fact that DBEC Unit 7 requires no new transmission facilities and no new gas pipelines?

A. No.

Q. Does Dr. Hausman's testimony contest the fact that the additional generation sited in Southeastern Florida as a result of DBEC Unit 7 will result in additional generation capacity sited in Southeastern Florida which will enhance both system and regional reliability?

A. No.

Q. Does his testimony contest the fact that DBEC Unit 7 is projected to lower system emissions of SO_2, NO_x, and CO_2 compared to the status quo resource plan (Plan 1) in which existing Lauderdale Units 4 & 5 are not retired and continue operating?

A. No.

Part III: Problems with Dr. Hausman's Testimony Regarding Reserve Margin, Reliability, and Need Determination Filings

Q. Did you find problems with statements made by Dr. Hausman in his testimony?

A. Yes. Exhibit SRS-5 presents a list of numerous inaccurate and/or misleading statements made by Dr. Hausman in his testimony. His problematic statements are presented on the left-hand side of this exhibit. The right-hand side of the exhibit explains why each statement is inaccurate and/or misleading. I will also be examining a number of these problematic statements in more detail in the remainder of my testimony.

Q. Does Dr. Hausman comment on FPL's reserve margin criteria?

A. He does. The following two statements from his testimony capture his view regarding FPL's reserve margin criteria:

"FPL uses extremely conservative reliability criteria. The industry standard for reliability is to have sufficient reserves to achieve a loss of load probability (hereafter, LOLP) of one day in ten years…the Company's two reserve margin criteria discussed above are more stringent – they mislead FPL to over-procure capacity that is not needed to meet the industry LOLP standard." (page 9, lines 9-15, and page 10, line 1)

and,

"I recommend that FPL take the following steps: Determine appropriate reserve margin criterion and regional resource needs using a loss-of-load probability of 0.01." (page 19, lines 6-8)

There are a number of problems with these statements. First, there is no single reliability criterion that is relied upon by all electric utilities and not all utilities utilize an LOLP criterion. Second, Dr. Hausman ignores the fact that reserve margin and LOLP reliability criteria are, by design, intended to give different perspectives of the reliability of a utility system, not to provide the same result. Third, in this statement he recommends an LOLP standard of 0.01 which is 10 times more stringent than the 0.1 day/year LOLP standard that FPL and most utilities that utilize an LOLP reliability criterion use. (However, on page 9 of his testimony, beginning on line 9, he discusses an LOLP criterion of *"one day in ten years"* which is equivalent to a 0.1 day/year value. With his two conflicting values, it is not clear what he is actually recommending.)

Fourth, he ignores the fact that FPL's reserve margin criteria have worked well in helping to ensure economic, reliable electric service for FPL's customers for almost two decades. Fifth, with these statements, Dr. Hausman is criticizing both FPL and the FPSC for the reserve margin criterion that FPL uses in its resource planning. Perhaps Dr. Hausman is unaware that FPL's 20% total reserve margin criterion was agreed to by FPL, two other Florida

investor owned utilities (IOU), and the Florida Public Service Commission (FPSC) in 1999 after extensive examination of system reliability in Florida. Sixth, Dr. Hausman also appears unaware that, in the almost two decades since that decision, the FPSC has consistently stated that a determination of need docket is not the appropriate place to attempt to question a reliability criterion or to attempt a change in the criterion. Exhibit SRS-6 presents a compilation of a number of the FPSC's statements regarding this issue.

Q. Is there another problem regarding the concept of reliability in his testimony that you wish to discuss?

A. Yes. Speaking as one who has been employed by FPL as a resource planner for 25 years and who has continually interacted and collaborated with transmission system planners and system operators over that time period, I have come to appreciate the fact that consideration of the reliability of an electric utility system is not simply a matter of performing analyses on a computer and letting that be your only guide. There is the matter of actual real world experience that has to be factored into a utility's planning. This is particularly true when it comes to the experience of system operators whose job is to keep the system operating in real time 24/7 on a second-to-second basis. Lack of this type of specific, real world experience is not something one can compensate for solely through calculations on a spreadsheet or in a model. Therefore, system operator experience and guidance should never be ignored when planning a utility system.

In regard to the analyses presented in this docket, FPL's system operators provided specific guidance as to how resource plans should be designed if FPL wanted to look at scenarios of a potential one- or two-year delay in the in-service date for DBEC Unit 7, assuming that existing Lauderdale Units 4 & 5 are to be retired. Their input was essentially this: the longer FPL waits to replace the capacity that is lost by retiring the 884 MW of the two Lauderdale units, the more risk the system operators have to deal with. FPL witness Sanchez discusses in more detail the operational risks associated with retiring the Lauderdale units, then not bringing replacement capacity in-service as soon as possible. The loss of 884 MW that will result from the retirement of the existing Lauderdale units represents about 1/7 of the total generation in the vital Southeastern Florida region.

The specific guidance that FPL's system operations provided when FPL began to consider the one- or two-year delay scenarios was that FPL should delay the retirement of the Lauderdale units by the same amount of time DBEC Unit 7's in-service date is delayed in order to minimize operational risk. In other words, that guidance was that if the in-service date of DBEC Unit 7 is delayed one year from 2022 to 2023, then the retirement of the Lauderdale units should also be delayed one year from 2018 to 2019. Based on this input from FPL's system operators, FPL used this guidance when evaluating the "delay" scenarios.

However, Dr. Hausman has chosen to completely ignore this guidance from FPL's system operators. In the portion of his testimony in which he discusses the "delay" scenarios, he cavalierly assumes that no delay in the retirement of Lauderdale Units 4 & 5 is required because a reserve margin calculation doesn't show the need to delay the retirement. He summarizes his disregard for the specific guidance provided by FPL's system operators in the following statement:

"FPL imposed irrational and costly assumptions on its two "delay" scenarios." (page 14, lines 1-2)

From this statement, it is clear to me that Dr. Hausman does not appreciate in any degree the realities of operating a complex electric system or the importance and value of system operators' experience.

Q. Dr. Hausman's testimony opposes the addition of DBEC Unit 7 in 2022. Is part of that opposition driven by a projection that FPL meets its minimum reserve margin requirements in 2022?

A. Yes. Dr. Hausman's testimony contains the following statement starting on page 4 beginning on the last line on that page:

"I further find that the Company's request is premature, given its own projection of sufficient resources at least through 2024."

Q. Please comment.

A. My experience from a number of prior need determination hearings before the FPSC leads me to conclude that the FPSC considers many factors in a need determination docket and can approve a determination of need request based on considerations other than just a reserve margin projection. In fact, the FPSC has done so fairly recently when it approved FPL's West County Energy Center (WCEC) Unit 3 in Docket Nos. 080203-EI, 080245-EI, and 080246-EI. In those dockets, FPL requested a determination of need for WCEC Unit 3 with an in-service date of 2011 although there was not a projected system reliability need until 2013 – two years later than the requested in-service date. FPL projected that an earlier in-service date would reduce system fuel costs and emissions, plus allow FPL the opportunity to modernize the Riviera and Cape Canaveral plant sites.

The FPSC granted the need for WCEC Unit 3 with a 2011 in-service date (Order No. PSC-08-0591-FOF-EI). The FPSC's decision was based in part on FPL's projection of resource needs that would begin two years from the in-service date and increase each year thereafter.

Q. Does FPL's determination of need request in this docket have any similarities to the WCEC Unit 3 determination of need request and decision?

A. Yes. FPL is again requesting a determination of need for a new unit with an in-service date two years earlier than would otherwise be suggested solely by

a system reserve margin calculation. In addition, FPL is again projecting resource needs that begin two years after the requested in-service date and continue to grow each year thereafter. And, similar to the WCEC Unit 3 docket, the new DBEC Unit 7 will significantly benefit FPL's customers in several ways including: (i) significant economic savings to FPL's customers in the amount of $337 million CPVRR that begin immediately, (ii) reduced system usage of natural gas, (iii) reduced system emissions, and (iv) enhanced system and regional reliability.

Part IV: Problems with Dr. Hausman's Testimony Regarding His Alternative Plan, the Economics of that Plan, the "Delay" Scenarios, and Fuel Diversity

Q. Dr. Hausman stated (on page 36, lines 13-15) that he created an "*an alternative plan*" to FPL's Plan 3. Did he?

A. No. FPL's Plan 3 is an example of a resource plan that addresses all of FPL's resource needs through the end of the analysis period (through 2061). What Dr. Hausman calls *"an alternative plan"* is merely a portfolio of solar, storage, and DSM that looks no further than the year 2026. At best, what Dr. Hausman has is one component of a resource plan, but he even labels this as an *"…illustrative example…"* (page 36, line 16).

Q. Please compare his portfolio versus the solar/storage component or portfolio in FPL's Plan 3.

A. Using nameplate values for solar and storage, a comparison reveals the following:

- In regard to universal solar, both portfolios use 433 MW of this resource. However, all of the universal solar in FPL's Plan 3 is in-place in 2022. Dr. Hausman's portfolio delays universal solar until 2024 and 2025, two and three years after they are added in FPL's Plan 3.
- In regard to distributed generation (DG) solar, both portfolios use 600 MW of this resource. FPL's Plan 3 adds DG solar in the 2018 through 2022 time frame. Dr. Hausman delays DG solar until 2025 and 2026, thus delaying DG solar additions by as much as 7 years compared to the DG solar additions in FPL's Plan 3.
- In regard to storage, FPL's Plan 3 adds 755 MW of storage in the 2018 through 2022 time frame. Dr. Hausman adds only 300 MW of storage and delays the storage additions until 2025 and 2026.

Thus both portfolios use the same amount of universal solar and DG solar, but Dr. Hausman assumes all of the solar is delayed until years later than they are added in FPL's Plan 3. Dr. Hausman assumes 455 MW less storage (755 MW in FPL's Plan 3 – 300 MW in Dr. Hausman's portfolio = 455 MW). Finally, Dr. Hausman assumes 200 MW of DSM/DR that is added over the 2021 – 2026 timeframe.

Q. What was your initial reaction to his illustrative portfolio?

A. My initial reaction was that it was certainly interesting that the Sierra Club representative was recommending a portfolio that would significantly delay the implementation of solar, and both significantly reduce and delay the implementation of storage, compared to what is assumed for solar and storage in FPL's Plan 3. This becomes even more interesting when one considers that such a delay in solar implementation would result in higher system emissions and higher natural gas usage, at least for the 2 to 7 years of delay, compared to FPL's Plan 3. Therefore, such a recommendation seems to be exactly the opposite of the Sierra Club's national effort to quickly increase the utilization of solar and storage.

Dr. Hausman's contemplated delay will also result in lower system and regional reliability for FPL's customers than would be the case with FPL's Plans 2 and 3, but these reliability impacts arising from the delay in solar and storage is given little if any consideration by Dr. Hausman in his testimony.

Q. Does Dr. Hausman explain why he significantly delayed the solar additions and reduced the storage additions in his portfolio?

A. Yes. He is attempting to lower the capital or fixed costs associated with the solar and storage additions in FPL's Plan 3 as explained in this statement of his:

"I do know that the capital costs would be many hundreds of millions of dollars less than under FPL's Plan 3 in an NPVRR basis, and <u>could</u> (emphasis added) *be competitive with Plan 2."* (page 39, lines 5-8)

Q. Does Dr. Hausman present an analysis of an actual resource plan, which utilizes his solar/storage/DSM portfolio, which can be compared to FPL's analyses of Plan 2?

A. No. This is evidenced by the following statement in his testimony:

"…let me say at the outset that this ('plan') is intended only as an illustrative example, and I do not claim to have thoroughly analyzed all of the reliability and feasibility aspects of this plan." (page 36, lines 15-17)

Q. His statement does not mention whether he analyzed the economics of his "plan." Did he perform an economic analysis that can be compared to FPL's Plan 2?

A. No. He performed no economic analyses. He admits this in the following statement:

"Q. Can you analyze what this illustrative plan would cost, relative to FPL's Plans 2 and 3? A. <u>I cannot</u> (emphasis added)*."* (page 39, lines 1-3)

Q. Has Dr. Hausman considered all of the economic and non-economic impacts to the FPL system that would result from his recommended portfolio?

A. No. Let us start by looking at a few aspects of the both the economics of FPL's Plans 2 and 3, and Dr. Hausman's portfolio, that he either overlooked or which he chose not to mention in his testimony.

First, let's review the CPVRR cost differences between FPL's Plan 2 and Plan 3. As shown in Exhibit SRS-4, page 1 of 2, of my direct testimony, the projected CPVRR fixed costs (in millions of dollars) shown on the second row of the exhibit is $9,637 for Plan 3 and $7,604 for Plan 2. Thus, Plan 3 is $2,033 million CPVRR more expensive than Plan 2 in regard to fixed costs. A similar comparison of the CPVRR variable costs for the two plans shown on the first row of the exhibit shows a $57,045 million CPVRR variable cost for Plan 3 and $57,790 million CPVRR variable cost for Plan 2. Thus, there is a $745 million cost advantage for Plan 3. The resulting net cost impact is a $1,288 million CPVRR advantage for Plan 2 versus Plan 3 as shown on the third row of the table.

A discussion that compares these different types of costs can be simplified by using approximate CPVRR values: Plan 3 is $2,000 million more expensive in fixed costs, and $700 million less expensive in variable costs, than Plan 2,

thus combining to a net cost result that shows Plan 3 is $1,300 million more expensive for FPL's customers.

Even if one were to assume Dr. Hausman's *"many hundreds of millions of dollars"* in fixed cost savings could be achieved, his portfolio would have to save $1,300 million CPVRR in fixed costs just to break even with Plan 2, assuming no other changes in costs. This would represent a 65% reduction in fixed costs (1,300/2,000 = 65%). As an illustration, if the fixed costs for the solar/storage portfolio in FPL's Plan 2 averaged $1,000/kW, the average fixed costs for Dr. Hausman's portfolio would have to drop to $350/kW just to break even. However, there are at least three other aspects to this economic comparison that Dr. Hausman does not mention, and all three are automatically driven by his "delay solar and storage" recommendation.

Q. What is the first of these three economic aspects that Dr. Hausman has failed to mention?

A. His "delay" recommendation will automatically reduce the projected variable cost savings of $700 million CPVRR shown for FPL's Plan 3. Solar, far more than energy storage, is responsible for the $700 million in CPVRR variable cost savings projected for FPL's Plan 3. Therefore, significantly delaying the in-service dates of both universal and DG solar, as Dr. Hausman recommends in his portfolio, will significantly decrease the $700 million in CPVRR variable cost savings that is currently projected for Plan 3. The longer the delay in the solar in-service dates, the more the variable cost saving is

decreased. Thus Dr. Hausman's idea of reducing fixed costs by delaying solar automatically results in his portfolio chasing a moving-away-from-him because the $700 million CPVRR variable cost savings value will now be significantly smaller.

Q. What is the second economic aspect of Dr. Hausman's recommended portfolio that his testimony fails to mention?

A. Dr. Hausman failed to mention that his portfolio has less firm capacity than does the solar and storage portfolio in FPL's Plan 3. As previously mentioned, both portfolios have identical MW amounts of solar, but Dr. Hausman's portfolio has 455 MW less firm capacity from storage than does FPL's Plan 3. This is partially offset by the 200 MW of DSM/DR that is in his portfolio. With FPL's 20% total reserve margin criterion, the DSM/DR has an equivalent capacity value of 240 MW (200 MW of DSM x 1.20 = 240 MW of equivalent capacity).

Thus Dr. Hausman's portfolio has 215 MW (455 MW from storage – 240 MW capacity equivalent from DSM = 215 MW) less firm capacity than does FPL's solar and storage portfolio in Plan 3. Therefore, 215 MW of additional resources will have to be added in Southeastern Florida in any resource plan that would be developed using Dr. Hausman's portfolio in order to address both system and regional reliability needs. System reserve margin analyses show that additional resources will be needed in 2027. The additional costs required to provide these 215 MW will offset some of the reduced fixed costs

that Dr. Hausman would hope to receive from his portfolio. Recognizing that the additional resources would have to be sited in Southeastern Florida, and could conceivably require a new gas pipeline to be built to a site in Southeastern Florida, the cost of the additional resources could also run into *"many hundreds of millions."*

Q. What is the third economic aspect that Dr. Hausman failed to mention?

A. Assuming as a starting point that Lauderdale Units 4 & 5 are removed in 2018, Dr. Hausman's portfolio does not replace even the 884 MW of capacity in Southeastern Florida that would be removed by that retirement until at least 2026. Following the specific guidance previously provided by FPL witness Sanchez to replace the generating capacity that is removed by the retirement of the existing Lauderdale generating units as quickly as possible, Dr. Hausman's recommendation would lead to FPL delaying the retirement of these Lauderdale units at least 4 years until 2022 in order to maintain the approximately 4-year gap between capacity retirement and replacement as in FPL's Plans 2 and 3. This would lead to at least 4 more years of operational costs being incurred to keep the Lauderdale units operating. These additional fixed costs would be significant and would further offset the fixed cost reduction that Dr. Hausman would hope to receive from his portfolio.

Q. Does Dr. Hausman's testimony discuss the system emissions aspect of FPL's Plan 2 and/or Plan 3?

A. Yes. He makes the following statement in his testimony that discusses alternatives to Plan 2:

"…alternatives to DBEC…that could serve customers with…lower emissions of pollutants to the environment." (page 13, lines 10-12)

Q. What do FPL's analyses show regarding relative system emissions of Plans 1, 2, and 3?

A. In regard to Plan 2 versus the status quo scenario in Plan 1, Plan 2 is projected to result in lower system emissions for SO_2, NO_x, and CO_2. This projection is presented in FPL's response to Staff Interrogatory No. 8. In regard to Plan 2 versus Plan 3, Plan 3 is projected to result in lower system emissions for SO_2 and CO_2 than Plan 2 (but with a $1.3 billion higher CPVRR cost).

However, Plan 2 is projected to result in lower system NO_x emissions than Plan 3. That projection is presented as Exhibit SRS-7. And, as previously mentioned, Dr. Hausman's recommendation of delaying the in-service dates for solar and energy storage in his alternative portfolio would result in an increase in system emissions for SO_X, CO_2, and NO_x at least during the years of delay.

Q. Did Dr. Hausman comment on the solar and storage portfolio FPL utilized in its Plan 3?

A. Yes. His testimony included at least three statements regarding this portfolio. The first and second statements are:

"…FPL claimed that '[a]n estimated maximum projected amount of universal PV that could be sited in Southeastern Florida was selected first….However,

that is not how the resource plan is presented in SRS-3, nor is it the sequence represented in the model files…These files make clear that, in fact, Plan 3 calls for the more costly small-scale solar resources (referred to by FPL as distributed generation solar) constructed first, while the less costly universal solar is installed no earlier than the last year of resource builds in 2022." (page 25, lines 8-17)

and,

"…Plan 3 illogically schedules these resources in ways that would be… unrealistic…" (page 23, lines 16-17)

By these statements, it appears that Dr. Hausman is both confused and misses an important point. He is confused by the differences in the terms "selected" and "constructed/installed." The important point that he misses is that, in the real world, an electric utility has to consider practical constraints regarding the implementation of resource options it may include in a resource plan.

In regard to his first statement, FPL constructed its portfolio exactly as stated. FPL first selected universal solar to be included in its portfolio because it is the most economical way to utilize solar energy to serve FPL's customers. FPL identified that the maximum amount of universal solar that was projected to be able to be sited in Southeastern Florida was 433 MW based on an evaluation of potential sites for universal solar in Broward and Miami-Dade Counties. Then, recognizing that all of this solar could likely be implemented

in a bit more than one year, FPL assumed that the work to construct all of the universal solar could wait until 2021 to start so that all of the universal solar would come in-service by mid-2022. This ensured that the universal solar component of FPL's portfolio was implemented in the most economical way.

Q. Is it reasonable to assume that a similar implementation schedule would work for DG Solar?

A. No. Whereas FPL would plan to implement universal solar in large 60 MW or 74.5 MW blocks, DG solar would be implemented in much smaller, 250 to 500 kW (kilowatt) sizes on commercial customers' roofs. The projected installed maximum amount of DG solar in Southeastern Florida is 600 MW. FPL estimated that it would require almost 1,900 separate installations to get to 600 MW by the same June 2022 date at which DBEC Unit 7 is projected to go in-service. This represents almost 1,900 public and/or private entities that must be identified, contacted, negotiated with regarding long-term contracts, and permits acquired before the installations can even begin.

There are also only about 1,600 days between January 1, 2018, and June 1, 2022. Therefore, even if DG solar installations were to begin on January 1, 2018, more than one DG solar installation per day would have to be completed for 1,600 consecutive days with no weekends or holidays off to meet the June 1, 2022 date. Recognizing that each DG solar installation will take a number of days or weeks to complete, FPL reasonably assumed that DG solar installations would have to begin in 2018, and continue each year

until June 2022, to realistically implement 600 MW of DG solar by June 2022.

By referring to FPL's schedule as *"illogical"* in his second statement, Dr. Hausman failed to account for the practical considerations just described of how the implementation of such a large amount of DG solar could actually be performed.

Q. What is the third statement Dr. Hausman made about FPL's solar and storage portfolio in its Plan 3?

A. On page 28, lines 15-16, he makes the following statement:

"…the Company made the plan <u>appear</u> (emphasis added) *even more costly by building the most expensive resources early, thereby frontloading unduly high costs…"*

I have several reactions to this statement. First, in regard to the portion of the statement *"…building the most expensive resources early…"*, I just discussed that real world, practical considerations require that DG solar installations must begin in 2018 to meet that objective. Second, in regard to the portion of his statement *"…the Company made the plan <u>appear</u>* (emphasis added) *even more costly…"*, FPL did not make any resource option or resource plan "appear" more costly. FPL simply determined the projected costs for all of the

resource plans it analyzed, then compared those costs. That Dr. Hausman does not like the outcome of the economic analysis does not change that fact.

Third, his use of the term "*frontloading,*" plus the overall tone of the statement, appears designed to give the impression that FPL is anti-solar. Such an impression is hard to reconcile with the fact that FPL is actively developing a very large amount of solar in Florida where it is cost-effective to do so. This is shown in the resource plans FPL developed and analyzed for its filing in this docket. In Plan 2, the addition of DBEC Unit 7 in 2022 will result in a net increase of 279 MW of gas-fired capacity (1,163 MW of DBEC Unit 7 – 884 MW of retired Lauderdale Units 4 & 5 = 279 MW).

However, as previously mentioned, a base assumption for all of the resource plans analyzed in FPL's 2017 analyses is a projected addition 2,086 MW of nameplate solar by 2023 which is 7.5 times as much net additional solar capacity as net additional gas-fired capacity. Clearly, rather than being anti-solar, FPL is a strong proponent of solar when and, most importantly, where it is projected to be cost-effective.

Q. In his testimony, does Dr. Hausman appear to recognize the fact that DBEC Unit 7 is significantly, and perhaps uniquely, advantaged by its specific location in Southeastern Florida?

A. No. This specific gas-fired generating unit has no incremental costs for land, new transmission, new gas pipeline, additional firm gas transportation, or

water due to both its location at an existing generation site and its design. As a result, the projected costs of this particular gas-fired unit are very low, making it a very tough resource option to beat economically – and a very good opportunity with which to lower costs for FPL's customers, as well as lower emissions, lower system natural gas usage, and enhance system and regional reliability.

Q. Is there anything else from a comparison of solar and DBEC Unit 7 that also impacts the economics of these two types of options in these specific analyses?

A. Yes. In regard to universal solar facilities, the cost of land for FPL's 2017 and 2018 SoBRA projects was discussed in the recent SoBRA docket (Docket No. 20170001-EI). Staff Interrogatory No. 60 in the SoBRA docket inquired about the cost of land for these projects. FPL's response to this interrogatory showed that for 7 of the 8 projects that would be sited on land that FPL did not already own, the total land cost was approximately $29.8 million dollars or approximately $4.25 million per site on average for the 7 sites. Recognizing that each site will be used for 74.5 MW of solar, this works out to a land component cost of approximately $57/kW ($4,250,000 / 74,500 kW = $57/kW).

The land cost picture is much different in Southeastern Florida. The projected costs of the universal solar sites in Southeastern Florida assumed in Plan 3 ranges up to approximately $34 million per site. Thus the projected land cost

for just one SoBRA-sized universal site in Southeastern Florida can be higher than the combined costs for all 7 of the previously mentioned universal solar 74.5 MW SoBRA sites located outside of Southeastern Florida. Stated in terms of $/kW, this works out to a land cost component of universal solar in Southeastern Florida of up to approximately $450/kW ($34,000,000 / 74,500 kW = $456/kW). This is roughly 8 times higher than the land component cost for the same amount of universal solar sited outside of Southeastern Florida in this year's SoBRA filing.

To summarize, the DBEC Unit 7 is significantly advantaged by its location at the existing Lauderdale plant site in Southeastern Florida, and its design is such that it requires none of the incremental infrastructure costs that new gas-fired generating units might typically require. Conversely, universal solar sited in the Southeastern Florida region is significantly disadvantaged by its location, compared to universal solar sited in most of the rest of FPL's service territory, in particular by the much higher land costs in the region compared to land costs outside of the region.

This points out that the locational aspect of any DBEC versus solar comparison is of significant importance. Furthermore, it seems reasonable to assume that land costs in Southeastern Florida may increase in the future, which would further disadvantage Dr. Hausman's recommendation to delay the implementation of universal solar in Southeastern Florida.

Q. Does Dr. Hausman's testimony address DSM?

A. Yes.

Q. Does Dr. Hausman's testimony appear to accept the fact that the cost-effectiveness of DSM on FPL's system continues to decline?

A. It is hard to say from his testimony. It contains no statement to that effect, but also contains no statement to the contrary such as: 'DSM is more cost-effective, or as cost-effective, today as it has ever been.'

Q. What is the status of DSM cost-effectiveness on FPL's system?

A. As stated in my direct testimony, DSM cost-effectiveness on FPL's system has been declining for a number of years and continues to decline. The reason for this is that the costs of key components of FPL's system that make up the bulk of DSM's avoided cost benefits have been declining. These include: fuel costs, environmental compliance costs, and costs of combined cycle generation. In addition, the fuel efficiency of the FPL system continues to get better, in part due to the implementation of solar at locations that allow solar to be cost-effective, which further lowers avoided fuel and environmental compliance costs.

In the last DSM Goals docket that concluded in late 2014, the FPSC set DSM Goals for incremental DSM signups that were approximately 50 MW per year. This was based in large part on the projected cost-effectiveness of DSM at that time. Exhibit SRS-8 presents a comparison of key cost components from the 2014 DSM Goals docket compared to current projections of those

components. As shown on this exhibit, the DBEC Unit 7 is significantly less expensive to build and operate than the combined cycle unit used as the avoided unit in the 2014 DSM Goals analyses. In addition, forecasted fuel and environmental compliance costs are also significantly lower as shown in the exhibit. As a consequence, the projected cost-effectiveness of DSM has declined since FPL's DSM Goals were last set.

Q. Did Dr. Hausman have any comments about any specific resource plans that were analyzed in FPL's 2016 analyses but which were not analyzed in FPL's 2017 analyses?

A. Yes. On page 27, beginning on line 7 of his testimony, he states the following regarding FPL's 2017 analyses:

"…FPL failed to assess alternate plans including solar without storage, even though such a plan was among the four most economic plans in FPL's 2016 analysis.[53] *FPL further affirmed that the only reason* (emphasis added) *that the Company added storage to Plan 3 was an attempt to mimic the characteristics of DBEC – and not to address any identified reliability need."*

In this statement, Dr. Hausman is referring to Plan 3 of Iteration 3 of FPL's 2016 analyses. That plan featured 433 MW of universal solar, plus 550 MW of DG solar, for a total of 983 MW of solar which is all sited in Southeastern Florida. That plan also assumed that the existing Lauderdale Units 4 & 5 would continue to operate for the duration of the analysis period.

Q. In making this statement, did Dr. Hausman overlook anything?

A. Yes. Dr. Hausman overlooked at least a couple of items. First, because a number of forecasts and assumptions (such as load forecast, generation capacity ratings, etc.) all changed as FPL began its 2017 analyses, none of the 33 plans analyzed in 2016 could have been brought into the 2017 analyses intact without modifying each plan. Therefore, this particular plan could not have been brought over intact into the 2017 analyses. Second, one of the updated assumptions in 2017 was that the costs to continue to operate the existing Lauderdale Units 4 & 5 were projected to be $861 million CPVRR. Thus a similar plan to this Plan 3 from the 2016 analyses, or any other plan that assumed that the two Lauderdale units continued to operate, would now have to include this very significant cost. Although FPL did consider creating a similar plan for the 2017 analyses, the $861 million CPVRR cost that would have to be accounted for in that plan convinced FPL to seek a potentially more economic approach that could provide FPL's customers with similar system and regional reliability levels as FPL's Plan 2 featuring DBEC Unit 7 in the 2017 analyses.

Third, in regard to the portion of his statement that reads: "*…admitted the only reason…storage was added"*, that is not exactly what I said at this deposition. I did not use the phrase "the only reason". In fact, on lines 22 – 24 on the same page of my deposition, I stated: "We had run out of PV that was considered to be doable/reasonable in Southeast Florida and turned to

storage". In the earlier Iteration 1 and 2 analyses in 2016[3], FPL had already determined that the remaining roughly 700 MW of additional capacity needed to match that provided by DBEC Unit 7 would have incurred hundreds of millions of dollars CPVRR of new gas pipeline costs if such a large amount of capacity sited in Southeastern Florida were gas-fired.

For these reasons, FPL was interested to see how storage, combined with solar, all sited in Southeastern Florida, would fare in the 2017 analyses with updated costs for both solar and storage.

Q. Dr. Hausman's testimony addressed the evaluation of scenarios that examined a one- or two-year delay in the in-service date of DBEC Unit 7. Please comment on his handling of the DBEC "delay" scenarios.

A. Roughly midway through his testimony, Dr. Hausman makes the following statement about the DBEC "delay" scenarios which he refers to as Plans 4 (a one-year delay) and 5 (a two-year delay):

"All of the additional costs (emphasis added) *found in Plans 4 and 5, relative to Plan 2, stem from FPL's choice to delay the retirement of Units 4 and 5 by one or two years, and not from any delay in DBEC's in-service date."* (page 22, lines 1-3)

[3] This information is presented in the PowerPoint presentation that summarized the results of the 2016 analyses. This presentation was discussed in both of the depositions of me that have been occurred before this rebuttal testimony is being filed, and was attached in redacted form to Dr. Hausman's testimony as Exhibit EDH-17.

However, on page 35 of his testimony, Dr. Hausman introduces his Table 1. In his table, he categorizes 3 different types of cost impacts: (i) *"Delay Construction of Dania Beach Unit 7,"* (ii) *"Delay Retirement of Lauderdale Units 4 & 5,"* and (iii) *"Non-Unit Specific."* Thus Dr. Hausman's table, which clearly shows three types of cost impacts, contradicts his earlier statement that there is only one type of cost impact.

He then describes the result that he believes his Table 1 shows as follows:

"Table 1 also shows that, contrary to Dr. Sim's assertion, FPL's analysis (emphasis added) *finds that delaying DBEC by one or two years would actually save customers $33 million or $63 million dollars, respectively."* (page 34, starting on line 21 continuing to page 35, line 1)

This statement contradicts what is clearly shown by Table 1. If one properly accounts for all three types of cost impacts, his table shows that a one-year delay will cost FPL's customers about $11 million CPVRR and a two-year delay will cost FPL's customers about $38 million CPVRR (which is essentially what FPL has previous stated: approximately $12 million higher CPVRR costs for a one-year delay and approximately $38 million higher CPVRR costs for a two-year delay).

So how does he get to the $33 million and $63 million “savings” values in his statement? It is simple. Dr. Hausman just decided to leave out the second and third types of cost impacts in his arithmetic.

Regarding the second type of cost impact, he chose to completely ignore the specific guidance provided by FPL’s system operators to delay the retirement of Lauderdale Units 4 & 5 by the same amount of time that DBEC Unit 7’s in-service date would be delayed in order to minimize system operations risk. FPL’s analyses of the “delay” scenarios have followed that guidance. But Dr. Hausman chose to ignore that guidance and, consequently, he did not include the $33 million (for a one-year delay) and $74 million (for a two-year delay) of additional operating costs for Lauderdale Units 4 & 5. Perhaps Dr. Hausman chose to ignore the guidance from FPL’s system operators because he thought his simple reserve margin calculation trumped decades of system operations experience. This is not a prudent assumption to make when the one who is offering specific guidance has the responsibility for operating an electric utility system as does FPL witness Sanchez. I view this as an error on Dr. Hausman’s part.

In regard to the third type of cost impact, he chose to not include the system fuel penalty in his arithmetic. However, a system fuel penalty would automatically occur by not operating the Lauderdale units for an additional year or two, thus requiring other, more expensive units to make up the MWh

that the Lauderdale units would have supplied if they had not been retired for an additional one or two years. This error in logic is hard to explain because these costs are right there on the table he created. Perhaps this is a simple mistake, or else Dr. Hausman just wanted as big a "savings" number as he could conjure up, and this was a way to get there.

Q. Do you have any other comment about Dr. Hausman's discussion of the DBEC "delay" scenarios?

A. Yes. My other comment refers to Dr. Hausman's labeling of his arithmetic as *"FPL's analysis"* in the emphasized portion of his comment above. In no way does this represent FPL's analysis. He started with FPL's analysis, then threw out two of its three parts.

Q. Did he make just this one claim that his calculation was "FPL's analysis"?

A. No. He makes similar statements towards the end of his testimony:

"Building DBEC in 2022 is clearly not the most cost-effective alternative, as the Company's own analysis (emphasis added) *establishes…"* (page 42, lines 22–23)

and,

"…customer interests would be better served if the FPL (sic) delayed the project not only for the one or two years that FPL's analysis shows (emphasis added) *would save customers money…"* (page 43, lines 2-4)

Because he threw out two of the three parts of FPL's analysis, what he presents is by definition not *"FPL's analysis"*. At best, perhaps he was just imprecise in his choice of words (although he uses them repeatedly).

Q. Does Dr. Hausman comment on DBEC Unit 7 in regard to system fuel diversity?

A. Yes. He makes a number of comments regarding the DBEC unit and FPL system fuel diversity. Here are a few:

"Nor has FPL shown that DBEC promotes fuel diversity in Florida or in FPL's generating fleet". (page 6, lines 2-3)

and,

"Further extending the Company's reliance on a single…fuel…" (page 41, line 12)

Q. Are his comments consistent with the facts in this docket?

A. No. It is well known that natural gas is the fuel that FPL system most uses to produce electricity and that DBEC Unit 7 will utilize natural gas as its primary fuel. However, the very fuel-efficient heat rate of the 1,163 MW DBEC Unit 7 will result in significantly reducing the operating hours of other, less fuel-efficient gas-fired generating units on FPL's system as DBEC Unit 7 is operated instead. As a result, DBEC Unit 7 is projected to reduce system natural gas usage compared to the status quo resource plan (Plan 1). This decreases the percentage of FPL's energy mix that is fueled by natural gas, thus improving fuel diversity on FPL's system. This point was made in my

direct testimony, and the projection of the system natural gas usage for both Plans 1 and 2 were presented in response to Staff Interrogatory Number 15. Thus, contrary to Dr. Hausman's statements, DBEC Unit 7 will enhance fuel diversity on FPL's system and will not extend/increase FPL's reliance on natural gas.

Part V: Observations Regarding Dr. Hausman's Exhibits

Q. Did you or your staff review the exhibits that Dr. Hausman attached to his testimony?

A. Yes. Dr. Hausman's 44-page testimony was accompanied by approximately 580 pages of exhibits. Exhibit EDH-1 was Dr. Hausman's resume. Exhibits EDH-2 through EDH-13 can be generally described as press releases regarding utility contracts and reports that present the results of various studies. Dr. Hausman's name does not appear as an author on these reports, so it appears he did not perform any of these studies. In that sense, these exhibits appear to be an aggregation of news reports and studies done by others. The rest of his exhibits, EDH-14 through EDH-23, are excerpts from the Sierra Club's depositions of me, documents from FPL's response to discovery in this docket, and excerpts from FPL's 2017 Site Plan and the FPSC's review of Florida utilities' 2017 Site Plans.

Q. In Exhibits EDH-2 through EDH-13, how many of these hundreds of pages appear to pertain specifically to FPL and its system of generation and transmission?

A. None.

Q. Did any of these exhibits pertain to any Florida utility?

A. Yes. Exhibit EDH-3, consisting of a total of only 4 pages, pertained to the Jacksonville Electric Authority (JEA). The key point from this exhibit is presented on page 17, lines 7 through 9, of Dr. Hausman's testimony. In that excerpt, JEA representatives are quoted as stating:

"…the price of utility-scale solar PPAs has declined from $75/MWh on average in 2016 to near JEA's current fuel charge of $32.50/MWh today."

Dr. Hausman then draws the following conclusion:

"In other words, below the cost of fuel for gas-fired generation, indicating that solar PPAs are already competitive with new and even existing gas-fired generation." (page 17, lines 9 through 11)

Q. What is your reaction to this?

A. I have two reactions. First, although JEA did not specify what *"near"* to the $32.50/MWh value means, it appears safe to assume that the solar PPA values they are examining are higher than the $32.50/MWh value. Second, Dr. Hausman did not take the logical next step and compare the $32.50/MWh

value to the fuel-based $/MWh cost of the specific gas-fired generator that is the topic of this docket: DBEC Unit 7. Had he done so, using information already produced in the docket [(i) the forecasted FGT firm gas cost for the year 2022 utilized in FPL's 2017 analyses, and (ii) the full load heat rate of 6,119 BTU/kWh], the calculation would be: $3.74/mmBTU gas cost x 6,119 BTU/kWh x 1,000 kWh/MWh = $22.89/MWh. This DBEC-based value for 2022 is 30% lower than the $32.50/MWh value for 2017 quoted in Dr. Hausman's statement.

In addition, a check was made using FPL's UPLAN model to see how long it would be until FPL's system average fuel cost was projected to climb to the $32.50/MWh level. The projection was that this cost would not be reached until 2036, almost 20 years from now. If Dr. Hausman's objective was to use a *"near"* to $32.50/MWh value to show how competitive solar PPAs were becoming, it appears his unfamiliarity with FPL's system, especially in regard to how much more fuel efficient FPL's system is than most utilities, resulted instead in his testimony showing how much lower the cost of a solar PPA, particularly one in which the solar facility was sited in Florida, would have to drop to match the fuel-based cost of DBEC Unit 7 and the FPL system.

Q. Did Dr. Hausman's testimony discuss $/MWh values elsewhere in his testimony?

A. Yes. On page 16, starting on line 13, of this testimony, Dr. Hausman makes the following statement:

"For example, NEER recently announced a PPA with Tucson Electric Power delivering a combined solar and storage solution for under $0.045 per kWh, with solar portions priced at under $0.03 per kWh. This would be cost competitive with or superior to new gas-fired resources on a levelized cost basis."

Q. What is your reaction to this?

A. I was surprised that Dr. Hausman believes that a levelized cost-based comparison of resource options can provide meaningful results. Such a comparison almost invariably ignores a number of significant system cost impacts that must be accounted for in order for obtain a complete picture of the economics of resource options. Consequently, an attempt to use a levelized $/MWh cost approach for comparing resource options will almost certainly yield meaningless results.

It is for this reason that neither FPL, nor the FPSC, utilizes a levelized cost of electricity (also commonly referred to as a "screening curve") approach to make final resource decisions. FPL has addressed this topic at least twice before in DSM Goals and nuclear cost recovery dockets before the FPSC. For example, a portion of my rebuttal testimony from the 2009 DSM Goals docket (Docket No. 20080407-EG) discussed the fundamental flaws in attempting to compare resource options on a levelized $/MWh approach. That discussion is provided as Exhibit SRS-9.

Q. Even if one were to ignore the problems with Dr. Hausman's attempt to use levelized cost numbers, how meaningful is it to try to compare cost values of solar in Arizona to cost values of solar in Miami-Dade and Broward Counties?

A. It is not meaningful. If the same project were to be replicated in Florida, the cost would be significantly higher for several reasons. One of these reasons is that solar insolation in the dry Arizona climate is higher than in humid, cloudy Florida. As a result, the projected annual capacity factor for the solar component of the Arizona project could be expected to be approximately 35%. By comparison, the projected annual capacity factor of FPL's' 2017 and 2018 SoBRA facilities is approximately 27%. Thus, the Arizona solar project will have an annual MWh output that is 30% higher than Florida's SoBRA facilities (35 / 27 = 1.30). Another of these reasons is that the Arizona project had zero land costs. This $0/kW land cost component is significantly lower than the up to $450/kw land cost component previously discussed for universal solar in Southeastern Florida.

For reasons such as this, the same project installed anywhere in Florida, not even in the more expensive Southeastern Florida region, would have a $/MWh cost significantly higher than the cost for the Arizona project. This is yet another example of why the location of where a solar facility is placed has to be a significant consideration.

Part VI: Other Problematic Statements Made in Dr. Hausman's Testimony

Q. Exhibit SRS-5 presents a listing of inaccurate and/or misleading statements made by Dr. Hausman in his testimony. Are there any of these problematic statements that you would like to discuss outside of that exhibit?

A. Yes. There are eight such statements that I have not already addressed, but which I will discuss in this section of my rebuttal testimony. The first of his statements refers directly to the DBEC unit:

"…more effectively advanced through reliance on technology that is not reliant on imported fuel (emphasis added)…" (page 43, lines 13-14)

The phrase "imported fuel" is typically used to refer to fuel that is imported from a foreign country into the U.S. The new DBEC Unit 7 will run on natural gas delivered by the existing FGT pipeline which provides natural gas which is all produced in the U.S. Thus, this statement of Dr. Hausman is, at best, puzzling.

Q. What is the second of these statements that you will discuss?

A. Dr. Hausman's testimony includes the following Q & A:

"Q. Has FPL explained its use of GRM as an additional reliability criterion? A. No, FPL has not." (page 8, lines 12-13)

FPL has explained its use of the GRM reliability criterion in numerous recent Ten Year Site Plan filings and briefly discussed it again in FPL's 2017 Ten Year Site Plan. In addition, FPL's development and use of the GRM criterion was recently discussed in detail in FPL's testimony in the Okeechobee combined cycle need determination docket (Docket No. 150196-EI). More importantly for this docket, the GRM criterion did not play a significant role in the analyses which led to the selection of DBEC Unit 7 as the best choice for FPL's customers. FPL's system resource needs projected with using both the 20% minimum total reserve margin criterion and the 10% minimum generation-only reserve margin (GRM) criterion were very similar to the system resource needs projected if only the 20% minimum total reserve margin criterion were used. This is shown in Exhibit SRS-2.

Q. What is the third statement?

A. This statement is:

"FPL can even meet its reliability needs via additional transmission…" (page 12, lines 1-2)

In this section of his testimony, Dr. Hausman was discussing both FPL system and Southeastern Florida regional reliability needs. Although additional transmission can (and will - courtesy of the CSQ line) assist with meeting the Southeastern Florida regional need, it cannot by itself meet FPL system resource needs. Transmission lines move electricity from one location to

another location, but transmission alone does not result in additional generating capacity for FPL's system that can address system resource needs. Furthermore, an individual transmission line is limited in regard to the total amount of capacity and energy it can transport, regardless of the magnitude, or type, of generation that it has access to. If even more capacity and energy need to be transmitted to a region, then new transmission lines, and their costs, will be needed.

Q. What is the next statement?

A. There are two related statements that deserve attention. Both refer to Dr. Hausman's opinion that FPL's customers will unnecessarily face higher costs if DBEC Unit 7 is brought into service in 2022.

"…deferring, reducing, or even avoiding expensive supply-side generation additions, protecting them from <u>overpaying now</u> (emphasis added)*…"* (page 12, lines 13-14)

and,

"…FPL would needlessly place DBEC in service …even though <u>there is no reliability or cost benefit to doing so</u> (emphasis added)*."* (page 21, lines 1-3)

The *"overpaying now"* comment in the first statement is not consistent with the facts of this docket. In Exhibit SRS-4, page 1 of 2, the CPVRR results of the economic analyses of Plans 1, 2, and 3 are shown. Plan 2 is projected to result in FPL's customers paying $337 million CPVRR less than with the

status quo Plan 1, and paying $1.288 billion CPVRR less than with Plan 3 which features solar and storage. Therefore, FPL's customers are projected to pay significantly less on a long-term CPVRR basis with Plan 2 which features DBEC Unit 7.

On page 2 of 2 of this same exhibit, the graph shows that FPL's customers are projected to benefit almost immediately with Plan 2 compared to either Plan 1 or Plan 3. Therefore, FPL's customers are projected to pay less in the short term as well with Plan 2 which features DBEC Unit 7.

In his second statement, the "*no reliability or cost benefit*" comment regarding Plan 2 is also not consistent with the facts of this docket. The cost benefits of Plan 2 have just been addressed in the paragraph above. In regard to reliability, the net increase of 279 MW that will result from DBEC Unit 7 will enhance increase system reserve margins, thus enhancing system reliability. And because that net increase of 279 MW occurs in Southeastern Florida region, regional reliability will also be enhanced by DBEC Unit 7.

Q. What is the fifth statement that you will discuss?

A. Dr. Hausman's testimony contains the following statement:

"…FPL did not even seek to take advantage of improvements it expects in both the cost and performance of CC units." (page 20, lines 21-23)

By making this statement, Dr. Hausman ignores the fact that FPL is constantly seeking to improve the cost and performance of its generation fleet. Exhibit SRS-10 provides a summary perspective of the improvements FPL has made in its fossil fuel generation fleet from 1990 to 2016. As shown by this exhibit, the levels of FPL's improvements have been impressive.

Dr. Hausman is also ignoring portions of the direct testimonies in this docket of FPL witness Kingston and me. Both our testimonies point out that FPL is seeking, and will continue to seek, ways to improve the DBEC Unit 7 design, cost, and performance characteristics that were used in FPL's 2017 analyses. These efforts will continue even after an affirmative need determination decision would be received. If these improvements result in a projected lower CPVRR system cost for FPL's customers, then FPL will both inform the FPSC of the changes and projected CPVRR benefits, and will seek to incorporate the improvements into the DBEC Unit 7 design.

Just such an improvement was identified, and taken advantage of, regarding the recently approved Okeechobee combined cycle unit. FPL's need filing initially projected that unit would have a Summer peak rating of 1,622 MW. During the need determination process, the peak rating of this unit increased to 1,633 MW at no additional cost to FPL's customers. Then, subsequent to the affirmative need decision, FPL's continuing efforts to improve the design resulted in the Summer peak capacity rating increasing to 1,748 MW at no

additional cost. FPL's customers will benefit from the lower system CPVRR costs that are projected to result from FPL's ongoing improvement efforts that led to these changes in the Okeechobee combined cycle unit. The DBEC Unit 7 design is similarly being examined during this need determination process, and will continue to be examined after the docket concludes, for improvement opportunities that will benefit FPL's customers.

Q. What is the sixth statement?

A. On page 19, lines 25-26, Dr. Hausman recommends that FPL should:

"Use RFPs in the final procurement process to try to reduce the cost of resources when they are ultimately procured."

By making this recommendation, it appears that Dr. Hausman does not know that this is exactly what FPL's standard practice is when it is time to ultimately procure resources. This was recently explained by FPL witness Bill Brannen in his direct testimony earlier this year in the SoBRA docket (Docket No. 20170001-EI). In his testimony, Mr. Brannen explained how FPL requested bids from numerous suppliers separately for the solar panels, the inverters, the step-up transformers, and for construction of the universal solar facilities. This was also the procurement process that FPL used for the last generating unit for which a determination of need was granted by the FPSC, the Okeechobee combined cycle unit that will be in-service in 2019. It is also

the procurement process that FPL will follow if an affirmative need determination decision is granted by the FPSC for DBEC Unit 7.

Q. What is the next statement?

A. Dr. Hausman makes the following statement regarding the fact that FPL's Plans 2 and 3 are designed to have an equivalent amount of firm capacity in order to compare the economics of two resource plans, Plans 2 & 3, with equivalent levels of both system and regional reliability:

"Plans 1, 4, and 5 are not "identical" to Plan 2 in regard to annual reserve margins or regional balance, and FPL had no problem presenting an economic comparison between these plans and Plan 2." (page 24, lines 23-26)

I have two reactions to this statement. First, the Sierra Club representative is now pointing out that Plan 2 offers FPL's customers a greater level of system and regional reliability than do Plans 1, 4, and 5. And, by doing so, Dr. Hausman has contradicted his earlier statement in his testimony (that I've just discussed) in which he claims that DBEC Unit 7 offers no reliability benefits to FPL's customers. Second, FPL could have added more resources to Plans 1, 4, and 5 to make them equivalent to Plan 2 in regard to system and regional reliability. However, Plans 1, 4, and 5 are already more expensive than Plan 2 (and Plan 3 is significantly more expensive than Plan 2). The addition of more resources to Plans 1, 4, and 5 would have increased their CPVRR costs, thus

resulting in these plans being even more costly than Plan 2. Thus, any additional analytical effort to make Plans 1, 4, and 5 equivalent to Plan 2 in regard to reliability to Plan 2 was unnecessary.

Q. What is the eighth statement that you wish to discuss in this section?

A. Dr. Hausman is critical of the fact that FPL did not make extensive use of one of FPL's resource planning models, the EGEAS model, in its analyses. On page 14, beginning on line 15, Dr. Hausman states:

"While FPL has routinely used the EGEAS model to develop its ten-year site plans, it did not use this model in its 2017 analyses. Moreover, in its 2016 analysis, FPL only applied the EGEAS model in the first of four iterations. FPL explains its abandonment of the model by claiming that "the need to simultaneously solve for both FPL system and SE Florida regions requires a new analysis approach."

The EGEAS model is designed to examine a relatively small number of resource options whose costs are entered as inputs to the model. Then, using these resource options, it first develops resource plans to meet predetermined system resource needs, and performs economic analyses of these resource plans.

FPL attempted to use EGEAS in Iteration # 1 of its 2016 analyses to test its usefulness in simultaneously analyzing options that could address both system

and regional resource needs. We quickly found out that its usefulness was very limited for this type of analyses. In these analyses, resource options, sites, transmission plans, and gas pipelines, plus their costs, must all be accounted for. The problem is that one must first create a resource plan that selects the resource options, their sites, and their in-service dates before the transmission analyses and gas pipeline evaluations can even begin. Once the transmission and gas pipeline analyses have each been completed, any attempt to re-optimize, which would change the resource option selection, sites, or in-service dates, could invalidate the transmission and/or pipeline components of the plan.

The remaining three iterations in FPL's 2016 analyses, and the 2017 analyses, continued to pose similar challenges. Consequently, I discussed the scope of our analyses, and the difficulties we were having in trying to perform the analyses, with the developers of EGEAS. We discussed whether there were different ways to use the model to overcome the difficulties we were having. None were identified. We also discussed whether the EGEAS developers were aware of another model available on the market that could potentially perform these types of analyses. They were unaware of any model that could do so.

Therefore, FPL did not use the EGEAS model for further analyses after Iteration #1 in the 2016 analyses. FPL relied instead on an on-going collaborative effort from experienced personnel from a number of FPL

departments/business units to develop the resource plans. Then the UPLAN model and FPL's Fixed Cost Spreadsheet, which FPL typically uses in its resource planning work and development of its Site Plans, were used to develop the cost projections for those resource plans.

Part VII: Summary and Conclusions

Q. Please summarize your view of Dr. Hausman's testimony.

A. I will summarize my view with the following five points:

1) In his testimony, Dr. Hausman does <u>not</u> contest the major points FPL has made in its filing regarding the addition of DBEC Unit 7 in mid-2022 which include:
   - DBEC Unit 7 is projected to have lower CPVRR costs for FPL's customers by $337 million versus a status quo scenario (Plan 1) and $1.288 billion versus a plan with equivalent system and regional reliability levels that features solar and storage sited in Southeastern Florida (Plan 3);
   - Cost savings to FPL's customers are projected to begin as early as 2018 and continue for the duration of the analysis period;
   - DBEC Unit 7 will result in additional generation capacity in Southeastern Florida, thus enhancing both system and regional reliability for FPL's customers;

- DBEC Unit 7 will lower system usage of natural gas compared to the status quo scenario, thus improving fuel diversity on FPL's system; and,
- DBEC Unit 7 will lower SO_2, NO_x, and CO_2 system emissions compared to the status quo scenario.

Therefore, these key points of FPL's filing are unchallenged.

2) Instead, Dr. Hausman attempts to divert focus away from these projected benefits of the DBEC Unit 7 project in his testimony. However, Dr. Hausman, who describes himself as an *"…expert based on my expertise and experience in energy economics…"* (page 2, lines 8-9), performed no economic or non-economic analyses of any alternate resource plan that could be compared to the economics of Plan 2 which features DBEC Unit 7.

3) Instead, he merely discussed one *"illustrative"* component of a resource plan. Regarding this component, he states that, in his opinion, this potentially *"could"* be cost-competitive with DBEC Unit 7. However, in his attempt to explain how his component could lower fixed costs through his recommendation to delay the implementation of solar and storage, he neglected to account for the fact that this approach would result in: (i) increased system variable costs, (ii) increased fixed costs to acquire needed additional firm capacity resources, (iii) further increased fixed costs due to the need to delay the retirement of the Lauderdale units, (iv)

lower system and regional reliability, (v) increased system gas usage, and (vi) increased system emissions.

4) The only economic calculation that Dr. Hausman attempts is in regard to the economics of delaying DBEC Unit 7. However, even here he performed no original, independent analysis. Instead, he simply started with the analysis that FPL had provided and threw out two-thirds of that analysis. Dr. Hausman then compounds the problem with this arithmetic by repeatedly referring to his effort as *"FPL's own analysis"*. This statement in clearly inaccurate and misleading, and undermines his credibility.

5) In addition, Dr. Hausman made numerous inaccurate and/or misleading statements in his testimony. These problematic statements further undermine his credibility as a witness.

After consideration of the items listed above, I conclude that Dr. Hausman's testimony is unreliable and not worthy of serious consideration by the FPSC in this docket.

Q. Does this conclude your rebuttal testimony?

A. Yes.

BY MR. COX:

Q And I just -- I know these exhibits have already been admitted, but just to clarify for the record, Dr. Sim, did you also have Exhibits SRS-5 through SRS-10 attached to your prefiled rebuttal testimony?

A Yes.

Q And did you cause to be filed a correction to Exhibit SRS-5 on January 9th, 2018?

A Yes.

Q And do you have any other corrections or changes to your exhibits at this time?

A No, I do not.

MR. COX: And just for clarity, those exhibits, Commissioner Brown, have been identified as Exhibits 44 through 49 on the staff comprehensive exhibit list that was admitted earlier today.

COMMISSIONER BROWN: Thank you. Those are noted.

BY MR. COX:

Q Dr. Sim, have you prepared a summary of your prefiled testimony?

A Yes.

Q Could you please present your summary to the

Commission at this time.

A Yes, I would -- glad to do so.

Good evening, Commissioners. My rebuttal testimony addresses the direct testimony of Sierra Club Witness Dr. Hausman, whose testimony is most-interesting in what it does not do concerning the key facts of FPL's filing.

Dr. Hausman does not contest that Dania Beach Unit 7 is projected to save 337 million in CPVRR compared to a status-quo resource plan, Plan 1, and that these savings are projected to begin this year.

He does not contest that DBEC is projected to save almost 1.3 billion CPVRR compared to Plan 3, that is designed to offer an equivalent amount of system and regional reliability from solar and storage located in southeast Florida.

He does not contest that Dania Beach is projected to lower system natural-gas usage and lower SO2, NOx, and CO2 system emissions compared to the status-quo plan.

And he does not contest that Dania Beach is projected to enhance both system and southeast-Florida regional reliability, compared to the status-quo plan.

Instead, Dr. Hausman attempts to divert attention from these key facts, which point out the

numerous and significant benefits for FPL's customers from Dania Beach, by essentially attempting three arguments.

First, he argues against Dania Beach because reserve-margin calculations show FPL's next need occurs in 2024, two years earlier than the requested 2022 in-service date; however, he ignores the fact that recent Commission precedent, through the West County 3 need filing, exists for approving a need request of new generation two years earlier than reserve-margin calculations would call for, if the need request is based on projections of significant benefits for FPL's customers, as is the case in this docket.

Second, Dr. Hausman argues against Dania Beach in 2022 by claiming that FPL should retire Lauderdale Units 4 and 5 in 2018, but then delay Dania Beach until after 2022; however, he ignores the fact that the FPL's system operators provided specific guidance to replace as quickly as possible, in 2022, the capacity lost when the Lauderdale units are retired in order to minimize operational risk for FPL's system.

And third, he argues against Dania Beach by claiming that there quote, "could be," unquote, a more-economic plan, perhaps, by significantly delaying the implementation of solar and storage; however, he ignores

the fact that, although this delay could reduce fixed costs, such a delay will also automatically significantly increase system variable costs, increase system gas usage -- usage and system emissions, and lower system and regional reliability. Most telling, he offers no economic analysis to support his "could be" claim.

Dr. Hausman's testimony also contains numerous inaccurate and misleading statements. And, in summary, I conclude that his testimony is not reliable and is not worthy of serious consideration in this docket.

Thank you.

MR. COX: Commissioner Brown, Dr. Sim is tendered for cross-examination.

COMMISSIONER BROWN: Thank you.

Sierra Club?

MR. LENOFF: Thank you, Madam Commissioner. Can I have one moment to prepare myself?

COMMISSIONER BROWN: Sure.

MR. LENOFF: Thank you.

COMMISSIONER BROWN: I thought you had 15.

MR. LENOFF: Thank you.

EXAMINATION

BY MR. LENOFF:

Q Ready when you are, Dr. Sim.

A Thank you. I'm ready to go.

Q Okay. According to FPL, since January 1st, 2012, there have been only three PPAs available as power -- three power-purchase options that have been available to FPL; is that correct?

A I'm not familiar with the number, nor with the phrasing of "available to FPL."

Q Okay. So, to your knowledge, there have been -- accord- -- to your knowledge, according to FPL, there have been only three power-purchase options available to FPL.

A I'm sorry. I just don't understand the concept of available -- options available to FPL.

MR. LENOFF: Okay. I would like to move -- or I would like to use --

COMMISSIONER BROWN: Exhibit?

MR. LENOFF: -- an exhibit, yes.

COMMISSIONER BROWN: All right. Staff, could you help Counsel?

So, we are on 71.

MR. LENOFF: Thank you.

MR. COX: Could I ask just a clarification question to Counsel? Is this an exhibit that Dr. Sim sponsored in the case -- an interrogatory -- I mean a response, I should say, a

discovery response that he sponsored.

MR. LENOFF: I am not positive about that -- that question.

MR. COX: And it looks like there's two interrogatories. So, do you know if he sponsored either one?

MR. LENOFF: I -- I believe -- and if you would like me to look at it, I believe that this interrogatory response was sponsored by Heather Stubblefield.

MR. COX: And she testified earlier today.

MR. LENOFF: She did.

MR. COX: Could --

MR. LENOFF: She did testify earlier today. I have a -- I would like to use this document for impeachment purposes. I don't believe that we have -- that this Commission has any rule that prevents me from using a document for impeachment purposes that was produced to Sierra Club in discovery and for -- can I --

COMMISSIONER BROWN: You can -- you can try to pro- -- go -- proceed ahead, and we'll stop you if there's any problems.

MR. LENOFF: All right. Thank you very much.

COMMISSIONER BROWN: All right. Please

proceed.

MR. LENOFF: Thank you.

COMMISSIONER BROWN: Oh, wait. Let me mark it 71. And the title is FPL's response to Sierra Club's fourth rog, No. 37.

Dr. Sim, you have a copy of it in front of you?

MR. COX: Commissioner, I think it's also 36. I believe there's two --

COMMISSIONER BROWN: Thank you.

MR. LENOFF: That's correct. Thank you very much.

COMMISSIONER BROWN: Thank you. Is it on the second page? Oh.

MR. LENOFF: Yes, there are --

COMMISSIONER BROWN: Third page.

MR. LENOFF: Yeah, there are two responses attached.

COMMISSIONER BROWN: Okay. So, change of title: FPL's response to Sierra Club's fourth rog, No. 37 and 36 -- 36 and 37.

MR. LENOFF: Thank you, Commissioner.

(Whereupon, Exhibit No. 71 was marked for identification.)

///

BY MR. LENOFF:

Q Dr. Sim, FPL's -- on -- on Interrogatory Response No. -- FPL's response to Interrogatory No. 37 states that FPL considers power purchases, quote, "presented," end quote, to FPL and power purchase -- purchases, quote, "available," end quote, to FPL as the same when it comes to considering potential power-purchase opportunities; is that correct?

A That's what it says.

Q Okay. And do you have any reason to doubt the -- the fact that this is FPL's response to Interrogatory No. 37?

A Although I did not sponsor it, I have no reason to doubt. It's not our response.

Q Okay. So, since FPL considers power purchases presented and -- quote "presented" and, quote, "available," I would like to turn back to the other page, No. 36, for the other -- response to Interrogatory No. 36.

And please confirm for me that the question presented is: Please describe any and all power-purchase options that have been presented to FPL since January 1st, 2012; is that correct, the first sentence there?

A Yes, it is.

Q Okay. And in FPL's response, do you see three power-purchase options listed there?

A Yes, I do.

Q And do you see that all of those are biomass facilities as in the -- the column for description, filled in by FPL?

A Yes, I do.

Q And do you have any reason to doubt that those are the -- the, quote, "Any and all power-purchase options that have been available to FPL since January 1st, 2012"?

A I think it would help if you -- if we would just substitute the word "presented." That I understand much better than "available."

Q Okay. But --

A And I have no reason to doubt that these were presented to FPL.

Q Right. So --

A And in fact, they were in our --

Q So -- Dr. -- Dr. Sim --

A -- ten-year site plan for at least a year.

COMMISSIONER BROWN: Please, let him continue and finish his sentence.

MR. LENOFF: Thank you.

COMMISSIONER BROWN: Thank --

THE WITNESS: I'm done. Thank you.

COMMISSIONER BROWN: Okay.

BY MR. LENOFF:

Q Okay. And we established that FPL considered "presented" and "available" as the same thing as when considering power-purchase options, as stated in the response to Interrogatory No. 37, correct?

A I would suggest we use the word "presented."

Q But --

A "Available" may mean something different to me in different contexts. So, it's easier for me to follow if we just use the terminology "presented to FPL," please.

Q Okay. So -- but I'm asking about -- I'm interested at this moment in FPL's response to Interrogatory No. 37. FPL referred me back -- if we can read the rest of FPL's response where it says, please confirm for me, Dr. Sim, that it says: Therefore, please see FPL's response to Sierra Club's fourth set of interrogatories, No. 36.

Does it say that in FPL's response?

A It does and --

Q So --

A -- 36 talks about, had been presented to FPL.

Q Right. So, FPL considers -- FPL considers

"available" and "presented" to be the same thing as -- to be -- as the same when it comes to considering potential power-purchase opportunities. Am I reading that correctly?

A You are reading it correctly. And that is clearly what the sponsor of this interrogatory meant. They interpreted those two words to mean the same.

Q Okay.

A I may not interpret it the same way, and you're asking me the question, so --

Q Okay.

A -- if you could --

Q What you --

A If you could use the word "presented," it will speed things up.

Q All right. Thank you. What does the word "presented" to -- what does the phrase "presented to FPL" mean to you?

A In this context, I understand it to mean someone came forward -- a third-party came forward and presented power-purchase options to FPL, which we considered -- and I'll stop there and let's see where you're going.

Q For -- for purposes of this docket, did FPL perform -- strike that question.

And you're not sure that that definition that you just gave me of "presented" is the same as the sponsor of this exhibit; is that correct?

A I'm saying I interpret the word "presented," and "available" generally as two different things.

Q Okay. Do you --

A And I -- I will point out, I don't discuss any of this in my rebuttal testimony.

Q Do you -- do you discuss PPAs in your rebuttal testimony?

A Certainly not these PPAs. And in general, I didn't discuss PPAs.

Q But specifically, you did discuss PPAs.

A If you can point me in my rebuttal testimony to where I discussed PPAs, it might speed things along.

Q Yeah, I believe that was on Pages 41 through 43 of your rebuttal testimony.

COMMISSIONER BROWN: Line 21 on -- on Page 41.

A Yes; although, I did discuss PPAs, but only in response to a discussion in Dr. Hausman's direct testimony where he was talking about solar PPA values. And we were discussing PPAs that had been offered to JEA.

MR. LENOFF: Okay. So, earlier, we had a discussion about, Commissioner -- Madam

Commissioner.

COMMISSIONER BROWN: Oh, sorry.

MR. LENOFF: That's fine.

Earlier, we had a discussion about whether there would be an objection to moving an exhibit into the record. Sierra Club would -- intends to move to put this into the record. So, I just wanted to, like, clear that up right now.

COMMISSIONER BROWN: You can continue with your questions.

MR. LENOFF: Okay.

COMMISSIONER BROWN: Thank you.

MR. LENOFF: Right.

MR. COX: I'm sorry. Sierra Club intends to move which -- the exhibit --

COMMISSIONER BROWN: He's talking about 71.

MR. LENOFF: 71, yes.

MR. COX: Okay.

BY MR. LENOFF:

Q Dr. Sim, during your 2016 analysis, for purposes of this docket, you considered a plan that included 983 megawatts of solar PV resources and no storage, correct?

A Yes. We're going back to my direct testimony, but yes.

Q Okay. In your rebuttal testimony, do you not discuss your 2016 analysis? Just give me a yes --

A I --

Q Just give me --

A -- don't recall that specific plan being discussed in my rebuttal.

Q Well, I mean, that actually leads me to my next question -- so, thank you, Dr. Sim -- that you, in fact, did not consider this plan at all after the 2016 analysis; isn't that correct? Just give me a yes or no, please.

A Yes, and we did not consider any of the 2016 plans in our 2017 analysis because we could not carry them forward. Too many things -- load forecasts, available generation, et cetera, had all changed.

Q Okay.

A So, we had to --

Q And --

A -- create new resource plans.

Q Okay. And yet, this was -- this plan that we're discussing, which had 983 megawatts of solar and no storage, was one of the most-competitive and cost-effective plans that you considered in the 2016 analysis, correct?

A It was. And that's one of the reasons why we

carried a plan with a large amount of solar forward into 2017.

Q And just a yes-or-no question is all I'm looking for here. The plan that you considered in --

COMMISSIONER BROWN: Counsel, as Chairman Graham alluded to earlier in his opening remarks, the witnesses are allowed to answer yes or no and provide a brief statement elaborating or clarifying their answer. So, that is our policy here, and that is what I will uphold.

So, the witness is allowed to answer.

MR. LENOFF: Thank you.

THE WITNESS: And I'll try to keep it short. Thank you.

COMMISSIONER BROWN: Thank you.

BY MR. LENOFF:

Q The plan that you ended up considering in 2017 -- that included the only plan that you ended up considering in 2017 -- that included solar, had resources that were not included in the 2016 plan, which was found to be cost-effective; is that correct?

A No, I'll disagree with the premise of your question. We did not find that particular plan with 983 megawatts of solar to be cost-effective. I think it was ranked No. 4 on the cost-effectiveness ranking. So,

it certainly was not the most cost-effective plan.

Q Okay. Can I refer you to ex- -- Dr. Hausman's exhibit, EDH- -- it's -- it's staff's -- it's marked on staff's exhibit list, No. 38. It's EDH-18.

A I do not have all of his exhibits with me, and that is one that I do not have. So, if you can provide me a copy, I'm -- I'm happy to take a look at that.

Q Give me a moment. I'll do that for you.

A Thank you.

COMMISSIONER BROWN: If counsel for FPL has an accessible copy of it to aid the witness or to provide the witness, that would expedite this line of questions.

THE WITNESS: Also, if it will help, I have a copy of the economic ranking of all 33 plans from 2016.

MR. LENOFF: Commissioner, that --

COMMISSIONER BROWN: Please show it to FPL's counsel first before you provide it to the witness.

MR. LENOFF: Sure.

COMMISSIONER BROWN: Thank you, Mr. Donaldson.

MR. DONALDSON: You're welcome.

COMMISSIONER BROWN: Dr. Sim, are you there?

THE WITNESS: Yes. Can you clarify, please, whether it was Exhibit 17 or 18?

BY MR. LENOFF:

Q 18.

A Thank you.

Q You're familiar with this exhibit, right? This is the exhibit that we discussed during your deposition that had to be edited by FPL?

A Yes, there was one correction on it. I am familiar with it. Thank you.

Q Yeah. And you see that --

COMMISSIONER BROWN: Could you speak a little bit closer into the microphone, please? Thank you.

MR. LENOFF: Thank you, Commissioner, yes.

BY MR. LENOFF:

Q You see that the plan whose economic -- or which has the economic ranking No. 4 has 983 megawatts of PV in southeast Florida; is that correct?

A That's correct. And again, it is the fourth-ranked plan. So, it is not the cost-effective plan coming out of 2016.

Q Okay. And this plan does not include any solar -- or storage; is that correct?

A That's correct. It does not.

Q And -- and you're -- the only plan that you considered in 2017 that included any solar resources at all includes a large amount of storage; is that correct?

A Yes, it included more solar than the 983, and it did include a significant amount of storage.

And if you would like an explanation of why that is, I'm happy to give it.

MR. LENOFF: No. I think I'm done with my questions. Thank you, Dr. Sim.

THE WITNESS: Thank you.

COMMISSIONER BROWN: Thank you.

Office of Public Counsel. Ms. Christensen.

MS. CHRISTENSEN: Thank you. I only have maybe one or two questions.

EXAMINATION

BY MS. CHRISTENSEN:

Q Referring to Page 7 of your rebuttal testimony --

A Just a moment, please.

Q Certainly. And let me know when you're there.

A Page 7, I'm there. Thank you.

Q Okay. And I'm specifically referring to Lines 9 through 11. And in your testimony, you discuss: In 2017 -- the 2017 analyses primarily focused on three resource plans that were based on the most-promising resource options identified in the 2016 analysis; is that correct?

A That's what it says, yes.

Q Okay. And FPL is part of its -- these 2017 analyses and -- in its evaluation of the need-determination proposals that are -- it's putting forth today did not consider any third-party bids or third-party options because they did not do an RFP; is that correct?

A Yes, because we did not think such an RFP was needed.

MS. CHRISTENSEN: Okay. Thank you. Nothing further.

COMMISSIONER BROWN: Staff?

MR. MURPHY: No questions.

COMMISSIONER BROWN: Thank you.

Commissioner Clark, you want -- you have a question?

COMMISSIONER CLARK: If I need to repeat it, I would be glad to, but I -- I am con- -- interested in learning what happens to excess power that you sell under a PPA agreement and the revenues associated with it.

THE WITNESS: Yes, sir. Let me -- let me try to address that. In a given year, if we find that we have excess capacity, either for any period of time, be it a month, perhaps, even smaller than that, or for the entire year, we look and see what

that amount is.

Part of that decision is made by -- a large part of that decision as to how much we have available is made by Mr. Sanchez and his operational team. Then, we have a group, the Energy Management and Trading group, which looks to see if we have a buyer.

Terms are discussed. Prices are discussed. If there is a buyer and -- a willing buyer and a willing seller, chances are very good that the -- that the sale will be made. Any revenues that come in from that sale are used to offset costs to our customers, to the -- to the benefit of our customers.

And I believe we've had the arrangement in the last two settlements under, I believe, asset optimization. So, sales are made, if it's possible to make them, where it benefits both our customers and the third party.

COMMISSIONER CLARK: Thank you -- which leads to my question. In looking -- and realizing what Mr. Sanchez said about reliability and taking that all into account, assuming your reliability is met, and you have, for this short period of time, what seems to appear to be a pretty significant

additional capacity above your coincident peak requirements, would those megawatt hours be sold on the open market and potentially reduce costs to consumers during this two- to three-year window of time?

THE WITNESS: Let me see if I have the premise correct. I believe you're discussing, if Dania Beach is added in 2022, we would have a somewhat-higher-than 20-percent reserve margin.

COMMISSIONER CLARK: Correct.

THE WITNESS: So, yes, I think that would certainly enhance the -- the opportunities by which sales could be made to the benefit of our customers because it would offset costs.

COMMISSIONER CLARK: Thank you.

COMMISSIONER BROWN: Okay. Redirect.

MR. COX: Thank you. I think I just have one question, and really mean it this time.

EXAMINATION

BY MR. COX:

Q Dr. Sim -- Dr. Sim, you were asked a minute ago about an exhibit to Dr. Hausman's testimony, EDH-18?

A Yes.

Q And you started to answer the question, but weren't allowed to finish the answer. I wanted to give

you that opportunity, where you were asked about a -- a plan for solar that was in that -- those 33 options considering the 2016 analysis had a large amount of storage.

A Yes.

Q Could you -- could you finish your answer, explaining what you wanted to explain about that particular plan that you looked at?

A I'll certainly try. When we came out of the 2016 analysis, we had done -- we had looked at a number of resource plans that, if we built gas-fired capacity in southeast Florida, we would have very large gas-pipeline expenses for everything other than a modernization at the Lauderdale site, to which we already had a pipeline going to the site.

We looked at resources located outside of southeast Florida. And in some cases there -- in most of those cases, if not all, there were smaller gas-pipeline costs, laterals instead of new pipelines, but there were also significant transmission expenditures.

So, the only plan we had at the beginning of 2017 was the Dania Beach plan, which did not require new pipeline, did not require new transmission lines. We were looking for, is there a way to avoid those significant costs in the plan, and to av- -- and to tack

that on to a retirement of Lauderdale, which would avoid 861 million CPVR dollars of operation expense.

MR. LENOFF: Commissioner, can I object? This is far beyond any- -- this is just unrelated to anything that was asked in cross-examination. I didn't ask about the Dania Beach plant, and that's all he's talking about.

MR. COX: Let me fine-tune the question a little bit.

BY MR. COX:

Q So, Dr. Sim, I think we were talking about -- with Mr. Lenoff about, looks like, Plan No. -- is it Plan No. --

COMMISSIONER BROWN: Mr. Cox, could you speak a little more --

MR. COX: I'm sorry.

BY MR. COX:

Q Plan No. 3 on that exhibit; is that correct?

A I think it was No. 4, the --

Q Plan No. 4.

A -- 983 megawatts of solar. And I'm setting the predicate for why we moved away from that approach and why we moved to an approach where we had a significant amount of storage.

Q I think the specific question was why --

you -- that -- that plan did not have any storage in it, correct?

A That's correct. And my understanding of the question is: Why did you, then, create Plan 3, that had a significant amount of storage.

MR. LENOFF: Comm- --

A And I'm trying to walk you through the several steps that led to the decision as to why storage was needed.

Q Right. That was --

MR. LENOFF: Commissioner --

(Simultaneous speakers.)

COMMISSIONER BROWN: Hold on, please. Stop -- please stop the speaking over each other.

I was allowing Dr. Sim to continue with his rationale, and I'll continue to allow him, but please focus on the specific question that Mr. Cox asked you and -- and make it more succinct.

THE WITNESS: All right. If I may ask a clarifying question, is -- is the issue you want to understand why we had a significant amount of storage in Plan 3?

BY MR. COX:

Q That was the question I was getting to, yes.

A Okay. By trying to avoid the $861 million of

having Lauderdale 4 and 5 in the plan, which we did, in that plan, in 2016, we have to take out 884 megawatts, the Lauderdale 4 and 5 units. That leaves a hole.

The only way we could avoid an expensive gas pipeline into southeast Florida or avoid -- and/or avoid significant transmission-line costs was to meet all of the resource need, matching up with Dania Beach in 2022.

We maxed out the amount of universal solar, 433 megawatts. We maxed out what our projection was for distributed generation solar. That was 1,033 megawatts, which equated to roughly three to 400 megawatts of firm capacity from solar. So, to match the 1,163, the only option we had left which we could cite in southeast Florida was storage.

MR. COX: Thank you, Dr. Sim. No further questions.

COMMISSIONER BROWN: All right. We -- this witness has just one, 71, associated with him for -- proffered by Sierra Club. Would you like to move that into the record?

MR. LENOFF: Yes, we would.

COMMISSIONER BROWN: Any objection?

MR. COX: Yes, we would object. I think that was -- this was 71, correct?

COMMISSIONER BROWN: Correct.

MR. COX: So, this was one where he was using it for impeachment. I -- I objected, saying this was from another witness' sponsor of these answers.

He also clarified that he didn't define "available" and -- what was the other -- the other word -- "available" -- "presented" at the same -- as this -- so, you know, I didn't see that it impeached him, and I didn't see that he agreed with the formulation of the term.

So, I don't see why it should be admitted for Dr. Sim. It could have been asked of -- of Witness Stubblefield earlier, but it was not.

COMMISSIONER BROWN: Your objection is noted; however, he was able to cross-examine the witness with this, and the witness was able to answer it. So, we're going to go ahead and enter that into the record.

(Whereupon, Exhibit No. 71 was received into evidence.)

COMMISSIONER BROWN: Okay. Would you like this witness excused?

(Brief pause.)

THE WITNESS: Apparently not.

COMMISSIONER BROWN: He can stay, but --

MR. COX: I'm sorry. He was --

COMMISSIONER BROWN: Would you like Dr. Sim excused?

MR. COX: Could you -- could Dr. Sim be excused? Thank you.

COMMISSIONER BROWN: Thank you.

Thank you, Dr. Sim. Have a good night.

THE WITNESS: Thank you.

COMMISSIONER BROWN: So, that was our last witness of the evening.

And we have no other exhibits to address at this time. They've all been moved into the record. Is that correct, legal?

MS. HELTON: By my account, yes.

COMMISSIONER BROWN: By my -- okay.

So, we have additional matters to the address. First, do any of the parties have any additional matters to address before we move to staff? Any concluding matters or -- all right.

Staff.

MR. MURPHY: Just to remind the parties that the transcripts will be due on January 22nd, and briefs will be no longer than 40 pages total, and that briefs will be due on January 29th. And I believe that the pre-hearing order was modified so you get 75 words to summarize your position.

I think that's everything.

COMMISSIONER BROWN: Okay. Do any of the parties have any other matters to address at this hearing?

Commissioner Clark, any comments, concluding remarks?

All right. Thank you all for this hearing and for your participation. And I hope you have a great night.

This concludes our hearing.

MR. COX: Thank you.

COMMISSIONER BROWN: Thank you. Safe travels. Thank you.

(Whereupon, proceedings concluded at 7:33 p.m.)

CERTIFICATE OF REPORTER

STATE OF FLORIDA)
COUNTY OF LEON)

I, ANDREA KOMARIDIS, Court Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 22nd day of January, 2018.

ANDREA KOMARIDIS
NOTARY PUBLIC
COMMISSION #GG060963
EXPIRES February 9, 2021