BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 20170266-EC
PETITION TO DETERMINE NEED FOR SEMINOLE COMBINED CYCLE FACILITY, BY SEMINOLE ELECTRIC COOPERATIVE, INC.
_____/

DOCKET NO. 20170267-EC
JOINT PETITION FOR DETERMINATION OF NEED FOR SHADY HILLS COMBINED CYCLE FACILITY IN PASCO COUNTY, BY SEMINOLE ELECTRIC COOPERATIVE, INC. AND SHADY HILLS ENERGY CENTER, LLC.
_____/

VOLUME 3
PAGES 301 through 495

PROCEEDINGS: HEARING

COMMISSIONERS PARTICIPATING: CHAIRMAN ART GRAHAM
COMMISSIONER DONALD J. POLMANN
COMMISSIONER GARY F. CLARK

DATE: Wednesday, March 21, 2018

TIME: Commenced: 3:00 p.m.
Concluded: 6:58 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

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| 109 - FRCC 2017 load and resource plan excerpts | 315 | 365 |
| 110 - Tampa Electric Company 2017 ten-year site plan excerpts, number of customers and winter-peak demand schedules 2.1, 2.2, 2.3, and 3.2 | 316 | 365 |
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P R O C E E D I N G S

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CONTINUED EXAMINATION

BY MR. PERKO:

**Q And Mr. Wood, have you prepared a summary of your testimony?**

A Yes, I have.

**Q Could you please present it to the Commission at this time.**

A Good afternoon, Chairman and Commissioners. My name is Kyle Wood. I am the manager of load forecasting and member analytics at Seminole Electric Cooperative.

I hold a Master's Degree in economics from the University of South Florida. I have been employed at Seminole for nearly six years, working exclusively on load forecasting and related matters. Prior to that, I was a senior economic analyst at Data Consulting Group for nearly four years.

My primary responsibility at Seminole is to develop a fair and reasonable outlook to -- to Seminole, our members, and our member coop- -- our member consumers.

The primary purpose of my testimony is to

present Seminole's load forecast. I also discuss the conservation and demand-side measures implemented by Seminole and its members. I also discuss the analyses of DSM and conservation measures presented by Mr. Hines.

Seminole's load forecast is the aggregate of nine individual forecasts, one for each member cooperative. I forecast the number of consumers, energy, and demand requirements for each member.

The Seminole system is not unlike the state of Florida as a whole. Seminole serves approximately 1.6 million people, businesses, farms, and schools, and portions of 42 of Florida's 67 counties. Seminole's consumer base, like Florida, is nearly 90-percent residential.

Generally, consumer growth rates in Seminole's system have historically exceeded growth rates in the state of Florida as a whole. Over the past ten years, residential consumer growth in the Seminole system was nearly 1 percent annually, on average.

The state grew at a slightly-lower rate of 0.6 percent. Over the next ten years, residential consumer growth is expected to be 1.5 percent annually on average in the Seminole system and 1.4 percent in Florida.

We serve large, rural areas that provide the

opportunity for new growth. We serve some of the fastest-growing counties in the United States that surround sprawling metropolitan areas outside of Sarasota, Tampa, and Jacksonville. We also serve the Villages, one of the fastest-growing communities in the United States.

Seminole is unique from the -- from the state of Florida as a whole in that it is a winter-peaking utility. This means that our average consumer requires more capacity in the winter than the summer. Despite this difference, however, our members' winter-capacity need, per consumer, is projected to be 4.4 kilowatts, on average. We utilize a robust, data-driven forecast methodology that takes all of these factors into account in deriving our load forecast. I am confident that this is a reliable estimate of our power requirements.

Thank you for your time and attention today.

MR. PERKO: We proffer the witness for cross-examination.

CHAIRMAN GRAHAM: Thank you.

Mr. Wright.

MR. WRIGHT: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WRIGHT:

**Q Good afternoon, Mr. Wood.**

A Good afternoon.

**Q Other than the errata that was discussed a bit ago, do you have any other changes to make to your testimony?**

A No.

**Q Any other changes to your exhibits?**

A No.

**Q Approximately how many ultimate consumers does -- or rely on Seminole for their bulk electric power supply?**

A Approximately 780,000.

**Q 780?**

A Thousand.

**Q Thousand. Okay.**

**And they represent roughly 1.6 million people?**

A People, businesses, farms, schools, yes, sir.

**Q At Page 4 of your direct testimony, you state that winter peak has averaged about 3,300 megawatts over the past three years?**

A I believe I did, yes, sir.

**Q Was that an -- an average of the actual peaks served during those three years?**

A I believe we're talking winter peak. It would be the average of the winter peak over the past three years.

**Q That's my understanding. I just want to make sure that we are having effective communication.**

**What -- what is your role in preparing the ten-year site plans?**

A I prepare a certain number of tables that show the total number of consumers, consumers by rate class, consumer sales, winter and summer demand, net energy for load. I also provide some written texts regarding the load forecasts.

**Q I'm not seeing it right this second, but I believe that you testified that Seminole's projected winter peak is projected to grow from 3,398 megawatts, either in 2017 or '18, to -- for 3,909 megawatts 2026?**

A I believe that's the winter of '26-'27.

**Q '20- -- okay. Okay. And that's -- that's on Page 11 of your testimony.**

**You also talk about filing your load forecasts with the RUS, correct?**

A Yes, sir.

**Q Have you ever had a forecast rejected by the RUS?**

A Not to my knowledge.

**Q On Page -- Page 13 of your testimony, you talk about Seminole's wholesale rate structure providing "Members" -- capital "M," Members -- with price signals**

**that reflect Seminole's cost of supplying power in aggregate, correct?**

A That's correct.

**Q And by this, you're referring to your wholesale pricing, correct?**

A Yes.

**Q And when you use the phrase "in aggregate," do you -- do you mean that these are what are sometimes called "average embedded costs"?**

A I'm referring to an aggregate, the member coincident peak with Seminole.

**Q Okay. And what is the basis for the price that is charged? Is it -- is it an average cost of all Seminole's costs divided into demand and energy components?**

A The price that I'm speaking to here is with regards to the capacity.

**Q Does the price charge the capacity -- can I use the term "capacity charge" or "capacity price"?**

A Yes.

**Q Okay. Does the capacity charge reflect the average of all of Seminole's capacity-related costs as identified in some cost-of-service study?**

A I would have to say that's not my area of expertise.

**Q Is the capacity price based on marginal capacity costs or incremental capacity costs, if you know?**

A What I know is that the capacity cost is based on the aggregate coincident demand that our members have with Seminole.

**Q I understand that that's the -- the basis for imposing the charges on the members. Correct so far?**

A Yes, sir.

**Q What I'm trying to get at is what the cost is that is spread on that basis and charged to the member co-ops.**

A Seminole charges both a capacity charge and a time-of-use fuel charge. The intricacies of that charge, I am not opining to.

**Q So, do you know -- do you know what the cost component of the capacity charge is?**

A It's the cost that Seminole takes on to provide power to its members.

**Q Does Seminole do a cost-of-service study to determine what the capacity charge and the energy charge are to be?**

A I am not involved in that process, if Seminole does do one.

**Q Okay. Do you know whether the wholesale**

**capacity charges reflect the cost of any specific unit?**

A Again, I'm -- that's not my area of expertise.

**Q On Pages 15 and 16, you talk about the various DSM programs that are offered by Seminole's member cooperatives, correct?**

A Yes, sir.

**Q And I think, over on the top of Page 17, you indicate that the cumulative winter-peak-demand savings in 2015 were approximately 85 megawatts, correct?**

A Yes, sir.

**Q Most of that is voltage reduction, is it not?**

A Yes.

**Q In fact, 61 megawatts or so is voltage reduction?**

A That's correct.

**Q Do you know what the peak savings from the commercial coincident peak rates is?**

A Approximately 18 megawatts.

**Q How many member co-ops offer rebates?**

A Currently one.

**Q And that's Clay Electric, correct?**

A Yes, sir.

**Q Do all of the member cooperatives offer all of the other programs?**

**I'll ask it differently. Does each member**

**co-op -- we know that only Clay offers rebates. Do each of the member co-ops offer all of the other programs that are listed here?**

A I can't say for sure whether or not they offer all of these.

**Q Do you know whether that specific information is in Mr. Hines' testimony or exhibits?**

A Mr. Hines did conduct DSM and energy-efficiency analysis. I believe that would be in his report.

**Q Again, just to be clear, my question was: Do you know whether each of the other member co-ops offers each of the programs listed here. And you said you don't know. And my question, then, is: Do you know whether that's included in Mr. Hines' testimony or exhibits?**

A My answer was that I don't know if they offer all of these programs, which was the question that you asked.

**Q Right.**

A I do not know if they offer all of these programs.

**Q I understand that. And then I just want to -- do you believe that that's included in Mr. Hines' testimony and exhibits?**

A Mr. Hines did do a savings-analysis report. And I believe that answer would be in his report.

**Q On Page 19, you make the statement that, as an additional point of comparison, TECO, which is comparable in size to Seminole in terms of consumers and annual peak demand, is expected to achieve Commission-approved DSM goals of approximately 56 megawatts in summer-demand reduction and 78 megawatts in winter-demand reduction over the course of the same ten-year period, correct?**

A Correct.

**Q Do you mean to suggest that the Commission should accept your 85 megawatts as being an accurate estimate of potential savings because it's comparable to Tampa Electric's?**

A No, sir.

**Q Do you know whether Tampa Electric's approved DSM goals and programs include voltage reduction?**

A I would have to say I do not believe that it does, but I do not know.

**Q I can show you a copy of the Commission's order approving the demand-side management plan of Tampa Electric Company. And I'll aver to you that I can't find a -- any reference to voltage reduction in it. Would you like to take a look at it and see if you can**

**find it?**

A I would have to say I would agree with you.

**Q Thank you.**

**How is it that you characterize voltage reduction as a demand-side measure?**

A System -- or Seminole offers its members a coordinated load-management-reduction program. Voltage reduction is one of the programs. Seminole coordinates with its members and signals when a peak is expected to occur. Voltage reduction is a way for members to lower their volt- -- their demand at the time of the Seminole coincident peak.

**Q Isn't it true that when voltage reduction is implemented, that's a reduction in the amount of electrical energy supplied to cust- -- member consumers?**

A Within reasonable limits.

MR. WRIGHT: I have a couple of exhibits, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: Thanks.

CHAIRMAN GRAHAM: I think we're at No. 108.

MR. WRIGHT: Thank you.

That will be 108. Thank you.

Mr. Chairman, I was slightly mistaken. I did have three. And the first one that I would like

marked as -- as 108 is the document titled "PSC 2017 annual report on FEECA activities excerpts."

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: I do have copies of the complete document, if anybody wants to see or use -- use them. I -- I brought three copies --

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: -- which is kind of the usual practice.

(Whereupon, Exhibit No. 108 was marked for identification.)

MR. WRIGHT: I would like to mark as No. 109 the document that has in the description line "FRCC 2017 load and resource plan excerpts."

CHAIRMAN GRAHAM: Okay.

(Whereupon, Exhibit No. 109 was marked for identification.)

MR. WRIGHT: And as Document No. -- I'm sorry -- Exhibit No. 110, the document with the description "Tampa Electric Company 2017 ten-year site plan excerpts, number of customers and winter-peak demand schedules 2.1, 2.2, 2.3, and 3.2." Okay?

CHAIRMAN GRAHAM: All right.

MR. WRIGHT: Thank you.

(Whereupon, Exhibit No. 110 was marked for identification.)

CHAIRMAN GRAHAM: Mr. Perko, do you have copies of those three documents in front of you?

MR. PERKO: Yes, I do, Mr. Chairman.

CHAIRMAN GRAHAM: Okay.

Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Mr. Wood, are you marking these?

THE WITNESS: I did.

CHAIRMAN GRAHAM: Okay. Thank you.

THE WITNESS: Yes.

BY MR. WRIGHT:

**Q Mr. Wood, are you familiar with FEECA?**

A Yes.

**Q And that's the Florida Energy Efficiency and Conservation Act, correct?**

A I agree.

**Q Have you ever reviewed the PSC's annual report on FEECA activities?**

A I believe I have.

**Q I would like to ask you to look at the excerpt, which is marked as Exhibit 108. If you would, please, turn to Page 3 of -- the numbered Page 3 of the**

**document, which is the last page of the exhibit.**

**And I would like you to -- to ask you to read the first sentence under the heading, "2016 achievements and related program costs." If you would, read that out loud, please.**

A "Since FEECA's inception, it is estimated that DSM programs offered by FEECA utilities have reduced summer-peak demand by 7,813 megawatts and winter-peak demand by 7,224 megawatts."

**Q Thank you.**

**I would like to ask you to look at the exhibit marked No. 109, which is the FRCC 2017 load and resource plan excerpts.**

**Are you familiar with the FRCC cumulative load and resource plan?**

A Yes, I am.

**Q Thank you.**

**So, you'll agree that the block of this table at the bottom of the page shows the summary of capacity demand and reserve margin at the time of winter peak, correct?**

MR. PERKO: I'm going to object, Your Honor. Lack of foundation. This document hasn't been authenticated as that document. I don't know if the witness can say that this is the actual FRCC

load and resource plan. It hasn't been authenticated.

CHAIRMAN GRAHAM: He said he has the entire document. If you would like a copy of it, I can have him give that to both you and the witness, if you're doubting the authenticity of this excerpt.

MR. PERKO: My problem is -- my problem is this is hearsay. Mr. -- it could look like the FRCC regional load and resource plan, but I don't know where it came from. It hasn't been authenticated.

CHAIRMAN GRAHAM: Do you have the entire document?

MR. WRIGHT: Yes, sir.

CHAIRMAN GRAHAM: Can I give Mr. Perko and the witness a copy of the document?

MR. WRIGHT: Yes, sir.

I'm just giving the witness a chance to look at this, Mr. Chairman.

CHAIRMAN GRAHAM: Sure. Sure.

MR. WRIGHT: Thank you.

CHAIRMAN GRAHAM: All right. Just tell him where it is in the document.

BY MR. WRIGHT:

**Q Okay. Mr. Wood, Seminole is a member of the**

**FRCC; is it not?**

A Yes, it is.

**Q I think you said you're familiar with the FRCC's regional load and resource plan?**

A Yes, I am.

**Q Do you agree that this appears to be an authentic copy of this document?**

A To the best of my knowledge.

**Q "To the best of my knowledge" -- yes?**

A That's correct.

**Q Thank you.**

**If at any time you want to refer to the whole document, that's completely fine, but now, I would ask you to look at -- in fact, why don't you go ahead and look at Page 31 of -- of the -- the full document, since you've got it.**

A I'm there.

**Q And can you confirm that that's the same as Page 31 in the excerpt that I handed you?**

A I believe that it is.

**Q Thank you.**

**And this -- this page of the FRCC load and resource plan shows, at the -- in the bottom table, the summary of capacity demand and reserve margin at time of winter peak, correct?**

A I don't believe I can agree with you on that.

**Q Surely you will agree that is the title of the table, yes?**

A It is.

**Q Why, then, can you not agree that that is what this table shows in this authentic document?**

A From what I understand, this is not a coincident winter peak. This is a maximum winter peak among all of the FRCC utilities.

**Q So, you believe that Column 11, net-firm peak demand and megawatts, is the sum of different coincident peaks of the FRCC members?**

A Yes.

**Q What's the basis for that belief?**

A I have seen this document. I believe, if memory serves me correctly, the FRCC does not collect one winter peak for all utilities, but rather the coincident peak for all utilities.

**Q So, what's your understanding of the installed capacity values interchanged and firm non-utility purchases shown in this table?**

A This is the first time I'm looking at that value. In the past, when I've referred to this document, I've never referred to this column.

**Q What, if any, understanding do you have of the**

**reserve margin shown in -- the reserve-margin information shown in Columns 9 and 10, and 12 and 13.**

A Again, this is the first time I'm looking at these columns as well. Typically, when I refer to this document, I would refer to the total peak demand and the net-firm peak demand.

**Q Okay. And what do you think the net-firm peak-demand number represents? Let's say for 2017-'18, in the table, it shows 4,000 -- 41,980 -- 94 -- 41,994 megawatts. What do you think that number is?**

A 41,994?

**Q Yes.**

A I believe that is the demand net of certain adjustments having to do with demand-side management.

**Q Do you understand that to be the net-firm peak demand served coincidentally by the FRCC utilities?**

A No.

**Q So, correspondingly, the reserve margin with exercising load management and interruptible you believe is not a reserve margin with reference to the entire FRCC system?**

A Again, my understanding is that this is reflecting the coincident peak demand for a particular utility and then aggregating those coincident peak demands together to reflect a winter peak for a given

year for the FRCC region.

**Q So, would it be your belief that this value is greater than the coincident peak for all of the FRCC utilities measured at the coincident-peak hour of the winter season?**

MR. PERKO: I'm going to object to form. You're -- I -- I think that's unanswerable. If the witness can answer it --

CHAIRMAN GRAHAM: How is it unanswerable?

MR. PERKO: I'll withdraw the objection.

CHAIRMAN GRAHAM: Okay.

THE WITNESS: If I may, just a clarification on the question, please.

BY MR. WRIGHT:

**Q Sure.**

A Either please repeat the question or rephrase it.

**Q Okay. In your previous responses, you stated, I think, that you believe that the total peak demand and the net-firm peak demand are the sum of the individual utility peak demands for the FRCC utilities. Did I understand your testimony correctly?**

A Yes, that's correct.

**Q Okay. I think you would agree that the sum of the individual utilities' peak demands cannot be less**

**than the peak demand for the entire FRCC system; would you not?**

A Are you -- again, more clarification. Are you saying that we should look at one coincident-peak period for all utilities in the winter?

**Q Well -- when I look at that number, represented by the FRCC to the Florida Public Service Commission, I think net-firm peak demand would mean the net-firm peak demand served by all of the FRCC utilities at the time of the coincident peak for the FRCC.**

A Okay.

**Q Now, you, apparently, don't agree with that and I'm just trying to understand what you believe.**

A What I believe is that each utility has a unique coincident peak demand. It is quite possible that all of the utilities in the FRCC region had a coincident peak at the same hour on the same day on -- in the same month, but I can't -- I can't say that the number that's reflected here is that. What I'm saying is that this is the sum of each utility's coincident peak demand.

**Q And if -- if they did all occur at the same hour, then that would be the same thing, correct?**

A If all the utilities had --

**Q -- peaked during the same hour.**

A -- same time -- yes.

**Q Okay. If they peaked at different times, wouldn't it be true that the sum of their individual coincident peak demands would be greater than the hourly -- the single-hour FRCC peak?**

A Yes.

MR. WRIGHT: Excuse me just a minute, Mr. Chairman. I have another exhibit that's closely related to this. I'll be right with you.

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: Mr. Chairman, I think 111?

CHAIRMAN GRAHAM: Yes.

MR. WRIGHT: Thank you.

CHAIRMAN GRAHAM: You got a title for me?

MR. WRIGHT: Yes, sir: FRCC presentation, 2017 ten-year site-plan workshop excerpts, cover page and -- and designated numbered pages.

(Whereupon, Exhibit No. 111 was marked for identification.)

MR. WRIGHT: And as with respect to the previous document, I have three complete sets of -- of this document.

CHAIRMAN GRAHAM: Well, let's hold on and see if we need it or not.

MR. WRIGHT: Yes, sir.

CHAIRMAN GRAHAM: Mr. Wright?

MR. WRIGHT: Thank you.

BY MR. WRIGHT:

**Q Mr. Wood, do you come to the ten-year site-plan workshops?**

A If you're speaking to this particular one, I did not attend this workshop.

**Q Have you attended other ten-year site-plan workshops?**

A Perhaps by phone, but not in-person.

**Q Have you had the opportunity to look at FRCC presentations like this?**

A I have.

**Q Does this look like something the FRCC presents in updated form each year at the annual ten-year site-plan workshop conducted by this Commission?**

A It does.

**Q If you would like to see the complete document, I'm happy to hand you a copy. Do you have any reason to doubt the authenticity of this document?**

A I would like to have the entire document.

**Q You got it (handing to witness).**

A Thank you, sir.

**Q You bet.**

**CHAIRMAN GRAHAM: Mr. Wright.**

MR. WRIGHT: Thank you, Mr. Chairman.

BY MR. WRIGHT:

**Q Mr. Wood, I would like to ask you to look at the page numbered 22, which, I think, is about the fifth page in to the document. It's numbered 22 in the bottom right-hand corner of the page.**

A I've got --

**Q It shows -- you with me?**

A Yeah.

**Q It shows plan reserve margin based on firm load, correct?**

A Correct.

**Q Okay. Let's look at the 2017 -- it -- it's got what appears to me to be sort of a brown bar for the summer and the -- and a blue bar for the winter reserve margin, correct?**

A Correct.

**Q And if I look at the blue -- blue bar and compare it -- for 2017 -- and compare it to the reserve-margin percent on the left-hand Y-Axis, that looks like about 38 percent, correct?**

A It's between 35 and 40 percent.

**Q Well, let's look back at the document we were just looking at, Page 31 of what has been marked as Exhibit 109. I think if you look in the far right-hand**

**corner of the 2017-'18 row, it shows 38 percent as the reserve margin, correct?**

A Correct.

**Q Now, do you understand this to be the FRCC's projection of the reserve margin for the entire FRCC system?**

A Based on looking at it right now, yes.

**Q Thank you.**

**Mr. Wood, I believe you also have a -- a document that's been marked for identification as Exhibit No. 110, Tampa Electric Company 2017 ten-year site-plan excerpts?**

A Yes.

**Q With certain schedules.**

**I would like to ask -- I would like to ask you to turn, please, to the last page of the document. It's Schedule 3.2 from TECO's plan, numbered Page 44 of the plan. And as with the other documents, I have complete copies if you would like to see them.**

A Yes, please.

MR. WRIGHT: You've got it.

May we take a short break, Mr. Chairman?

CHAIRMAN GRAHAM: How long of a break are you talking about?

(Discussion off the record.)

MR. WRIGHT: We can skip the break. It -- it appears that -- that my document-control system -- that would be me -- has let me down. I don't think that I have Tampa Electric's complete ten-year site plan with me.

CHAIRMAN GRAHAM: Okay.

BY MR. WRIGHT:

**Q Mr. Wood, you have reviewed ten-year -- Tampa Electric Company's ten-year site plan in the past, have you not?**

A I have seen it.

**Q Do you have any reason to doubt the authenticity of the pages that I've presented to you here are part of Tampa Electric Company ten-year site plan?**

**CHAIRMAN GRAHAM: Mr. Wright, he asked for the full document, which you cannot produce. So, let's move on.**

MR. WRIGHT: Okay. Mr. Chairman, I would like to hand the witness a copy of what's already been identified for purposes of this hearing as -- subject to official recognition. It's Tampa -- it's Seminole Electric's 2017 ten-year site plan.

CHAIRMAN GRAHAM: Sure.

Mr. Perko, do you have a copy of that?

MR. PERKO: We're checking, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

MS. DZIECHCIARZ: Mr. Perko, we have an extra copy, if you need one.

MR. PERKO: Thank you.

I've got it, Mr. Chairman. Thank you.

CHAIRMAN GRAHAM: All right. Mr. Wright.

MR. WRIGHT: Okay. And I have lucked out, I found my Tampa Electric ten-year site plan.

BY MR. WRIGHT:

**Q For now, I would like to ask you to look at Page 13 of your -- Seminole's ten-year site plan.**

A Okay.

**Q If you would, please look at the row headed, on the left side -- it -- the -- that page is Schedule 3.2, "History and forecast of winter-peak demand in megawatts," correct?**

A Correct.

**Q And if you look at the row with the header 2017-'18, that shows a wholesale peak demand of 3,727 megawatts, correct?**

A That's correct.

**Q And that -- that -- that is Seminole's coincident peak demand for that winter, as projected, correct?**

A Yes.

**Q Thank you. Thank you.**

**Okay. I just want to go across that row. And it appears that there are certain reductions to get from the -- from the total demand to net-firm demand. Those reductions appear to me to be interruptible load, 31 megawatts; distributed generation, 71 megawatts; and residential load management, 102 megawatts, correct?**

A Correct.

**Q And that totals to 204, in my arithmetic, correct?**

A I would have to look at your calculation. I -- I haven't calculated it myself.

CHAIRMAN GRAHAM: Subject to check.

THE WITNESS: Subject to check.

BY MR. WRIGHT:

**Q Can you add those three numbers together and tell me what you come up with?**

A It looks like approximately 202, 204.

MR. WRIGHT: Thank you.

Mr. Chairman, as I said, I found my copy of the Tampa Electric Company's ten-year site plan. May I hand one to the witness?

CHAIRMAN GRAHAM: If you have a copy for the witness and Mr. Perko, yes.

MR. WRIGHT: I don't have one for Mr. Perko. I have one copy.

CHAIRMAN GRAHAM: We need a copy for both the witness and the attorney.

MR. WRIGHT: I'll aver to you I printed this off the PSC's website. It is what it is. If -- if you're not going to let me question the witness about it now, I'll see what I can do later, but I really think that this is completely appropriate. This is a regular document, recognized by the Commission in the official course of business.

CHAIRMAN GRAHAM: Which is fine, but usually if you have an excerpt from a regular document, you'll bring a copy for the witness and for his attorney just in case he questions the authenticity of it --

MR. WRIGHT: Yes, sir.

CHAIRMAN GRAHAM: -- which he has on two other documents.

MR. PERKO: As well as other information that may be pertinent to this examination.

MR. WRIGHT: Well, I'll tell you what, I'll move on and I'll see if I can come back to this.

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: Thank you.

CHAIRMAN GRAHAM: Mr. Wright.

BY MR. WRIGHT:

**Q In your direct testimony, you assert that Seminole's current load forecast is reasonable for long-term planning, correct?**

A Yes, I do.

**Q What makes a forecast reasonable?**

A There are multiple things that make a forecast reasonable: the process, itself; the analysis of forecast accuracy.

**Q And when you say analysis of forecast accuracy, to what are you referring?**

A In my testimony, I produced -- in my rebuttal testimony, I produced an analysis of forecast accuracy, and I would be referring to that.

**Q Now, was that -- was that actual versus forecast or was that your ex-post, ex-ante? And I really did not intend to get into your rebuttal anyway.**

A I would be referring to my ex-post-analysis.

**Q Thank you.**

**You haven't worked on load forecasting other than at Seminole, correct?**

A That's correct.

**Q Do you personally, in -- in your consideration of demand-side-management savings -- do you personally**

**do any analyses of the penetration rates or implementation rates of various programs?**

A I have looked at this type of information in the past.

**Q In connection with your work, leading up to this case, did you do any analysis of likely implementation of solar at the -- on the customer's side of the meter?**

A Yes, I have.

**Q What -- what -- what do you perceive is going on there?**

A I believe that, behind the meter, solar generation is saturating on the residential side and also, to some extent, on the commercial side. And I have conducted an analysis to measure that saturation.

**Q And what -- what -- if you can tell us, currently, what is the estimated saturation value amongst Seminole's member cooperatives?**

A Well, there are several ways that I would address that and -- to what period are you referring to?

**Q Currently.**

A Current. I would have to look at my analysis to tell you.

**Q Do you -- do you think -- do you think it's, like, 1 percent or 2 percent or can -- you just can't**

**say?**

A I wouldn't want to speculate.

**Q Have you done an analysis of projected solar saturation?**

A I have.

**Q And where do you think that's headed?**

A In terms of capacity, I've projected exponential growth in solar saturation, and I've reflected that in my load forecast.

**Q Do you do anything similar with respect to solar combined with on-site storage?**

A No.

**Q Do you know when the next round of goals-setting for the FEECA utilities will be conducted by this Commission?**

A Off the top of my head, no.

**Q Do you know when the last cycle was?**

A I would have to look -- I would have to refer to the document.

**Q With respect to the analysis of forecast accuracy we discussed a minute ago, have you analyzed errors ex-ante to inform your planning process?**

A Yes.

CHAIRMAN GRAHAM: Mr. Wright, if you're just trying to kill time until your copies come, we can

go to staff and Commissioners and come back to you.

MR. WRIGHT: I would appreciate that very much.

CHAIRMAN GRAHAM: Staff.

MS. DZIECHCIARZ: Staff does have just a few questions. Thank you.

EXAMINATION

BY MS. DZIECHCIARZ:

**Q Good afternoon, Mr. Wood. I'm Rachel Dziechciarz. And the same qualifications -- if you need any clarification or anything, please just let me know.**

A Thank you.

MS. DZIECHCIARZ: Chairman, right now, I'm distributing a reference sheet that staff would like to use in order to assist with the analysis. And I'll -- I'll explain it once everybody has it.

CHAIRMAN GRAHAM: Okay.

MS. DZIECHCIARZ: The numbers in the sheet can be used or can be found in all of the Exhibits or in the 2017 ten-year site plan that's been officially recognized.

Thank you. We would like to mark this as Exhibit No. 112 --

CHAIRMAN GRAHAM: Okay.

MS. DZIECHCIARZ: -- if that's okay and --

MR. PERKO: Just for the record, Mr. Chairman, if I could ask, is this the same document you provided to us earlier, Ms. --

MS. DZIECHCIARZ: Yes, it's the one I provided earlier in e-mail. Yep.

MR. PERKO: Thank you.

MS. DZIECHCIARZ: And if I may have 30 seconds, let me find my copy of it, please.

Okay. If we could title it, "Winter Peak Demand Forecast Changes in Seminole's Load Forecast Studies."

(Whereupon, Exhibit No. 112 was marked for identification.)

BY MS. DZIECHCIARZ:

**Q And Mr. Wood, if you wouldn't mind just reviewing the document, and I will give a summary of the numbers that we have on here.**

A Okay. I've reviewed the document.

**Q Okay. So, staff's -- this exhibit shows Seminole' 2020-through-2023 forecast of net winter-peak demand, as provided in Seminole's 2014 through 2017 ten-year site plans and its 2017 load-forecast summary. And you can -- load-forecast study. And that would be the Rows 1 through 5 right there.**

**It also shows the year-over-year differences**

**in such forecasts, which is Row 6 through 10, and the percent change reflected in those year-over-year differences, reflected in Rows 11 through 15.**

**Finally, it shows the major enhancements you've cited in your testimony to Seminole's forecast methods since 2015 and the year in which such enhancements first impact either Seminole's ten-year site plans or load-forecast study. And to be clear, I will hold off asking any questions related to the major-enhancements portion until your rebuttal testimony.**

**Subject to check, can you agree that I've accurately described the information contained in this graph?**

A I have checked these numbers and they are correct.

**Q Thank you.**

**So, if you review -- if you could please review the data shown in Rows 1 through 5, is it correct that this data -- again, subject to check -- shows a general decreasing trend in Seminole's forecast of 2020-through-2023 winter peak demand, beginning with the forecast appearing in the 2015 ten-year site plan, and extending through the forecast in the 2017 load-forecast study?**

A Yes, ma'am, that's correct.

**Q And just to be clear, was the winter-peak-demand forecast, shown in Row 5, labeled "2017 LFS," a forecast that was prepared subsequent to the 2017 ten-year site-plan forecast that was shown on Row 4?**

A That is correct.

**Q Is it -- is it correct that the winter-peak-demand forecast, shown on Row 5, labeled "2017 LFS," is Seminole's winter-peak-demand forecast supporting Seminole's need study in this proceeding?**

A That is correct.

**Q And if you please look at Rows 6 through 10, this section of the exhibit shows the year-over-year differences in the forecast appearing in Rows 1 through 5. So, for example, Row 6 indicates that the 2015 ten-year site plan winter-peak-demand forecast for the 2021 winter season was 657 megawatts lower than the 2014 ten-year site-plan forecasts; is that correct?**

A That is correct.

**Q And the data shown in Row 10, which is the sum of Row 6 through 9, indicates that the 2017 load-forecast studies' winter-peak demand forecast is significantly lower for the three winter seasons shown compared to its 2014 ten-year site plan, correct?**

A That is correct.

**Q And this is reflected in percentage terms on Line 15?**

A That is correct.

**Q Okay. Thank you.**

**And now, moving to the portion of the need study that you sponsored, specifically Page 47 of 153, which is within Section 5.2.4 -- and I'll -- if you'll let me know when you're there, I'll wait for you.**

A Just to be clear, what tables are we referring to?

**Q Table 15.**

A Table 15. Thank you.

**Q Of which an errata was filed on March 9th --**

A Yes.

**Q -- for this table. Yes.**

**So, this table shows the annual net-energy load for seasonal net-firm demand, and the schedule shows Seminole's forecast of net energy for load, summer net-firm demand, and winter net-firm demand, beginning with the year 2017, correct?**

A That is correct.

**Q And is it correct that the actual amounts for the year 2017 for these metrics were not available at the time -- were not available to the company at the time it filed its petition in this proceeding?**

A That is correct.

**Q And do you have those actual amounts for the year 2017 at this time?**

A I do.

**Q And what are those actual amounts for the 2017 net energy for load, summer net-firm demand, and winter net-firm demand?**

**CHAIRMAN GRAHAM: Are those the numbers that are on the errata sheet?**

MS. DZIECHCIARZ: No. These are numbers we don't have yet.

CHAIRMAN GRAHAM: Okay.

THE WITNESS: The first number for summer-peak demand 2017, actual, 3,114.

I did provide an initial number for the winter-peak demand of 2017-2018, which was 3,853. And I do have an update to that number as well. That number is 3,932.

The 2017 actual value for net energy for load is 14,325.

MS. DZIECHCIARZ: Okay. Thank you, Mr. Wood.

Staff has no more questions at this time.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Commissioner Polmann.

COMMISSIONER POLMANN: Thank you,

Mr. Chairman.

Afternoon, Mr. Wood.

THE WITNESS: Good afternoon.

COMMISSIONER POLMANN: Your testimony involves forecasting. Does -- does that include both forecasting the load, meaning on the demand side as well as on the production side?

THE WITNESS: I forecast at the delivery point, the load at the delivery point, the demand at the delivery point.

COMMISSIONER POLMANN: So, with regard to the utility's ability to meet that demand at the delivery point, are you considering the capacity?

THE WITNESS: Yes, I am.

COMMISSIONER POLMANN: Within the forecast analysis, what is the time scale -- not necessarily the -- the year time frame, meaning ten years or 30 years, but you have year-by-year results. But are you looking at it month-by-month or seasonally? There's a lot of winter-peak discussion going on here, but are you -- are you looking at month-by-month or --

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: How is that?

THE WITNESS: Yes, sir. I look at it

month-by-month and by season, winter and summer season.

COMMISSIONER POLMANN: Were you here earlier today during the cross-examination of Mr. Ward?

THE WITNESS: I was.

COMMISSIONER POLMANN: Okay. With regard to evaluating alternative portfolios, were you personally involved in that analysis that ended up going to the Seminole board that led to the selection of the proposed alternative?

THE WITNESS: My involvement was limited to the load forecast, itself.

COMMISSIONER POLMANN: Okay. There was -- I -- I believe, in your introductory remarks, you used -- correct me if -- if I'm mistaken, but I believe you used a term "fair and reasonable outlook" with regard to your customers -- your member cooperatives, including your member consumers.

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: Can you explain to us what you mean by "fair and reasonable"?

THE WITNESS: Yes, sir. I take an independent analysis in my work. I strive to be unbiased in my analysis, and I strive not to either under-project

or over-project the load forecast. That's what I refer to.

COMMISSIONER POLMANN: We, here at the Commission, have a particular use of the term "fair and reasonable" in terms of our evaluations. And I'm trying to determine whether you adopt the same definition or -- you seem to be using the same words. I'm wondering if you're aware of our use. And I'm not sure, given your answer, that you're using it the same way we're using it.

THE WITNESS: No, I'm not aware of your use. It happens to be a coincidence.

COMMISSIONER POLMANN: Okay. Thank you.

Other than your un- -- your claim of being unbiased, is there any other -- is there anyone else or another entity that is judging the -- the forecasting as being fair and reasonable or the outcome being fair and reasonable? Who -- who reviews that?

THE WITNESS: Yes, sir. I meet with member staff representatives three times a year in which I explain the load-forecast methodology and assumptions and the projections. I meet with the Seminole board of directors, the board of trustees, three times a year, in which I do the same.

I also request that the member-representative staff, the general manager of the member cooperative, the board of directors to the member cooperative, and the Seminole board of trustees all approve the load forecast.

We also send the load forecast to the Rural Utility Service for approval. And we also present the load forecast to credit-rating agencies.

COMMISSIONER POLMANN: And do you ever get feedback that leads to corrections or changes in the forecast?

THE WITNESS: I do receive feedback from our -- from member staff representatives and the general managers. The board of trustees -- they are certainly open to tell me their opinion of the forecasts.

COMMISSIONER POLMANN: Okay. So, you answered with regard to feedback. Do you -- do you receive feedback that leads -- causes you to make changes?

THE WITNESS: The feedback that I receive is with regards to information that I do not have at my fingertips, such as what's currently going on in the member system; information that I would not typically find through news. The members know firsthand the growth in their system and the types

of usage that their consumers are making.

So, I do take that into consideration, into my load forecasts.

COMMISSIONER POLMANN: So, is it -- excuse me. So, is it true that Seminole is the entity that develops the forecast and you're re- -- you're responsible for that?

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: So, from what sources do you gather the -- the data?

THE WITNESS: I gather load data at the delivery point, hourly load data at Seminole. It's collected through our system-operations department. I also collect member sales data and number of consumer data, which is provided in the Rural Utility Service form seven report.

I also collect data from other sources, third-party sources, including Moody's Analytics and Itron. I collect data from universities such as the University of Florida Bureau of Business and Economic Research. I also collect data from the EIA.

COMMISSIONER POLMANN: So, the data that you receive from members is their actual sales?

THE WITNESS: Yes, that's their accounting

sales.

COMMISSIONER POLMANN: Okay. Do they provide to you their own forecast in terms of future load?

THE WITNESS: They do not.

COMMISSIONER POLMANN: Okay. So, Seminole has the full responsibility and -- for the forecasts. And you have an obligation to meet the load that's presented to you; is that correct? They -- the member governments have a demand at the point of delivery and you have an obligation to meet that demand.

THE WITNESS: That's correct, sir.

COMMISSIONER POLMANN: Back to the concept of reasonable forecasts. And Mr. Wright had asked a question about what -- what makes a forecast reasonable. I would like to ask a more-specific question.

Part of your -- your answer in terms of what makes a forecast reasonable, you referred to the material that's in your rebuttal. And again, I don't want to get into that now, but if you could, just describe to us in words, what is the metric that you're using -- and I'll call it a goodness of fit.

Can you give us an overview of that and --

that might help me prepare or limit my questions later. So, what is a metric that you're using to determine the -- the goodness of the forecast?

THE WITNESS: Yes, sir. We begin by judging the goodness of fit in our training data. Since we are working with time-series data, we also do holdout analysis, which judges the goodness of fit in the more-recent period.

We judge the goodness of fit based on several statistics, but the primary statistic is mean absolute percentage error.

COMMISSIONER POLMANN: Okay. Now, is it correct that, as you look further into the future, that you would expect that mean absolute percentage error -- well, let me back up. So, you're using historical data in order to -- to fit your forecasting tools?

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: You would, then, expect, within the application of the forecast, as you look into the future, that there would be uncertainty between your forecasts and the actual need?

THE WITNESS: Absolutely.

COMMISSIONER POLMANN: Is there any way for

you -- for you to -- to have confidence intervals applied to that so that you would have a gauge on -- on what the range of need could be?

THE WITNESS: In my opinion, the best confidence interval would be to the -- the variable that causes the most variation in the forecast. And that would be weather, which is our high-low forecast analysis. It's based on severe and mild weather.

COMMISSIONER POLMANN: And from -- from what source do you get an estimate of -- of that type of variable?

THE WITNESS: From our historical weather data. The source -- the general source is NOAA. We do receive it from AccuWeather. And we make the calculation as to the best representation of weather in each of our member service territories.

COMMISSIONER POLMANN: So, you're using historical weather, then, and applying that into the future?

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: Are you assuming that weather from the past is going to be the -- the same type of weather we're having in the future?

THE WITNESS: Yes, I am.

COMMISSIONER POLMANN: Are there any other variables in the -- in the model that you calibrate from the historical record that you're also assuming would be the -- the same statistical or probabilistic nature in -- in the future? Everything is essentially the same, you're just kind of running it forward in a probabilistic way?

Maybe I can rephrase that. Is there anything in your -- in your process of fitting the model to the historical record that you've elected to change going forward and give it a different characteristic?

THE WITNESS: Yes, sir. We've done several applications to our forecasts to consider that. One would be energy efficiency, and the change in usage patterns, given weather, given the types of appliances that people and businesses use through the future. We've also considered the impact of driver variables on usage into the future, such as population.

COMMISSIONER POLMANN: So, you're accounting for population growth?

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: And you would expect growth to be -- the rate of growth to be different

in different parts of your region?

THE WITNESS: Absolutely.

COMMISSIONER POLMANN: You had mentioned, with regard to growth, a few moments ago, I believe -- oh, I'm sorry. Let me back up. There was discussion here a few minutes ago regarding, I believe, alternative energy source, specifically to solar energy, installed capacity within the region. And I understood that discussion to be installed, not within your utility, as you were utilizing that as a source, but dispersed within the region.

THE WITNESS: That's correct.

COMMISSIONER POLMANN: Installed capacity by others. And I believe you said you were planning to incorporate that or your plan did incorporate that as -- essentially looked to you as a demand reduction because it was being employed by others and it would be reducing demand at your point of delivery; is that correct?

THE WITNESS: That's correct.

COMMISSIONER POLMANN: And I -- I believe you said you were accounting for -- with regard to growth as exponential growth.

THE WITNESS: That's correct.

COMMISSIONER POLMANN: Did you mean that

literally, in the mathematical sense, as exponential growth in -- in that?

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: Can you elaborate on -- on what -- what that means in terms of going -- going forward, in -- over the long term? That -- that seems to me it has the potential to become very, very large. Is there a constraint somehow that you've imposed on that?

THE WITNESS: I would say there is a constraint. That constraint is something that we didn't -- we didn't realize in the time period that we projected because we believed that growth would continue in the time period that we projected.

We used -- we can take a look at the number of -- or the total installed capacity and the number of consumers who have installed solar units at their home. And we see that that growth has been exponential over the past five years.

So, we apply that growth rate and then, at a certain period of time -- I believe the time period is around 2021 -- we use EIA projections of solar-capacity growth in our model, which is also exponential.

COMMISSIONER POLMANN: Let me ask first, are

you knowledgeable of the specifics of that, the parameters of that exponential growth rate, or are you just speaking in general terms?

THE WITNESS: No, I'm -- I'm -- I did that analysis with my staff.

COMMISSIONER POLMANN: Okay. So, the recent five-year period and then going forward the next four or five years --

THE WITNESS: Yes, sir.

COMMISSIONER POLMANN: It's a fairly-rapid growth. And then beyond 2021 or 2022 -- are you saying that the rate of growth, even though it's exponential, would be at a lesser rate, different -- different coefficients in the exponential formula --

THE WITNESS: Yes, sir. The -- the exponential growth in the past five years is the total number of data that we have when we project that the next five years out.

Then we refer to the EIA and the total growth in capacity as they projected from 2021 into the future. Even their growth rate is exponential, but at a lesser rate than the first initial five years.

COMMISSIONER POLMANN: And your total time frame is -- is 33 years, is that correct, or are

you just looking -- in terms of the solar being included, what is the total time frame of your analysis?

THE WITNESS: I believe my analysis goes through 20- -- 2050 in total.

COMMISSIONER POLMANN: Do you know where in the -- in the docket I would find the amount of energy that you're assuming or that you're including as being provided by solar from others? Where -- where would I find that information? I don't want to ask you what exactly the number is, but -- I mean, if you know, I -- we can look at it now, but where in the testimony or in the -- in the docket would that be available?

THE WITNESS: That was produced as supplemental data upon our experts' review -- another one of our experts' review of my analysis. Specifically, that would be presented in the 2017 load forecast study provided to the Rural Utility Service.

There is also supplemental data that I provided as a request for production that shows that analysis.

COMMISSIONER POLMANN: Okay. Thank you.

Mr. Chairman, I'll have additional questions

on rebuttal. That's all I have for now.

CHAIRMAN GRAHAM: Commissioner Clark.

COMMISSIONER CLARK: Mr. Wood, a couple of quick questions. You referred to your system peak demand for 2017, 2018. Do you run on a different calendar year at Seminole?

THE WITNESS: Yeah, for demand, I refer to the time period between November and March, so --

COMMISSIONER CLARK: So, specifically, you gave me -- you gave 3,932 megawatts as your system load for 2017-'18. What was the system peak in January of 2018? Do you know that number?

THE WITNESS: That is the system peak for January 2018.

COMMISSIONER CLARK: That is the system peak.

What was your load forecast for January of 2018?

THE WITNESS: 3,398.

COMMISSIONER CLARK: Other than the extreme weather, were there any other factors that would be consistent with you underestimating the needed load for January?

THE WITNESS: Yes, sir, there's a number of factors that may have resulted in that -- that load. It could be higher growth and population,

for instance. But certainly, the variation was due primarily to weather.

COMMISSIONER CLARK: Do you meet each year with each of your member systems to discuss potential anomalies to the forecast?

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: Can you give me examples of some of the things that might be different in your forecast as opposed to typical weather-related stuff?

THE WITNESS: I'm sorry. I -- I don't understand the question.

COMMISSIONER CLARK: When you meet with your member systems to discuss your long-range plan, your load forecast, what are -- are there things that occur within the member systems that you're not aware of normally, outside of -- of weather and -- and normal growth that's based on statistics that you factor into your load forecast?

THE WITNESS: I would say the statistics that I factor into my forecast would be the primary drivers for anomalies and for load growth in general.

COMMISSIONER CLARK: What would be an example of some of that?

THE WITNESS: Ex- -- low temperatures, you know -- and we project a normal minimum temperature, for instance, for the winter. And the anomaly may be a lower minimum temperature than our baseline forecast.

COMMISSIONER CLARK: Do you meet with the member systems to discuss potential economic-development projects that might be in their area, that are outside of the norm as well?

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: What type of load enhancements have you seen in some of the member systems?

THE WITNESS: I think SECO is a primary example. The growth that is going on in SECO's territory is so rapid that it -- it's not even picked up in the population projections.

In some cases, I provide my forecast to the members. And they'll -- they may provide me additional information, such as, this past year that the Villages announced that they would install 2,000 -- or 20,000 new homes. That would be new information that -- that just came out that may not be reflected in the population projection.

COMMISSIONER CLARK: One last question. In

looking at the reliability coordinating council information that was provided -- looking at the difference between the total peak and -- and net-firm peak -- well, first of all, in general, when it comes to net-firm peak, is that after potential buy-throughs of interruptible load?

THE WITNESS: Yes. In -- when we presented in actual terms, it would be -- it would be reduced by, say, interruptible load that was implemented at the time --

COMMISSIONER CLARK: It would be reduced by interruptible load, but suppose that the interruptible load had a buy-through clause in it -- is it still considered firm load?

THE WITNESS: I'm sorry. I'm not familiar with the term "buy-through."

COMMISSIONER CLARK: So, if -- so, if you have an interruptible rate with a consumer that's "X" cents per kilowatt hour, assuming that they can be interrupted "X" hours, but you give them an option to buy-through the interruption at a higher price, is that considered net-firm still?

THE WITNESS: What I can tell you, Commissioner, is that if one of the members who are on the interruptible rate implement interruption at

the time of the peak, then that would be reflected in the net-firm demand.

COMMISSIONER CLARK: It would be reflected in net-firm demand. Okay.

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: So, my other question is -- is a relative question to the entire system and Seminole. In your opinion, is -- is the document that we're looking at here -- and I realize this is an opinion -- about the excess capacity that is available -- is this relative to Seminole and its system -- its member systems?

THE WITNESS: I do not believe so, sir.

COMMISSIONER CLARK: Could you elaborate as to why?

THE WITNESS: Well, first of all, Seminole has a different reserve requirement than the IOUs, from what I understand. So, this is quite -- quite a high-reserve requirement compared to Seminole.

COMMISSIONER CLARK: Okay. Thank you.

THE WITNESS: Thank you.

COMMISSIONER CLARK: No further questions.

CHAIRMAN GRAHAM: Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman. Thank you very much for your indulgence, Mr. Chairman.

I -- I would like -- if you tell me I should limit to just the TECO ten-year site plan, I will do that.

I would like to ask two predicate questions that are predicate to my anticipated cross for Mr. Hines and --

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: -- ties to that. Thank you.

There is the TECO ten-year site plan (handing to witness).

THE WITNESS: Thank you.

MR. WRIGHT: You're welcome.

CHAIRMAN GRAHAM: Okay. Mr. Wright.

MR. WRIGHT: Okay.

CONTINUED EXAMINATION

BY MR. WRIGHT:

**Q Okay. Mr. Wood, you had a chance to review that document?**

A The Tampa Electric Company --

**Q -- ten-year site plan?**

A -- ten-year site plan.

**Q That appears to be an authentic copy of Tampa Electric's ten-year site plan?**

A It appears to be, yes.

**Q Back to the exhibit that has been marked for**

**identification as No. 110, I, some time ago, asked you to please look at the last page in that document, which is numbered Page 44. It's Schedule 3.2, history and forecast of winter-peak demand megawatts base case for Tampa Electric.**

**Are you there?**

A Yes, I am.

**Q That also shows some numbers comparable to those that we were talking about with respect to Seminole's ten-year site plan, including interruptible residential load management, which is zero going forward, residential conservation, and commercial and industrial load management, and commercial and industrial conservation, correct?**

A That is correct.

**Q And those are shown as deductions to go from the retail total peak to the net-firm peak, correct?**

A That is correct.

**Q Thank you.**

**I do have -- hopefully -- I -- I count two -- I've got two more questions I would like to ask you about with respect to the relationship between your work and the work of Mr. Hines.**

**On Page 18, Lines 7 through 17 of your testimony, you talk about whether there is sufficient**

**DSM or conservation measures reasonably available to Seminole or its members to mitigate the need for the Seminole combined-cycle facility. And I assume there's a similar question in your Shady Hills testimony, correct?**

A That is correct.

**Q Okay. Is the basis for your statement here your reliance on A.E. Tierra's work, Mr. Hines' work?**

A That is correct.

**Q Thank you.**

**Immediately above that, you make the statement: Seminole also is committed to working with its members to implement recommendations made by A.E. Tierra to help improve program tracking and increase future savings by enhancing current efforts and adding new measures to existing programs when appropriate.**

**With me there?**

A Yes.

**Q Are you aware of your members adding any new measures in response to suggestions made by Mr. Hines?**

A Yes, I am.

**Q Can you tell me what measure or measures those are?**

A Currently, we are running a pilot for a smart-thermostat program.

**Q Is that it?**

A That is -- yes.

**Q Great. Thank you very much.**

A Okay.

MR. WRIGHT: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

Redirect?

MR. PERKO: Very briefly, Mr. Chairman.

FURTHER EXAMINATION

BY MR. PERKO:

**Q Just -- just for clarification purposes, Mr. Wood, Mr. Wright asked you or showed you a document relating to the Commission's review of FEECA energy savings; do you recall that?**

A Yes, I do.

**Q Is Seminole subject to the requirements of FEECA?**

A No, they are not.

**Q And in response to Mr. -- Commissioner Clark's questions, you identified the -- the winter peak that occurred in January of this year; do you remember that?**

A Yes, I do.

**Q And what was that number?**

A 3,932.

**Q And you compared that to the base-case**

**forecast. How did it compare to the high-case forecast that -- that you referred to in response to Commissioner Polmann's questions?**

A I believe it's, over the severe forecast, the high case by 80 megawatts.

MR. PERKO: Thank you. I have nothing further.

CHAIRMAN GRAHAM: Thank you. Trust me, I almost wish you didn't compare it to TECO, either. That wouldn't have opened up this whole FEECA thing.

(Laughter.)

CHAIRMAN GRAHAM: Exhibits.

MR. PERKO: Yes, Mr. Chairman, we would move Mr. Wood's Exhibit KDW-1, which was identified as Exhibit 14 on the comprehensive exhibit list.

CHAIRMAN GRAHAM: Okay.

MR. PERKO: As well as No. --

CHAIRMAN GRAHAM: -- 38?

MR. PERKO: -- 38. And also, we would move in Sections 5.2 and 7 of the need study that's been identified as Exhibit No. 3 and 29.

CHAIRMAN GRAHAM: Okay. Seeing no objection, we will enter all that into the record.

MR. PERKO: And I guess I would move -- the

errata sheet is already in the -- in the record, I believe.

CHAIRMAN GRAHAM: Yes, correct.

Mr. Wright?

MR. WRIGHT: We would move 108, 109, 110, and 111, Mr. Chairman.

CHAIRMAN GRAHAM: And for the record, we're going to move the full document on 09, 10, and 11.

MR. WRIGHT: Yes, sir. And shall I just get with staff about how we're going to do that logistically or --

CHAIRMAN GRAHAM: I'm sure if it's the document that's described here, staff can pull that document themselves.

MS. HELTON: It might be better, Mr. Chairman, if he could provide the full document that we've used today to the clerk --

CHAIRMAN GRAHAM: Okay.

MS. HELTON: -- during the course of these proceedings.

CHAIRMAN GRAHAM: Okay. There you go.

MR. WRIGHT: Just -- just to be clear, that would be one copy to the clerk, Mr. Chairman?

CHAIRMAN GRAHAM: Yes.

MR. WRIGHT: Thank you very much.

MR. PERKO: And Mr. Chairman, I hate to be difficult, but it's my job to protect the record. And with respect to Exhibits 109 and 110 -- or I'm sorry, 111 -- well, first of all, we don't have a problem with the ten-year site plans because those are arguably at least subject to exemption from the hearsay rule.

These two documents, 111 and 1- -- 109 and 111 are pure hearsay. They are documents of -- of the FRCC. No witness was here to sponsor them. We didn't have an opportunity to cross-examine them.

Under the APA, in Section 12057, the -- hearsay is allowed to be admitted if it corroborates other evidence. So, you know, I just would like to state that objection for the record, to the extent that these might be tried to be used to establish facts based solely on hearsay.

CHAIRMAN GRAHAM: I agree. And we'll just, as normal, give them the weight that we think they're due.

MR. PERKO: Thank you.

(Whereupon, Exhibit Nos. 108, 109, 110, and 111 were admitted into the record.)

CHAIRMAN GRAHAM: Staff.

MS. DZIECHCIARZ: Chairman, we ask that you

move in Exhibit 112.

MR. PERKO: No objection.

CHAIRMAN GRAHAM: Seeing no objection, we will enter Exhibit 112 into the record.

(Whereupon, Exhibit No. 112 was admitted into the record.)

CHAIRMAN GRAHAM: Okay. We are prime for a break. So, we will take a five-minute break. And you guys can see this as well as everybody else (indicating).

(Brief recess.)

MR. PERKO: Seminole calls Mr. Thomas Hines.

CHAIRMAN GRAHAM: Mr. Hines, welcome.

THE WITNESS: Thank you.

EXAMINATION

BY MR. PERKO:

**Q Could you please state your name for the record.**

A Yes. My name is Thomas Allen Hines. I go by Tom.

**Q And Mr. Hines, have you been sworn today?**

A Yes, I have.

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

A My current employer is Tierra -- Tierra

Resource Consultants, LLC. My business address is 7227 North 16th Street, Phoenix, Arizona.

**Q Did you cause to be filed on December 21st, 2017, direct testimony consisting of eight pages in Docket No. 20170266-E- -- EC?**

A Yes, I do.

**Q And did you also cause to be filed on December 21st, 2017, direct testimony consisting of eight pages in Docket No. 20170267-EC?**

A Yes, I did.

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

A No, I do not.

**Q If I were to ask you the same questions in your prefiled testimony today, would your answers be the same as you sit here today?**

A Yes, they would be.

MR. PERKO: Mr. Chairman, at this time, we would ask that Mr. Hines' prefiled testimony in both dockets be inserted into the record as if read.

CHAIRMAN GRAHAM: We will insert Mr. Hines' prefiled direct testimony in both dockets into the record as though read.

(Prefiled direct testimony inserted into the

record as though read.)

BEFORE THE PUBLIC SERVICE COMMISSION

SEMINOLE ELECTRIC COOPERATIVE, INC.

DIRECT TESTIMONY OF THOMAS HINES

DOCKET NO. _____-EC

DECEMBER 21, 2017

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

A. My name is Thomas Hines. My business address is 7227 N 16th St Phoenix, Arizona 85020.

**Q. By whom are you employed and in what capacity?**

A. I am a Principal with Tierra Resource Consultants ("Tierra"), LLC.

**Q. What types of company is Tierra?**

A. Tierra is a full-service energy and natural resource management consulting firm.

**Q. Please state your professional experience.**

A I have over 25 years of experience in Demand Side Management ("DSM") program design, implementation, and evaluation. I have successfully designed and managed multiple award-winning energy efficiency programs, including the Arizona Public Service ("APS") ENERGY STAR Homes program and the APS Home Performance with ENERGY STAR program. Throughout my career, I have worked closely with industry stakeholders (including builders, contractors, Realtors, lenders, raters and other

trade allies), to drive market transformation. I have testified extensively during public utility commission proceedings and as a public spokesperson for energy efficiency related topics. I also serve as a board member of the Energy and Environmental Building Alliance ("EEBA"), an organization devoted to advancing building science and energy efficient building practices.

I hold a Bachelor of Science degree in Psychology from Rutgers University and a Masters of Environmental Planning degree from Arizona State University.

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

A. The purpose of my testimony is to discuss work that Tierra performed in conjunction with North Carolina Advanced Energy Corporation ("AE") under contract with Seminole Electric Cooperative, Inc. ("Seminole") to help evaluate existing energy efficiency ("EE") and DSM programs offered by Seminole and its Member Cooperatives, as well as potential new offerings. Specifically, the AE/Tierra team assisted Seminole with determining and quantifying the EE/DSM efforts that it and its Member Cooperatives undertook in 2015 to reduce load. Additionally, we recommended ways to enhance the existing EE/DSM programs and offered additional EE/DSM program concepts that Seminole and its Member Cooperatives could consider adding to their portfolio in the future. The analysis of additional EE/DSM program concepts included an evaluation of the cost-effectiveness of the proposed programs.

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

A. Yes, I am sponsoring the following exhibits, which were prepared by me or under my supervision and are attached to my pre-filed testimony:

- Exhibit No. ___ (TH-1) – Resumé;
- Exhibit No. ___ (TH-2) – a report entitled Energy Efficiency and Demand Management Savings Report; and
- Exhibit No. ___ (TH-3) – a report entitled Energy Efficiency and Demand Management Program Analysis.

**Q. Please describe the work that AE/Tierra performed to quantify the savings resulting from the existing EE/DSM offerings of Seminole and its Members.**

A. To quantify existing EE/DSM programs, AE/Tierra researched all programs and EE and DSM measures currently offered by Seminole and Member Cooperatives to collect cost and savings information. Seminole and its Members offer many programs and services to educate their members on ways to save energy, including web content, brochures, member outreach events, and on-site energy audits. Although it is expected that these efforts produce significant energy savings and market transformation effects, it is difficult to accurately quantify and attribute specific savings amounts to these educational programs. In addition to these general education programs, the team identified a subset of EE and DSM measures and program activities within the overall portfolio where energy savings could be identified, quantified, and reported. To facilitate accurate and consistent reporting, the team worked with Seminole to standardize the program measures, units, and definitions across all Member Cooperatives. Per-unit energy savings estimates were developed using a

combination of sources and custom energy-savings calculations, including regional technical reference manuals, national industry-recognized databases, custom energy modeling work using local weather and building characteristics, and engineering review of Seminole information submitted in response to data requests. Specific references are provided in the following section for each program type. Program participation, such as number of units or meters, and spending on incentives and labor were also collected from all Member Cooperatives and included in benefit/cost calculations for each measure. Finally, a tracking and reporting spreadsheet tool was developed for Seminole and each Member to document all data and summarize results.

**Q. What existing energy savings programs did AE/Tierra identify and analyze?**

A. Working in conjunction with Seminole, AE/Tierra identified a number of existing energy savings programs and initiatives offered by Seminole and/or Member Cooperatives in 2015, including:

- **Residential Pre-Pay Program**: Residential member-consumers can pre-pay for their electricity and receive enhanced feedback on their energy use and costs. The increased energy awareness that this program provides results in behavioral changes that produce energy savings.
- **LED/CFL Efficient Bulb Giveaway**: This program provides participating end-use member consumers with free energy-efficient 10 Watt (W) LED or 13W CFL bulbs to replace their existing 60W incandescent bulbs.

- **Residential Energy Smart Rebate Programs**: A rebate is given to residential member-consumers to upgrade to more efficient equipment and/or improve their home's building envelope. Rebate measures include: air conditioners and heat pumps, heat pump water heaters, solar water heaters, insulation – batt or spray foam – and window film.
- **LED Outdoor and Street Lighting**: This program involves the replacement of utility-owned outdoor and municipal street lighting with lower wattage LEDs. Several types of high efficiency lighting change outs were evaluated including: 100W high pressure sodium (HPS) to 40W, 48W, or 72W LED, 150W HPS to 70W LED, 250W HPS to 107W LED, 1000W metal halide (MH) to 283W or 316W LED.
- **Coincident Peak Power (CPP) Rates**: Coordinated load management-demand reduction program where enrolled commercial and industrial member-consumers are signaled to shed load during critical peak billing periods.
- **Time-of-Use (TOU) Rates**: Residential, commercial, and industrial rates that encourage member-consumers to reduce power use during on-peak hours through price signals. These rates shift energy use, reduce peak demand, and often result in energy savings. Within the scope of the AE/Tierra evaluation, no demand or energy savings were claimed for these rates.
- **Commercial Interruptible Rates:** Direct load control program where Seminole interrupts electrical service to enrolled commercial member-consumers during extreme peak demand, capacity shortage or

emergency conditions. This program was not called as a resource in 2015 but it is available when needed.

- **Commercial Customer Load Generation:** Standby peak-shaving generators which Seminole and its Members may dispatch for purpose of load management and enhanced reliability. Members with standby generators under this program receive a billing credit. This program was not called as a resource in 2015 but it is available when needed.
- **Energy Audits:** On-site energy audit program for residential, commercial and industrial member-consumers.
- **Utility System EE Projects**, including:
  - Lighting and HVAC upgrades at Seminole generation or administration facilities or Member Cooperative facilities; and
  - Distribution System Voltage Reduction (VR): Reduction of voltage on certain distribution feeders during peak times.

**Q. What were the results of AE/Tierra's quantification analysis?**

A. As discussed further in the Energy Efficiency and Demand Management Savings Report attached as Exhibit No. ____ (TH-2), total annual energy savings for Seminole and its Members in 2015 were 12,353 MWh and peak demand savings were 85 MW (at generator including transmission and distribution losses). Lifetime energy savings were 34,479 MWh.

**Q. Please describe the work that AE/Tierra performed to evaluate other potential EE/DSM program offerings.**

A. AE/Tierra proposed several new program concepts for Seminole and its Members to consider, including:

- Commercial & Industrial Lighting Program;
- Residential Audit Direct Install Kits;
- Direct Load Control or Grid-Enabled Water Heater Program;
- HVAC Quality Install Program; and
- Smart Thermostat Program.

The program concepts were selected based on AE/Tierra experience and feedback from Seminole on current activities in Member Cooperative territories. Our focus was on providing concepts that enhance existing programs or leverage current activities, improve the member experience, provide potential to shift peak demand, promote new technologies, and add value for members.

In order to help evaluate the cost-effectiveness of these programs, Seminole requested information on the impact of implementing EE/DSM programs on rates for all member-consumers, as well as a comparison between the cost of EE/DSM programs and other resources, such as new generation. As such, the AE/Tierra team performed calculations for two cost-effectiveness tests: the Ratepayer Impact Measure (RIM) test and the Utility Cost Test (UCT). These calculations concluded that none of the program concepts that were studied would pass the RIM test as being cost effective at this time. The results of those analyses, as well as other key findings and recommendations, are summarized in a report prepared by AE/Tierra entitled “Energy Efficiency and

Demand Management Program Analysis," which is attached as Exhibit No. ___ (TH-3) to my pre-filed testimony.

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

A. Yes.

BY MR. PERKO:

**Q And Mr. Hines, did you also attach to your testimony in the 201700- -- 0266 docket three exhibits labeled TH-1 through TH-3?**

A Yes, I did.

MR. PERKO: And I believe, just for the record, Chairman, those are -- have been identified in the comprehensive exhibit list as Exhibits 15 through 17.

CHAIRMAN GRAHAM: Duly noted.

BY MR. PERKO:

**Q And Mr. Hines, were those same exhibits attached to your testimony in Docket No. 20170267?**

A Yes, they were.

**Q And for the record, those have been identified on the comprehensive exhibit list as Exhibits 39 through 41.**

**Do you have any changes to those exhibits, as you sit here today, Mr. Hines?**

A No, sir, I do not.

**Q And Mr. Hines, have you prepared a summary of your testimony?**

A Yes, I have.

**Q Would you please present it to the Commissioners at this time.**

A Yes. Thank you.

Good afternoon, Commissioners. My name is Thomas Hines. And I'm a principal with Tierra Resource Consultants, LLC. We're a full-service energy and natural-resource-management consulting firm.

Myself -- I have a Bachelor's Degree in -- a Bachelor of Science from Rutgers University in psychology. And I have a Master's of Environmental Planning from Arizona State University.

In my professional career, I have over 25 years of experience in demand-side management-program design, implementation analysis, and evaluation. I've successfully designed and managed multiple award-winning energy-efficiency programs including Energy Star Homes program and the Home Performance of Energy Star Program that have won national awards.

I've testified extensively during public utility commission proceedings. And I've acted as a public spokesperson for many energy-efficiency topics nationally. I also serve as a board member of the Energy Environmental Building Alliance, which is an organization devoted to advancing building science and energy-efficient building practices.

My purpose of my testimony here today is to discuss work that Tierra performed in conjunction with

the North Carolina Advanced Energy Corporation, who's our partner on the project. We did it under contract with Seminole Electric Cooperative, Inc.

And the project was to help evaluate existing energy-efficiency and DSM program offerings that were being offered by Seminole and its member cooperatives, as well as to look at potential new program offerings for the members.

Specifically, we assisted Seminole with determining and quantifying the energy-efficiency and demand-side management-program efforts that Seminole and its member cooperatives undertook in 2015 to reduce load.

We also recommended ways to enhance the current portfolio of energy-efficiency and demand-side management programs, and offered additional program concepts that Seminole and member cooperatives could consider adding in the future. And as discussed in my -- in the report that is an exhibit to my testimony, Exhibit TH-2, we quantified total annual energy savings for Seminole and its members in 2015.

There were approximately 12,350 megawatt hours and approximately 20 -- 85 megawatts of peak-demand savings. And then, lifetime energy savings, representing the savings over the entire life of all

measures installed, were approximately 34,500 megawatt hours.

The other report that is attached to my testimony is Exhibit TH-3. And in that report, it discusses our evaluation of new program concepts for Seminole and its members to consider. In order to help evaluate the cost-effectiveness of these programs, we looked at the impact of implementing the programs, the costs, the benefits, and the cost-effectiveness of these programs.

The -- we perform calculations for two cost-effectiveness tests; the utility-cost test and the RIM test, or ratepayer impact measure. And these -- the results of these tests concluded that none of the program concepts at this time were cost-effective as re- -- as measured by the RIM test.

That concludes my -- my summary. And I appreciate being here.

MR. PERKO: We proffer the witness for cross-examination at this time.

CHAIRMAN GRAHAM: Mr. Wright. Mr. Wright.

MR. WRIGHT: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WRIGHT:

**Q Good afternoon, Mr. Hines.**

A Afternoon.

**Q Have you been here before?**

A I have not been here before.

**Q Well, welcome to Tallahassee and the Florida PSC.**

A Thank you.

**Q I have a few questions for you this afternoon. I believe Mr. Perko asked you this -- these questions, but I want to just clarify. You don't have any changes to make to your testimony, correct?**

A Correct.

**Q And you don't have any changes to make to your exhibits either, correct?**

A That is correct.

**Q So, what is stated in your testimony and exhibits is true and correct, to the best of your knowledge and belief?**

A That is correct.

**Q And it represents your professional opinions as to the matters stated?**

A Yes.

**Q From reading your resume, it appears that much of the work you do is for the Arizona Public Service Company; is that correct?**

A That has been much of my work, but I have

quite a few clients around the country.

**Q Okay. Have you testified at other PSCs, public utility commissions?**

A Yes, I have.

**Q Not here, correct?**

A Not here.

**Q Okay. About how much of your work, say, over the last three years, has been for APS?**

A I would say roughly half.

**Q Thank you.**

**Before this matter for Seminole, have you ever worked for any Florida utilities on energy-conservation or DSM matters?**

A Many years ago, I did some work for Gulf Power.

**Q Thank you.**

**Are you familiar with the Florida Energy Efficiency and Conservation Act?**

A I am somewhat familiar with it.

**Q Did you happen to review it before you prepared your testimony in this case?**

A Briefly, yes.

**Q Did you review the Florida PSC's rules applicable to conservation cost-effectiveness before filing your testimony?**

A Briefly, yes.

**Q Are you familiar with the various cost-effectiveness tests that are frequently or regularly applied in evaluating utility program plans and goals?**

A Yes, very familiar.

**Q I thought you would be.**

**Is one of those the societal test?**

A One of those tests -- yes, there's typically five tests that are used and one of them is the societal cost test, or SCT.

**Q And another one is the total resource cost test?**

A That is correct.

**Q The ratepayer impact measure test?**

A Correct.

**Q The participant test or participants test?**

A Correct.

**Q And the utility cost test.**

A Correct.

**Q You mentioned you did the -- you did use the utility cost test in your work for Seminole, correct?**

A We did.

**Q What is that, exactly?**

A That is the test that -- I like to think of the tests as each having a different perspective. And

the test for the utility cost test is the perspective of the utility. So, it compares the resource and the costs of that resource as compared to what the utility could -- would -- would spend on other resources.

**Q But it's different from the RIM test, correct?**

A Correct. It does not include the lost revenues associated with -- with energy -- loss of energy sales.

**Q Have you performed all of these tests over the years for Arizona Public Service?**

A I have worked on a team that -- that performs those tests, yes.

**Q And for other utilities as well?**

A Yes.

**Q Why did you not perform a total resource cost test in this matter, this -- these proceedings?**

A We've talked to Seminole about the scope of the project, and it was determined that those were the two tests that we wanted to use. And I think, from the standpoint of trying to convince member co-ops of possible programs that would make sense for them, we thought it was a good idea.

**Q And you didn't perform a participant test either, correct?**

A No, we did not in this case.

**Q Again, why not?**

A It is my experience that that's sort of the table stakes for a test; that, if you can't pass the participant test, then you shouldn't do the program.

**Q Are you aware that the Florida Public Service Commission at least considers the results of participant tests and TRC tests in its considerations of goal-setting for Florida utilities?**

A I believe that the awareness I have is that that's part of FEECA, but not necessarily applied to cooperatives.

**Q Are you familiar with the use of what is sometimes called the payback screen to screen out or disqualify from further consideration proposed programs that customers or participants are likely to do anyway, in other words, to avoid free-riders?**

A Yes, absolutely, very familiar.

**Q I thought you might be.**

**Do you include such considerations in planning DSM and energy-efficiency goals for APS?**

A In the case of the Arizona Commission, they -- they have adopted a policy that net-to-gross equals 1.0. And so, free-riders are not considered in that analysis. We considered them qualitatively, but not quantitatively.

**Q Okay. Are you aware that the Florida PSC has most recently approved a two-year payback screen to -- to avoid free-riders?**

MR. PERKO: Object to form, Your Honor. I -- I think that question is a little bit unclear in what context.

CHAIRMAN GRAHAM: Mr. Wright?

MR. WRIGHT: Yeah, I'll -- I'll restate. I -- I just want to get some information about -- about customer economics here. I'm going to -- if it's okay, I'm going to hand the witness a copy of the Commission's last goals order.

CHAIRMAN GRAHAM: Okay. We're down to --

MR. WRIGHT: I don't intend -- I don't intend to mark this as an exhibit.

CHAIRMAN GRAHAM: Okay.

BY MR. WRIGHT:

**Q Well, let me ask you this question before we move on here: Have you worked in other states where the commissions or the utilities used a payback screen?**

A Yes, I have.

**Q Okay. I would like to ask you to look at -- I've handed you a copy that has an official-looking Public Service Commission time-date stamp, or date stamp, in the upper right-hand corner. It's the**

**Commission's order in the last batch of DSM goal-setting dock- -- dockets.**

**I would like to ask you to look at Page 20 -- start at Page 22, please. You'll see there, around the middle of the page, a section headed "Consideration of Free-riders."**

A Yes.

**Q If you would, go to the bottom of Page 27. I think there, you'll see that the Commission stated in -- in this -- in these dockets, that it would continue to use a two-year payback screen?**

A It looks like that's correct.

**Q Okay. Thank you.**

A Subject to check.

**Q What -- what kind of a discount rate is associated with a two-year payback screen?**

A What kind of a discount rate? I'm not sure I understand your question, really.

**Q Well, what would a customer's discount rate have to be to -- to correspond to a two-year payback?**

A I mean, typically, what we -- what is done there -- it's based on the savings. So, I'm not sure where the discount rate applies.

**Q Well, if the customer has to make an expenditure to get the savings, and it's a two- -- and**

**the hypothesis is that the customer won't make the investment unless it gets -- the customer gets a two-year payback, correct?**

A That's the assumption around the two-year payback.

**Q Right. Doesn't that imply the discount rate on the order of 40-odd percent?**

A I -- I've done the analysis sort of differently. We just look at it simply as what's the investment for the technology on the consumer's behalf, and then what's the annual savings that they would see and what's the simple payback for that.

**Q Do you have any understanding of individual customers' discount rates that you -- you would use or have used in DSM analyses?**

A No, I don't.

**Q You said you recommended program enhancements and new programs to Seminole in your testimony, correct?**

A Yes.

**Q Do you know whether they took your advice?**

A My understanding is that they have started to implement a smart-thermostat pilot project. And I think some of the things that we did in terms of tracking, I think that they've started to adopt more of.

**Q Does your 85-megawatt number reflect any of**

**those recommendations?**

A No, it doesn't. I -- at the time of the -- of the report, no, it did not.

**Q Did you evaluate any solar programs to be considered for the future for Seminole's member cooperatives?**

A No, we did not as part of the project.

**Q And so, did you evaluate any programs that involved solar with storage?**

A No, we did not. It was not part of the scope.

**Q Did you suggest to Seminole that they should consider solar with storage?**

A No, we talked about thermal storage. So, storage, yes, but not battery storage; thermal storage, absolutely.

**Q Did you have -- are you aware that one of the specific issues in this case is whether there are additional conservation measures reasonably available to the proposer of a new power plant that might mitigate the need for a new power plant?**

A Yes, I'm generally aware of that.

**Q Okay. And so, my -- my questions go to the -- whether and to what extent Seminole might have considered solar with storage in making that evaluation. And are you aware of anything they did in that regard?**

A Nothing that I can speak to, no.

**Q When you say nothing that you can speak to, does that imply there's something confidential or just --**

A No. No. Sorry. Just nothing I'm aware of.

**Q That's --**

A Was not part of the project.

**Q That --**

A Not part of the project scope.

**Q That's fine.**

**What's going on in Arizona with solar and storage?**

A The solar part, lots of adoption; not much with storage so far.

**Q Okay. Do you know Andy Tobin?**

A I do know Commissioner Tobin, yes.

MR. WRIGHT: I've got an exhibit, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: Mr. Chairman, I think this is 113.

CHAIRMAN GRAHAM: That is correct.

MR. WRIGHT: It is a one-page document that -- described as Arizona Corporation Commission, Andy Tobin's Proposed Amendment No. 4, Re: storage and

gas moratorium, dated 3/12/2018.

(Whereupon, Exhibit No. 113 was marked for identification.)

BY MR. WRIGHT:

**Q Are -- are you aware of this action considered and taken by the Arizona Corporation Commission recently?**

A I'm aware of similar actions, but I -- I have not seen this one yet, until today.

**Q So, you didn't attend the -- the open meeting on March 13th?**

A I did not. And as far as I see, this is a proposed amendment. So, I'm not sure what the -- whether it was actually adopted or not.

MR. WRIGHT: Okay. I've got another exhibit, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: This will be 114. It's a March 17th, 2018, Arizona Star article regarding the Arizona Corporation Commission ordering Tucson Electric Power and the Arizona Public Service to add renewables and impose a moratorium on gas plants.

(Whereupon, Exhibit No. 114 was marked for identification.)

BY MR. WRIGHT:

**Q Do you read the Arizona Star?**

A No, I don't. I read the Arizona Republic. I'm -- I'm in Phoenix. This is in Tucson.

**Q Okay. Are you -- are you just not familiar at all with the -- the action reported in this article?**

A I'm -- again, I'm familiar in general with what Commissioner Tobin has been proposing over the last couple of months, but not -- not exactly this, no.

**Q Okay.**

A I've been working on other projects.

**Q In your work for the -- for Seminole in this matter, did you do any comparison of the achievements of other Florida utilities in terms of winter-peak demand reductions to the achievements of Seminole's member co-ops?**

A It was really not part of our scope. So, no.

MR. WRIGHT: Thank you.

That's all I have, Mr. Chairman. Thank you.

Thank you, Mr. Hines.

CHAIRMAN GRAHAM: Thank you.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Staff.

MS. DZIECHCIARZ: Staff has no questions.

Thank you.

CHAIRMAN GRAHAM: Commissioners?

Redirect?

MR. PERKO: Very briefly, Commissioner -- Mr. Chairman -- sorry.

FURTHER EXAMINATION

BY MR. PERKO:

**Q Mr. Hines, Mr. Wright asked you about a number of different tests that are used in DSM analyses. And you mentioned the RIM test, but I don't believe he asked you what that's designed to -- to analyze and tell you.**

**Could you --**

A So --

**Q -- explain that?**

A Yeah, I can explain that. The RIM test, in particular, is -- again, I -- I look at it as what's the perspective. And the perspective of the RIM test is from a non-participant; so, someone who chooses, for whatever reason, to not participate in a DSM program.

And the concept is, does the fact that you are offering DSM and the costs associated with that cause a rate increase for non-participants. So, it's also -- you know, it's the ratepayer impact measure. And so, it is associated with looking at the potential that programs will produce short-term rate impacts.

**Q So, the focus is on the ratepayer. And if the**

**measure does not pass the RIM test, you would expect it to increase the ratepayers' -- what's the ratepayer is paying.**

A Yes, that's correct. That's what the test is designed to do.

**Q Mr. -- Mr. Wright also asked you about the potential for reasonable -- for DSM measures to mitigate the need. Do you have an opinion as to whether the -- there is a -- you could develop a program of reasonably available DSM measures to mitigate a need on the order of magnitude that's talked about -- been talked about in this case?**

A Based on what I know about the need and my professional opinion and the work that we did, I would say no. There's an order-of-magnitude difference in terms of EE and DSM being able to meet the need.

MR. PERKO: Thank you. I have nothing further, Your Honor --

CHAIRMAN GRAHAM: All right.

MR. PERKO: -- sorry -- Chairman.

CHAIRMAN GRAHAM: Exhibits.

MR. PERKO: We would need -- move 15 through 17 and 39 through 41, please.

CHAIRMAN GRAHAM: 15 through 17 and 39 through 41.

No objection, Mr. Wright?

MR. WRIGHT: No objection Mr. Chairman.

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: And acknowledging they are hearsay, I would move 113 and 114. He acknowledged that he's familiar with Commissioner Tobin's activities in this regard.

MR. PERKO: That is not auth- -- auth- -- auth- -- that is not authentication, Your Honor. Furthermore, these are pure hearsay. He could establish that this appears to be a proposal that was never -- we don't even know if it was ever acted on.

This is a newspaper article that -- the authenticity has not been established. It's pure hearsay. And the relevance has not been established either. I would object on lack of foundation, lack of authenticity, and hearsay.

CHAIRMAN GRAHAM: I agree with him on both of those, both 113 and 114. So, neither one of those will go in.

MR. WRIGHT: Well, I -- I will make this proffer: The standard for evidence in administrative proceedings is -- is information of the sort that -- that people would ordinarily use

in their -- in their daily business.

I think this is the kind of thing this -- he has said he is familiar with Commissioner Tobin's initiatives in this regard and -- and the newspaper article appears to state that the Arizona Commission actually voted to approve this -- this amendment.

Again, with the understanding it's hearsay, I -- I would ask that it be admitted.

CHAIRMAN GRAHAM: We're not going to admit either one of those.

MR. WRIGHT: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Okay. Next witness.

MR. PERKO: Thank you, Mr. Chairman. Seminole, at this time, calls Mr. Jason Peters.

CHAIRMAN GRAHAM: Welcome, Mr. Peters.

EXAMINATION

BY MR. PERKO:

**Q Could you please state your full name for the record.**

A It's Jason Thomas Peters.

**Q Mr. Peters, have you been sworn today?**

A Yes, I have.

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

A It is Seminole Electric Cooperative, Inc. And our business address is 16313 North Dale Mabry Highway, Tampa, Florida 33618.

**Q Mr. Peters, did you cause to be filed on December 21st, 2017, direct testimony consisting of 11 pages in Docket Nos. 20170266-EC and Docket No. 20170267-EC?**

A Yes.

**Q Do you have any changes or corrections to your prefiled direct testimony?**

A I do not.

**Q If I were to ask you the same questions in your prefiled testimony, would your answers be the same as you sit here today?**

A They would be the same.

MR. PERKO: Mr. Chairman, at this time, I would ask that Mr. Peters' prefiled testimony in dock- -- in those dockets be inserted into the record as if read.

CHAIRMAN GRAHAM: We will insert Mr. Peters' direct prefiled testimony in the two dockets into the record as though read.

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

BEFORE THE PUBLIC SERVICE COMMISSION

SEMINOLE ELECTRIC COOPERATIVE, INC.

DIRECT TESTIMONY OF JASON PETERS

DOCKET NO. _____

DECEMBER 21, 2017

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

A. My name is Jason Peters. My business address is 16313 North Dale Mabry Highway, Tampa, Florida 33618.

**Q. By whom are you employed and in what capacity?**

A. I am employed by Seminole Electric Cooperative, Inc. ("Seminole") as a Portfolio Director.

**Q. Please describe your responsibilities in your current position.**

A. In my role as a Portfolio Director, I lead, manage and provide strategic direction to the power marketing and portions of the fuel supply (coal, fuel oil and certain coal combustion residuals) team at Seminole. I also develop and implement strategies for the aforementioned power and fuel supply portfolios, including pricing, optimization, risk management, transportation and trading. I lead a team of three professionals and manage a budget of $400-600 million annually.

**Q. Please state your professional experience and education background**

A I hold a B.A. and Masters in Business Administration from the University of South Florida. I have been employed by Seminole for 16 years, in roles of increasing

responsibility. During those 16 years, I have either been directly involved or led our activities related to the procurement of wholesale power supply from the Florida and southeast markets.

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

A. The purpose of my testimony is to describe Seminole's assessment of market alternatives, including the Request for Proposals ("RFP") process that was used to identify the available purchased power alternatives. Historically, Seminole has purchased wholesale power both via an RFP process and also as a result of bilateral negotiations. I will describe the bids Seminole received in response to the RFP, and how those bids were initially evaluated by Seminole from both a technical and commercial perspective.

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

A. Yes. I am sponsoring the following exhibits, which were prepared by me or under my direct supervision:

- Exhibit No. __ (JP-1) - Resume of Jason Peters; and
- Exhibit No. __ (JP-2) - Summary of RFP Responses.

I am also sponsoring Section 6.3 of Seminole's Need Study, which is identified as Exhibit No. ____ (MPW-2), as well as Appendix B to the Need Study, which is the RFP that Seminole issued in March 2016, along with addenda to the RFP issued during the course of the process.

**Q. Please describe Seminole's philosophy in using purchased power RFPs.**

A. Seminole uses wholesale market purchases to maintain competitive flexibility in our power supply portfolio, and the RFP process is one of the tools we use to determine which wholesale market purchases best fit our portfolio. To provide some perspective on the importance of purchased power in Seminole's portfolio, in 2016, Seminole purchased approximately 26% of our energy and 54% of our capacity from wholesale purchased power. Historically, Seminole has acquired resources from Hardee Power Partners, Reliant Energy, Constellation, Duke Energy and from various biomass renewables via the RFP process. Several of these resources remain in Seminole's portfolio today.

Via the RFP process, Seminole seeks to find power supply resources that provide the most cost effective, risk managed resources for our member systems. To find those resources, Seminole evaluates the economic value of the RFP proposals, and the flexibility offered in the agreements, versus other resource alternatives. Additionally, Seminole conducts a risk assessment of the RFP proposals. Some of the risks reviewed in our process include intangible considerations, such as construction timeline, flexibility of the contract, energy scheduling rights, and firmness of the output from the resource. For example, Seminole evaluates the flexibility of a resource by determining whether Seminole has the ability to increase or lower the purchased amount of capacity at a predetermined price, and would also value the scheduling rights for a resource by how quickly Seminole can call upon energy from a resource during a given day.

**Q. What experience does Seminole have with RFPs for purchased power?**

A. Seminole has incorporated the RFP process into its resource planning development numerous times throughout its history. Prior to the March 1, 2016 RFP, Seminole issued a solar RFP in 2015 that led to the construction of a 2.2 MW solar farm at Seminole's Midulla Generating Station ("MGS"). The solar facility went commercial in August 2017. In addition to the solar facility, Seminole's use of RFPs also led to the emergence of independent power producers ("IPPs") into Florida, beginning with the Hardee Power Plant, an RFP issued in 1988 that was awarded to and built by TECO Power Services (Hardee is now owned by Invenergy) and completed in 1993. Other IPPs contracted by Seminole via our RFP process include Reliant's Osceola plant (three combustion turbines totaling 546 MW), Southern Power Company's ("SPC's") Oleander facility (Seminole contracted for three combustion turbines totaling 546 MW), and Duke Energy Florida's ("DEF's") Osprey 580 MW combined cycle power plant (formerly owned by Calpine).

**Q. Does Seminole restrict its consideration of purchased power alternatives to the issuance of formal RFPs?**

A. No, Seminole does not restrict its evaluation of resources to only RFP proposals. Seminole utilizes a variety of options including RFPs, bilateral discussions with current and historical wholesale market suppliers, and review of unsolicited offers to determine which resources best fit into its portfolio. As I mentioned previously, Seminole has consistently used the IPP market to fulfill its resource portfolio and supplement its owned generation resources.

Through a combination of RFPs and bilateral discussions, Seminole has procured power supply from a number of entities. In addition to the RFP additions mentioned above, Seminole also has executed agreements for term power supply with DEF and Florida Power and Light Company ("FPL"). Oftentimes, selected resources included in Seminole's portfolio are extended beyond the initial agreement, as Seminole did with the DEF Osprey, Reliant Osceola and SPC Oleander resources.

Seminole has also included resources in our portfolio from several unsolicited offers, including the Hillsborough County waste-to-energy facility, a 40 MW waste-to-energy facility, and the City of Tampa's McKay Bay facility, a 20 MW waste-to-energy facility.

**Q. Please describe the RFP that Seminole issued on March 31, 2016.**

A. Seminole issued the RFP outlining that it was looking for up to 600 MW starting June 1, 2021 with needs up to 1,000 MW by June 2022. Seminole was receptive to offers from typical fossil fuel generation, including existing tolling resources, new builds by IPPs and existing utilities, system proposals, and renewable generation. All offers were required to be a minimum of 25 MW given the significant capacity need, and we requested a minimum two year term for any proposals. We were purposefully not restrictive in our criteria in an attempt to draw as many proposals as possible from the market for our evaluation. Seminole also welcomed demand side management proposals in response to the RFP.

The RFP laid out the desired qualifications for each bidder and the necessary requirements for a proposal submittal including financial viability, credit worthiness, references, and experience. For new generation, including renewables, site control was a requirement to proceed to the short list.

Seminole also asked for fixed and variable pricing, scheduling, output, heat rates, and start/scheduling charges to determine the economics of energy dispatch. Lastly, the RFP required the identification of transmission interconnection location and/or delivery points to receive the capacity and energy.

Q. **Please describe the process by which the March 2016 RFP was issued to potential market counterparties.**

The RFP was distributed through a multifaceted approach. Seminole simultaneously emailed its current suppliers and contacts while it issued the RFP via newswire and industry trade publications including MW Daily, an S&P Company. Seminole also published all of its documents on its external website where it was publically available.

**Q. Did Seminole receive any questions from potential bidders on the March 2016 RFP?**

A. Seminole received many questions regarding the RFP. Seminole collected all of the bidder questions and published all the responses via our website (as addenda) for viewing by all respondents. Seminole also emailed the questions to all potential bidders and instructed them to view the website for any additional clarifications and answers.

**Q. Please describe the proposals that Seminole received in response to the RFP.**

A. Seminole received over two hundred proposals that spread across a wide spectrum of alternatives. The proposals were for different stratifications (baseload, intermediate or peaking) and had varying commercial terms, including term lengths, MW size, and generation type. Renewable proposal types included solar, wind, battery storage, landfill gas, and waste to energy. The other offers were for traditional fossil-fueled generation, but varied in structure, with the majority of the offers classified as baseload/intermediate or combined cycle. Exhibit No. __ (JP-2) provides a summary of the different proposals received in response to the RFP.

**Q. Did Seminole receive any proposals for renewable resources or demand side measures?**

A. Yes. Seminole received renewable offers that included solar, wind, waste to energy, and battery storage. The majority of the renewable proposals were from solar resources. Seminole did not receive any proposals for demand side management.

**Q. Please describe the screening process that Seminole followed upon receipt of the proposals.**

A. To evaluate the large number of RFP responses, Seminole brought together subject matter experts ("SMEs") from various parts of the company to evaluate the proposals. The SMEs encompass the following areas of responsibility: supply management, transmission, fuels (including natural gas, coal, and fuel oil), contract administration, power marketing, treasury services, accounting, system

operations, and environmental services. At first, the SME group reviewed all of the proposals to determine if the proposal had all of the required information, such as appropriate qualifications, economics, scheduling rights, and transmission information. Our team then worked with the bidders to obtain any missing or incomplete information in order to keep the proposal list as robust as possible. Proposals that were not approved under the bidder qualification standards were removed from the process.

Once the qualified offers were identified, the SME group segregated the renewable offers for solar and wind (due to the variable nature of their energy output) from traditional fossil-fueled generation to compare economics, transmission, size, viability and timing. Seminole further categorized the traditional offers into three different stratifications, baseload, intermediate and peaking. Offers for asset purchases were evaluated differently than the initial assessment of PPAs. The waste to energy proposal was bundled with other fossil baseload generation due to its plant operating characteristics.

Seminole's initial analysis compared each proposal's busbar cost in their designated stratification to narrow down uneconomic and outlier offers. Seminole also analyzed the operational and transmission risks of the proposed resource at a high level. Seminole removed both the offers with undesirable economics based upon the busbar analysis results and any offers that posed significant operational and transmission risks.

Seminole then continued to narrow the remaining list down by evaluating proposals in regards to the way they would interact with Seminole's entire portfolio. Seminole used Planning and Risk ("PaR") and System Optimizer software tools to select and choose which generation/power purchase agreement provided the greatest overall economic value within an entire portfolio with varying combinations of start dates, term lengths, and MW size. All acquisition offers were then evaluated to understand the potential benefits to the system, and to assess the impact of buying the asset earlier than Seminole's identified capacity needs.

Economics was not the only considered factor that reduced the number of proposals down to a manageable short-list. Seminole incorporated a risk analysis on the individual offers and also produced a comprehensive portfolio risk assessment based on the group of selected proposals. The SMEs investigated in greater detail transmission availability, fuel accessibility and availability, build and construction risks, technological/commercial risks, environmental factors, credit capabilities, term flexibility, and scheduling flexibility. Seminole concentrated on proposals that used available and proven technology.

The team evaluation results were compiled into a comprehensive rating scorecard. The comprehensive rating scorecard weighted a mix of short-term and long-term economics, individual and portfolio risks, strategic outlook, fuel flexibility, and real time operational functionality.

**Q. Were any of the proposals eliminated from further consideration as a result of the technical and commercial evaluation?**

A. Seminole did eliminate one conventional generation proposal from consideration due to the specialization of the technology; the unit was a one-of-a-kind unit and did not have an abundant spare part market. Battery storage proposals were eliminated not because of the technical evaluation, but because of the undesirable economics.

**Q. What did Seminole do upon the completion of this economic evaluation?**

A. Throughout the RFP process, Seminole notified participants of the ongoing evaluation. Once a short-list was finalized, Seminole notified participants of their status, either removed from evaluation or subject to continued evaluation. Those that remained were given an opportunity to present their best and final offers. In addition to their final proposals, the short-list participants were asked for drafts of their related power purchase agreements. Negotiations continued on the potential PPAs until a final decision was presented and approved by the Seminole Board of Trustees. Throughout the process, Seminole staff updated the Board of Trustees on the proposals, risks, economics, evaluations, and suggested recommendations.

**Q. What was the end result of the RFP process?**

A. When the comprehensive evaluation was complete, Seminole entered into PPA negotiations with several counterparties. The Board of Trustees approved a portfolio of resources which included a new Seminole self-build resource and several PPAs with GE Capital, Southern Company Services (Southern Company Wholesale), DEF, SPC and Coronal Energy.

**Q. Has Seminole considered potential purchased power options outside the RFP process?**

A. Seminole continually receives offers for solar and traditional fossil fueled/system generation and evaluates them at a high level when received. As per our normal practice, Seminole did not include unsolicited offers sent following our RFP close date in the RFP short list. Via our high level evaluation, we did note that the unsolicited proposals did not provide any significant economic or risk benefit in comparison to the RFP proposals.

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

A. Yes.

BY MR. PERKO:

**Q And Mr. Peters, did you also attach two exhibits -- two exhibits to your direct testimony in those dockets that were labeled JP-1 and JP-2, and identified on the comprehensive exhibit list as 18 through 19 and 42 through 43?**

A Yes, I did.

**Q Do you have any changes to those exhibits?**

A No, I do not.

**Q Okay. Mr. Peters, have you prepared a summary of your testimony?**

A Yes, a brief one.

**Q Would you please provide it to the Commission at this time.**

A Sure.

So, good afternoon, Chairman and Commissioners. Thank you for the opportunity to provide my summary testimony today. My name is Jason Peters. And I have been employed at Seminole Electric for 17 years; currently employed as a portfolio director.

In terms of formal education, I have a Bachelor of Arts in criminology and a Master's in business administration from the University of South Florida. And during my time at Seminole, I've had several different roles of increasing responsibility.

My current role at Seminole is to lead our commercial activity in the wholesale power markets and our fuel activity related to coal, rail transport, and certain coal byproducts. During my tenure, I have either contributed in regards to the analysis or led each of Seminole's wholesale power RFPs.

The purpose of my testimony here today is to review the activity that Seminole took in relation to its recent RFP. I led the internal drafting process at Seminole for the RFP and issued the document to the market on March 1, 2016.

And as a result of issuing the RFP, Seminole received a robust response from the market with over 200 proposals received from most major market counter-parties in Florida and the southeast.

We attribute this to the length of the market and also, in regards to the RFP, itself, the lack of requirements for the RFP in regards to term and megawatt size; made it very open to the market and the participants. We wanted responses.

I was the primary contact with each of the bidder representatives and led the evaluation team that took a look at each of the market proposals. Our team spent over one year evaluating the individual proposals in regards to economics, risk, and other qualitative

considerations.

Following our iterative review of the individual proposals, we, then, refined the proposals into portfolios in order to fill the thousand-plus-megawatt-capacity need required to service Seminole's members.

As Seminole concluded its market-evaluation activity and moved forward on the recommendation provided to our board of trustees, I was the principal in negotiating the five purchase power agreements, previously enumerated in the testimony of my -- one of my colleagues.

Given my participation in the RFP and knowing the extraordinary effort put forth by the collaborative review of my colleagues to evaluate all of the available options, along with my understanding and experience of Seminole's system, I fully support the selected portfolio of resources to meet Seminole's future needs.

And I thank you for your time and your consideration today.

MR. PERKO: We proffer the witness for cross-examination.

CHAIRMAN GRAHAM: Sure.

Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WRIGHT:

**Q Afternoon, Jason.**

A Hello, Mr. Wright.

**Q In your testimony, on Page 7, you described the screening process that Seminole used to evaluate the proposals received in response to the RFP, correct?**

A Yes.

**Q Thanks.**

**I think it starts on Page 7, Line 7, and continues through Page 9, Line 23, correct?**

A Yes, that's correct.

**Q Thank you.**

**On Page 9, Lines 11 through 17, you also further describe a risk analysis that Seminole used to evaluate the proposals, correct?**

A Yes, that's correct.

**Q I probably should know this, but what is an "SME"?**

A That acronym was used by Seminole to designate a subject matter expert.

**Q Thank you very much.**

**Do I -- at Page 5 of your testimony, Lines 9 through 12, you talk about resources included in Seminole's portfolio from unsolicited offers including**

**the Hillsborough County waste energy facility and the City of Tampa's McKay Bay waste energy facility, correct?**

A Yes.

**Q Are they both interconnected directly to Tampa Electric Company?**

A They are, yes.

**Q Are -- are those -- are those resources in Seminole's power-supply portfolio at the present time?**

A They are, yes.

**Q You were around during the time that Seminole was purchasing power from the Osprey Energy Center, were you not?**

A Yes, I was.

**Q If you know, it was interconnected to Tampa Electric's Recker set -- Recker substation, was it not?**

A Yes, it was.

**Q Thank you.**

**On Page 10, Lines 5 through 7, you state that: Battery-storage proposals were eliminated, not because of technical evaluation, but because of the undesirable economics, correct?**

A Yes, that's correct.

**Q How many battery-storage proposals did you get?**

A It was just a handful. It wasn't -- it wasn't more than five, but I don't remember the exact number. It may have been three or four.

**Q Has Seminole done anything further to investigate solar with battery-storage options?**

A Not formally. We just concluded our RFP activity and the negotiation, execution of the contracts that we've talked about that's been -- been mentioned in the testimony -- towards the end of December.

And in the interim, we've been preparing for this -- this hearing. So, no, we have not engaged in another RFP process or done anything formal in regards to the battery storage in the interim.

**Q Thank you.**

**Were there two separate RFPs that led up to where we are today; a solar RFP and -- and the other RFP? Or was it one big one?**

A There were two RFPs that Seminole conducted. One was an RFP conducted by Mr. David Kezell in regards -- in regards to the self-build activity. The other was an RFP that I conducted for the market activity, but we didn't separate renewable from the conventional technology in the second RFP.

**Q Thank you.**

**So, is -- I think I can infer from that that**

**you did not conduct a separate RFP for battery-storage options, correct?**

A That's correct.

**Q Are you planning to issue an RFP for battery-storage options at any time in the foreseeable future?**

A We do not currently have another RFP on the schedule, but we would be happy to do that, if there's an interest on behalf of our members and they direct us to do so.

**Q Have you -- have you personally evaluated the economics of battery storage?**

A We did that as a team, but yes, I'm familiar with the results and the way that we analyzed it.

**Q Okay. And just to be clear, I did just say battery storage. I -- did that include the economics of solar coupled with battery storage?**

A Yes.

**Q Thank you.**

**What are the cost trends for battery storage?**

A They're moving down, much like solar has moved down over the past couple of years.

**Q I -- I was at some -- I was at some solar presentation not too long ago at which one of the participants made the statement, so- -- storage today is where solar was in 2008. Do you agree with or disagree**

**with or have no opinion on that statement?**

A I -- I think generally the trend is the same. If you were to go back and look at where solar was six, seven, eight years ago, the market price was very high. There were feed-in tariffs and other things happening in the state which the pricing is multiples, five, ten times of what it is today.

And we're seeing a similar trend in storage. I -- I don't have any data to share in regards to how low that will drop out in regards to the difference of the two, but certainly it's moving down, in -- in the same kind of direction that solar PV moved down.

**Q In the RFP that led up to this proceeding, did you solicit proposals for winter capacity only?**

A No, we did not, but we didn't limit that in the RFP. We just asked that the terms be a minimum of two years. So, if someone had wanted to offer winter seasonal for multiple years, they could have done that.

We did receive proposals for summer-only capacity.

**Q For summer-only?**

A Summer-only, yes.

**Q Will you agree -- based on your experience with RFPs and -- and soliciting power supply, will you agree that -- that greater amounts of excess capacity**

**generally results in lower-capacity price offers?**

A Generally speaking, you know, the greater the supply, the -- the better off the pricing is. As it relates to RFPs in general and the amount of proposals that we received, certainly the pricing could be better, but that doesn't necessarily mean it's translatable and includible in Seminole's portfolio.

So, we received a number of responses that, for various different reasons, including, for example, the inability to acquire transmission or the cost of having to double-wheel, as some of my colleagues have talked about -- just because you get a proposal doesn't necessarily mean you can bring it into the system and it makes sense for Seminole, as far as a future resource is concerned.

**Q Are -- are you familiar with the proposals submitted by Quantum Pasco Power, L.P., as updated in, I think, October of 2016?**

A Yes, I'm familiar with that.

MR. WRIGHT: Thank you.

Mr. Chairman, I would like to distribute that as an exhibit. It is confidential.

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: Thank you.

CHAIRMAN GRAHAM: We're up to No. 115.

Got a title for me, Mr. Wright?

MR. WRIGHT: Quantum Pasco's updated proposal, dated 10/11/2016.

(Whereupon, Exhibit No. 115 was marked for identification.)

THE WITNESS: (Examining document.) All right.

BY MR. WRIGHT:

**Q Have you -- have you seen this document before?**

A Yes, I have.

**Q And it is what I've represented it to be, as Quantum's proposal, as updated in October?**

A Yes, I believe that is so.

**Q And it included both a PPA proposal -- I should say, some alternate PPA proposals, varying start dates, and an asset-sale offer?**

A That's true, yes.

**Q Thank you.**

**And this proposal was not disqualified for -- from further consideration, was it?**

A No, it was not.

MR. WRIGHT: Thank you.

That's all I have for Mr. Peters. Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Okay.

Staff?

MS. DZIECHCIARZ: Staff has no questions. Thank you.

CHAIRMAN GRAHAM: Commissioners?

Commissioner Polmann.

COMMISSIONER POLMANN: Good afternoon, Mr. Peters.

THE WITNESS: Good afternoon.

COMMISSIONER POLMANN: You indicated you led -- led the RFP effort; is that correct?

THE WITNESS: Yes, it is.

COMMISSIONER POLMANN: Could you remind us how many respondents you had to the RFP? Approximately.

THE WITNESS: It was around 230 individual proposals.

COMMISSIONER POLMANN: Thank you. And generally speaking, you -- you had a team reviewing all those, subject matter experts. And you developed what -- what we could call a short list, is that correct, in --

THE WITNESS: Yes, that's correct. So, we received the proposals in May of 2016. And it took us the better part of nine months to get down to a

short list that we could select the individual proposals that we wanted to comprise into the portfolios that we've talked about.

So, it took us a while to -- to winnow down appropriately due to the number of the responses that we received into what we would consider a short list.

I would say, in this particular case, our short list was more around the size of what we traditionally received in regards to RFP responses. So, we received quite a few number of responses. And we winnowed that down to an appropriate list to try to find the appropriate portfolio for our future needs.

COMMISSIONER POLMANN: Approximately how many proposals remained on that short list?

THE WITNESS: I did not bring that number with me, but it was somewhere in the neighborhood of, say, 15 to 20.

COMMISSIONER POLMANN: Okay. Could you describe, generally, the range of types of opportunities that were included in that short list, PPAs or billed or -- or others -- not specifically, but just generally.

THE WITNESS: Sure. It was a -- it was a

pretty good cross-section. We had a group of renewable proposals that we kept on the short list that we felt were appropriate, would fit best into our portfolio. Those were all solar in nature.

In the initial phases of the RFP, we did have wind responses and we had some battery storage, but those didn't seem to be appropriate given the -- the analysis we had done up until that point. So, we had a number of solar proposals.

Then we also had a couple of new-build and some existing-system power, which I would consider to be, like, an intermediate or a combined-cycle type of proposal. We had some peaking structure as well.

So, the GECT tolling agreement -- that was one of the particular items that was left on the list, as far as CTs were concerned. We had some other system peaking that we had in the mix as well.

So, a number of system products, a number of what -- what I would consider the intermediate or combined cycle. Sometimes it could be based in peaking. So, we had a pretty good cross-section of -- out of the total RFP responses, we had a good amount of representation of each of the segments in that final list that we used to comprise the

portfolios.

COMMISSIONER POLMANN: As you moved forward at that point, was this continued evaluation performed entirely in-house.

THE WITNESS: It was performed in-house and then we also had our independent evaluator from Sedway Consulting, who mirrored our analysis. He did his own analysis, but he had a separate process and we had the one that we were doing in-house.

COMMISSIONER POLMANN: Did you receive supplemental information at this point from the respondents to the RFP -- those who -- who had put forth these proposals? Did you ask for supplemental information from the short list?

THE WITNESS: Yes, we did that throughout the process. There was a number of times the bidders asked questions or we asked questions of the bidders.

We received several responses in which we asked for -- as we tried to put together the portfolio because we weren't looking for a single amount of megawatts. Say, for a hundred megawatts, there wasn't any one particular resource that fit our needs because we were trying to put together a portfolio that would best meet our overall needs.

We did modify, through negotiations with those bidders on the short list, to get to an appropriate conclusion that we thought would best work for Seminole. So, we asked questions of them. They asked questions of us. And we came to what we felt was the best commercial fit for all the parties.

COMMISSIONER POLMANN: At what point in the process did you ask for pricing? Was that in the front end or the middle or -- where?

THE WITNESS: Yeah, it was -- it was asked for on the front end. So, along with the bid information and the qualifications and the executive summary that we asked the bidders to produce, we also asked them to provide a pricing table.

A couple of times during the -- the process, we had what I would call stages of folks. We let them know, we're no longer considering you. We did go back to them and revisit some of the pricing, but we did it for all the bidders at the appropriate times during the process.

COMMISSIONER POLMANN: With regard to price, then, at what point did you -- or have you, in fact, come up with final pricing from each of the -- the bidders?

THE WITNESS: We have come up with final pricing from the -- from the bidders. So, on the self-build side, Mr. Kezell mentioned that there's still some work left to be done on the EPC contract, but in regards to the market activity that was done, all those contracts have been executed and were in the implementation phase.

So, all the pricing is established and it's in those contracts.

COMMISSIONER POLMANN: Did you have those final prices when -- when the board made a decision to -- to move forward with the selected portfolio or did they elect to move forward with this portfolio without final prices?

THE WITNESS: I would say that all the major terms and conditions were known. There might have been small pricing adjustments in regards to individual issues that had to be negotiated or finalized, the structure of that.

But in regards to the price, the demand price, the fixed O & M -- or I'm sorry -- the demand price, the variable O & M start charges, those types of things -- those were all enumerated. Parties knew what they were. We presented those to our board. And we negotiated and finalized

agreements around those prices.

So, everything was known before we executed the agreements and before we went to the board in September of 2017.

COMMISSIONER POLMANN: And is it your opinion that the board, as well as having information regarding terms and conditions, also had full knowledge or -- or what the team would describe as adequate and reasonable knowledge, with regard to -- to the spectrum of risk and reliability?

THE WITNESS: Yeah -- yes, absolutely, I would say that is true. We not only updated the board during our regularly-scheduled meetings, we also had workshops that we presented to the board and we went through, from A to Z, really, not just on the market alternative, but on the entire spectrum of what Seminole was doing to satisfy that need.

We went through all of the information that we had, kept the board updated. And that included risk assessment and how we were progressing in that evaluation.

So, they -- they saw it multiple times. And as more information became present and the risk analysis got a little deeper, as it did through the process, they were presented with updates.

COMMISSIONER POLMANN: Were there any remaining questions, with regard to risk, reliability, or other factors beyond costs, that you -- your board felt were not answered that you continue to work on or will be part of subsequent steps going forward, beyond this case, beyond this docket?

THE WITNESS: Not that -- not any that I'm aware of. I mean, there's -- there's risk related to every single agreement that we put together.

Previously in the testimony, it was mentioned a couple of off-ramps that are usually inherent in each agreement. So, the parties worked to put together an agreement that surrounds that, allows either party to exit, for example, if they don't get transmission, but those things are all normal course of business and items that were discussed with the board and are -- are usually in our contracts.

So, I'm not aware of any exceptions to -- to that type of information or those types of risks.

COMMISSIONER POLMANN: So, to the best of your knowledge, you don't -- you don't believe that there are unanswered questions for your board with regard to this proposed portfolio --

THE WITNESS: Not that I'm aware of.

COMMISSIONER POLMANN: -- other than -- other than in agreements or contracts that need to be executed.

THE WITNESS: Everything has been executed. So, all the agreements are set in stone. And as I said, we're implementing. So, there's not any questions on the agreements or what they are. Ultimately, through the implementation, can -- something can happen.

COMMISSIONER POLMANN: Sure.

THE WITNESS: And that might cause a party to take advantage of one of those exit ramps, but there's not anything that we're aware of or that the board has questioned in regards to what we've done thus far.

COMMISSIONER POLMANN: Thank you, Mr. Chair.

CHAIRMAN GRAHAM: Commissioner Clark.

COMMISSIONER CLARK: Thank you, Mr. Chairman.

You actually answered two of my questions, but --

CHAIRMAN GRAHAM: Microphone.

COMMISSIONER CLARK: I'm sorry?

CHAIRMAN GRAHAM: Microphone.

COMMISSIONER CLARK: Oh, I'm sorry.

You actually answered two of my questions, but I -- I still want to understand, just briefly, the thought process behind this particular RFP. Is -- would you describe this RFP process as normal for a utility seeking generation assets?

THE WITNESS: Yes, I think it is very typical.

COMMISSIONER CLARK: With that much scope -- knowing -- with that much change in scope, allowing 25-megawatt increments, knowing you need 600 in firm capacity?

THE WITNESS: Yes. I'll say this: I think it's very typical for Seminole. If I were -- if I worked for a different kind of entity, an IOU, perhaps, you would find that the RFP is probably more targeted and less open to different possibilities for the market, but that is not Seminole's business model.

We've been -- during our history, we've incorporated RFPs as part of our process and we've awarded to the market many different times. At other times, we've awarded or moved in the direction of self-build when the market wasn't there.

So, what we try to do through the RFP process and the -- and the dual process that I described

before where Mr. Kezell went out and took a look for self-build alternatives and Seminole looked for market alternatives -- or I'm sorry -- I looked for market alternatives and tried to define what was beneficial to us in the market. We tried to find the best solution for member owners.

And it's not really important to us whether that comes in the form of self-build or it comes in the form of market alternatives. What is important to us is that we provide to our members the reliable, cost-effective power supply that they deserve.

COMMISSIONER CLARK: Did you anticipate this many responses?

THE WITNESS: No, I did not.

COMMISSIONER CLARK: Would you have narrowed the scope, had you known you were getting 200 responses?

THE WITNESS: No. I think it was a good exercise for Seminole. It -- it taught us something in the process. It sharpened our -- our evaluation process and the way that we did that. So, all the changes were beneficial.

I think the -- the one change that we might make is -- is maybe the suggestion of focusing on

the variable products on the renewable side and then focusing on traditional commodity.

So, we might have structured the RFP differently to get the answers a little bit differently in terms of the forms and that sort of thing, but the response from the market is very much what we wanted. We want to have all those opportunities to take a look at and figure out what works best for Seminole.

COMMISSIONER CLARK: You -- you mentioned earlier in your testimony -- and correct me if I'm wrong -- that some of the responses were eliminated due to the transmission constraints, the ability to actually deliver the prod- -- the product. Was that not a condition of the RFP?

THE WITNESS: That was through the evaluation process. Out of the 230-plus offers -- I think it was 238 -- that we received, we only eliminated four from the initial screen.

And so, we tried to find our -- we did our best to find a way to consider the rest meaningfully and see if they should be included in the portfolio. The reason we eliminated those four -- one was after the RFP submittal date. We received it afterwards. And the other three were

for -- were for a time that didn't meet the RFP requirements. So, they were past June 1 of 2021.

So, everything else we considered.

COMMISSIONER CLARK: But they could all meet your requirements in terms of delivery?

THE WITNESS: That was something -- transmission is a hard question to answer. Usually the resources don't come to you in the form of, we have this transition and we're ready to provide it to you. As we've talked about, Seminole is a transmission-dependent utility. So, it requires a couple of different things in regards to transmission.

In regards to the Hillsborough County and the City of Tampa resources, those came from a renewable RFP that we had done a number of years ago. And what it requires is that the -- there's available transmission. They call it ATC. So, you have to acquire the ATC from Tampa Electric, for example, and we would pay for that transmission wheel.

And then, on the other side, when it's delivering into the Duke balancing area, what has to happen there is we have to make a request to Duke for network transmission service for that

to -- for that particular resource to serve our network load there. So, there's two transmission requests that have to happen. And only Seminole can make that second part.

So, the answer on transmission is not always apparent, unless it's -- well, even a resource that you buy from Duke, we still have to make that network transmission request. And the folks that work on the commercial side and do the marketing -- they're different than the folks that do the transmission. So, it still requires a study on the -- on behalf of the transmission side.

COMMISSIONER CLARK: So, for example, the numbers that we see, that Mr. Wright gave us in terms of Quantum's proposal, the capacity payments -- if you looked at these numbers, do those include in -- their anticipated transmission costs?

THE WITNESS: They do not. And so, on our side, what we included was the assumption that the available transmission would be there on the Tampa Electric side. We added that cost into our evaluation of that particular proposal.

So, we gave it -- we gave it credit as if -- and that's the way we did it with all the

resources. We assumed that the transmission would be there with regards to our evaluation, until we got to a point where that resource was no longer considered.

COMMISSIONER CLARK: Okay. So, you didn't actually go all the way with each one of the proposals.

THE WITNESS: No. As we -- as we moved through the process and we narrowed the scope in regards to the number of proposals, we put those aside, but up until that point, we assumed the transmission is available for the resources.

COMMISSIONER CLARK: The proposal that Quantum submitted was -- did have available transmission capacity.

THE WITNESS: Yes.

COMMISSIONER CLARK: And the wheeling fees were not a deal-killer?

THE WITNESS: We left it on the short list. I mean, ultimately, what I would say about the Quantum Pasco proposal was it was not the most cost-competitive. And you know, you can ask the question to Julia Diazgrenados as we get to -- as we get to her testimony. But what we saw in the economic screening is that that particular resource

was not coming to the top of the list.

COMMISSIONER CLARK: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Redirect?

MR. PERKO: No redirect.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. PERKO: Excuse me, Chairman, we would move Exhibits 18, 19, 42, and 43, as well as Section 6.3 of the need study that's been referred to as Exhibits 3 and 29, which Mr. Peters is sponsoring.

CHAIRMAN GRAHAM: Mr. Wright, any objection to the exhibits?

MR. WRIGHT: No, Mr. Chairman.

CHAIRMAN GRAHAM: Any exhibits for you?

MR. WRIGHT: 115, please.

CHAIRMAN GRAHAM: Any objection -- objections?

MR. PERKO: No, objection, Your Honor -- I'm sorry -- no objection, Mr. Chairman. I will just ask if -- if this is being held confidential at Quantum's request?

MR. WRIGHT: It is.

MR. PERKO: Thank you.

MR. WRIGHT: Thank you.

CHAIRMAN GRAHAM: Okay. We'll add that to the record.

MR. WRIGHT: (Indicating.)

CHAIRMAN GRAHAM: We will enter that into the record.

MR. WRIGHT: Thank you very much.

(Whereupon, Exhibit No. 115 was admitted into the record.)

CHAIRMAN GRAHAM: Would you like to excuse your witness?

MR. PERKO: Yes, Mr. Chairman.

CHAIRMAN GRAHAM: Mr. Peters, travel safe.

Your next witness.

MR. PERKO: Seminole calls Ms. Julia Diazgranados.

EXAMINATION

BY MR. PERKO:

**Q Ms. Diazgranados, could you please state your full name for the record.**

A Julia Diazgranados.

**Q And Ms. Granados -- Diazgranados, have you been sworn today?**

A Yes, I have.

**Q And could you please state your current employer and business address.**

A Seminole Electric Cooperative, 16313 North Dale Mabry Highway, Tampa, Florida.

**Q Ms. Diazgranados, did you cause to be filed --**

**CHAIRMAN GRAHAM: Microphone.**

MR. PERKO: Sorry.

BY MR. PERKO:

**Q Did you cause to be filed in Docket -- on December 21st, 2017, prefiled direct testimony consisting of 15 pages in both Dockets 20170266-EC and 20170267-EC?**

A Yes.

MR. PERKO: And I'm sorry. Strike that, Your Honor -- Commissioner. I -- I forgot that she filed revised testimony.

BY MR. PERKO:

**Q Did you caused to be filed revised testimony in those dockets on March 8th, 2018?**

A Yes.

**Q Consisting of 15 pages each?**

A Yes.

**Q And do you have any changes to that revised testimony?**

A Yes, we have one change.

**Q Could you explain what that change is, please.**

A On Page 13, Line 2, it was initially 363. We inadvertently changed it to 530. That should not have been updated. It should have stayed at the 363.

**Q So, if you were -- so, if you were to correct**

**your revised testimony, you would change that 533 -- or 530 to 363; is that correct?**

A Correct.

**Q Now, in the motion to revise -- for leave to file your revised testimony, I believe your overzealous counsel identified a page on -- in the need study in Section 1.5 that needed to be revised; do you recall that?**

A Yes.

**Q And it was that -- was it that same 363 figure that was identified as needing to be changed to 530?**

A Correct.

**Q So, that correction would not need to be made to the need study; is that correct?**

A Correct.

**Q Thank you.**

**Ms. Diazgranados, did you also attach to your revised testimony -- I'm sorry. If I were to ask you the questions in your revised testimony today, would your answers be the same, with that single correction you just identified?**

A Yes.

**Q And did you also attach to your revised testimony seven exhibits identified as JAD-1 through JAD-7, and on the exhibit list in Docket No. 20170266 as**

**20 through 25, and in Docket 20170267, Exhibits 44 and 49?**

A Seven being the revised?

**Q Correct.**

A Yes.

**Q Do you have any changes to those exhibits?**

A No.

**Q Now, Ms. Diaz [sic] -- I believe I may have asked you this -- and I apologize. I'm getting ahead of myself here -- but if I were to ask you the same questions in your revised testimony, with that single exception, would your answers be the same today?**

A Yes.

MR. PERKO: At this time, Commiss- -- Mr. Chairman, I would move Ms. Diazgranados' revised testimony of March 8th, 2018, to be inserted into the record as if read.

CHAIRMAN GRAHAM: We will insert Ms. Diazgranados' revised March 8th -- 8th?

MR. PERKO: Correct.

CHAIRMAN GRAHAM: March 8th testimony into the record as though read.

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

BEFORE THE PUBLIC SERVICE COMMISSION

SEMINOLE ELECTRIC COOPERATIVE, INC.

DIRECT TESTIMONY OF JULIA DIAZGRANADOS

DOCKET NO. 2017-266-EC

MARCH 8, 2018

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

A. My name is Julia Diazgranados. My business address is 16313 North Dale Mabry Highway, Tampa, Florida 33618.

**Q. By whom are you employed and in what capacity?**

A. I am employed by Seminole Electric Cooperative, Inc. ("Seminole") as Director of Treasury and Planning.

**Q. Please describe your responsibilities in your current position.**

A. As Director of Treasury and Planning, I am responsible for coordinating, managing and directing Seminole's planning process. My team produces study results used to assist executive staff in establishing long-term plans to meet our Members' energy needs while maintaining competitive rates, mitigating risk, and preserving reliability. We evaluate existing available resources along with proposed resources over our planning horizon and in line with Seminole's load forecast. In my role, I have overseen the completion and filing of Seminole's most recent Ten-Year Site Plan ("TYSP") provided as Appendix A to Seminole's Need Study, which has been submitted as Composite Exhibit __

(SECI-1). I also represent Seminole on the Florida Reliability Coordinating Council's Resource Subcommittee.

**Q. Please state your professional experience and education background.**

A I have over twenty years of experience in the electric utility industry. I began my career in 1991 as a financial analyst for eight years with Allegheny Energy. From 1999 until 2004, I was a principal in a consulting company that specialized in electric utility planning software. I joined Seminole in 2005 as a Senior Strategic Planning Analyst with the lead role in the development of annual long-term strategic plans. In 2007, I was promoted to Lead Generation Planning Analyst. I was promoted in 2010 to Supervisor of Generation Planning, and advanced to Manager of Generation Planning in 2013. In 2017, I assumed my current position as Director of Treasury and Planning. I hold a Bachelor of Science degree in Business Management and an Associate degree in Electronic Data Processing from Fairmont State University.

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

A. The purpose of my testimony is to address three areas. First, I will describe the power supply planning process and need assessment that Seminole performed to identify its need for capacity in 2021 and beyond. Next, I will review Seminole's economic evaluation of self-build and purchased power alternatives along with risk assessments to explain why the Seminole Combined Cycle Facility ("SCCF") and the Shady Hills Combined Cycle Facility ("SHCCF") are the best, most cost-effective, risk-managed options to meet the reliability and economic needs of Seminole and its Members. Finally,

I will discuss the unfavorable consequences if the requested need determination is not granted.

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

A. Yes, I am sponsoring the following exhibits, which were prepared by me or under my supervision and are attached to my pre-filed testimony:

- Exhibit No. ___ (JAD-1) – Resume
- Exhibit No. ___ (JAD-2) – Seminole's gap chart (forecasted winter peak demands plus reserves vs. committed resources)
- Exhibit No. ___ (JAD-3) – Seminole's initial economic analysis results
- Exhibit No. ___ (JAD-4) – Seminole's scorecard analysis
- Exhibit No. ___ (JAD-5) – Seminole's sensitivity analysis; and
- Exhibit No. ___ (JAD-6) – Seminole's revised economic analysis results.

I also am sponsoring Sections 5.1, 5.3, 5.4, 6.1, 6.4.1, 6.4.2, 6.4.4, 6.5, 6.6, 6.7, 6.8, 8 and 9 of the Need Study (Exhibit No. __ (MPW-2)), as well as Appendix A to the Need Study, all of which were prepared by me or under my supervision.

## POWER SUPPLY PLANNING PROCESS & PROJECTED NEED

**Q. What is the objective of Seminole's power supply planning process?**

A. The objective of Seminole's power supply planning process is to provide a portfolio of resources that will satisfy two criteria: (1) to satisfy Seminole's reliability criteria; and (2) to provide our nine Members with reliable wholesale

energy to serve their member-consumers' future electrical needs in the most cost-effective and risk-managed manner.

**Q. What reliability criteria does Seminole use to determine the need for additional resources?**

**A.** Seminole uses utility industry planning practices and tools which utilize both deterministic and probabilistic approaches for planning a resource mix that satisfies a Reserve Margin criterion of 15 percent and achieves a Loss of Load Probability ("LOLP") of one day in 10 years. The Reserve Margin is a percentage of the load forecast peak demand and is the additional amount of capacity that a utility maintains above the forecasted peak demand. Reserves are necessary to accommodate generator outages, load forecast uncertainty, and abnormal weather. The Reserve Margin considers only the forecasted peak demand versus the amount of generation resources, but the LOLP criterion takes into account load shape, unit sizes, unit availability, and capacity mix when calculating the probability of a utility not adequately meeting load. These reliability criteria help to ensure that sufficient generation capacity is available to meet our Members' load forecast needs.

**Q. Please describe Seminole's power supply planning process.**

A. Seminole's power supply planning process begins with the development of the peak demand and energy forecasts ("load forecast") for each of our nine Members, which are aggregated into a Seminole load forecast. The Seminole load forecast's coincident peak demands are used to determine the amount of capacity needed to meet our Members forecasted demand plus an additional 15

percent to satisfy Seminole's Reserve Margin requirement. A gap analysis is used to identify deficiencies between forecasted requirements and current available capacity. When a deficiency is identified, Seminole evaluates all available alternatives (purchased power, acquisitions, and self-build) to establish a portfolio that provides a cost-effective and reliable generation mix to meet our Members' needs.

**Q. What is Seminole's future capacity need?**

A. Seminole's future capacity need results primarily from the expiration of purchased power agreements ("PPA"). These PPAs consist of multiple system deals starting with the expiration of 150 MW from Duke Energy Florida on December 31, 2020, followed by expiration of 200 MW from Florida Power & Light on May 31, 2021. Additionally in May of 2021, Seminole has the expiration of a PPA with Southern Power Company for three of their Oleander peaking units with total capacity ratings of 550 MW winter and 460 MW summer. In total, Seminole will lose 900 MW of purchased power in 2021.

When forecasted load is taken into account, by the end of 2021, Seminole will need 901 MW of generation to meet its Members' energy needs along with its Reserve Margin requirements. That need will grow to 1,265 MW the next year due to load growth and the expiration of a 300 MW PPA with Duke Energy Florida. This is reflected in Exhibit No.___ (JD-2).

**Q. How does Seminole plan to meet that need?**

A. The most cost effective, risk-managed resource plan for Seminole to meet the future needs of our Members is a mix of resources consisting of existing generation resources, PPAs, and the construction of two natural gas-fired combined cycle units. The first combined cycle unit (SHCCF) will be a 573 MW (winter) 1x1 unit to be constructed by GE Capital at its existing Shady Hills site in Pasco County pursuant to a tolling facility agreement with Seminole. The second combined cycle plant (SCCF) will be a self-build 1,122 MW (winter) 2x1 combined cycle plant at our existing Seminole Generation Station ("SGS") site, along with taking one of the two existing 664 MW (winter) SGS coal units out of service.

## ECONOMIC EVALUATION AND RISK ASSESSMENT

**Q. How did Seminole determine that a combined cycle tolling facility and self-build combined cycle facility along with taking a SGS coal unit out of service should be pursued to meet the projected need in 2021 and beyond?**

A. The process began over two years ago. Seminole first determined which self-build alternatives would be evaluated. We then issued a request for proposals ("RFP") for firm capacity to solicit alternative proposals from the market. Lastly, we performed economic and risk evaluations on all available alternatives and developed portfolios of generation resources to fulfill Seminole's need.

**Q. What self-build alternatives did Seminole consider?**

A. Due to the high costs and regulatory uncertainties associated with new nuclear and coal-fired generation, Seminole limited its analysis of self-build alternatives to natural gas-fired generation. As discussed in Mr. Kezell's testimony, Seminole evaluated several different gas-fired technologies from three different vendors.

**Q. Please, describe Seminole's evaluation process of its self-build generation alternatives along with its market alternatives.**

A. Seminole identified market alternatives by issuing an RFP in March 2016 for firm capacity up to 1,000 MW beginning as early as June 1, 2021. The RFP stated that the need for capacity of 600 MW would start in June 2021, with total needs increasing to 1,000 MW by June 2022. Seminole encouraged proposals of base, intermediate, and/or peaking capacity, as well as renewable resources. The RFP also stated that proposals providing demand side options would be considered, although no such proposals were received. In May 2016, Seminole received proposals for purchased power alternatives in response to its RFP. The response was robust, with Seminole receiving responses from 38 counterparties for a total of 223 proposals with offers providing generation from renewables, existing and new gas-fired facilities, and system offers. Following receipt of the bids, Seminole's staff reviewed the proposals for completeness along with technical and operational viability. We performed an initial economic screening using bus bar cost analysis (i.e., the total cost to operate a resource on a $/MWh basis) of all alternatives within a stratification (base, intermediate, or peaking). Those with significantly higher operating cost based on a typical capacity factor within a stratification were eliminated.

Next, all remaining alternatives, including self-build options, were modeled and analyzed using System Optimizer. System Optimizer is an ABB tool that is an industry-recognized utility model used to develop an optimal resource mix to satisfy future needs. The model simulates how each generating resource, potential resources along with existing resources, will be used to serve the forecasted peak demand and energy requirements in the load forecast. System Optimizer's inputs include the demand and energy forecast, Reserve Margin requirements, fuel price forecast, plus the individual resource's cost and performance characteristics (e.g. fixed cost, variable cost, heat rates, forced outage rates, and maintenance schedules). Seminole used System Optimizer to develop economical portfolios of resources to meet the projected future need.

Seminole ran multiple iterations through System Optimizer. The first iteration was to develop a portfolio for the need starting in winter of 2022 with all resources available ("SGS 2x1 Portfolio"). We then developed a limited build portfolio which allowed one 1x1combined cycle unit to be built ("Limited Build Risk: Shady Hills Portfolio"). We also developed a no build portfolio consisting of only PPAs ("No Build Risk: All PPA Portfolio"). In addition, due to the regulatory uncertainty and long-term economics of coal-fired generation, Seminole also developed a portfolio taking into account the removal of one coal unit from service ("CPP/CC Portfolio"). The components of the various portfolios are summarized in Exhibit No. ___ (JD-3).

Once the optimal portfolio candidates were identified via System Optimizer, Seminole used Planning and Risk ("PaR"), another industry-recognized utility model from ABB, to further evaluate the production cost. PaR is a detailed production cost model, which commits resources in each hour over the thirty-three year study period from 2018-2051 based on costs and operational constraints. The operational constraints are similar to those in System Optimizer but more extensive, including such constraints as minimum up and down times, must run requirements, and natural gas pipeline flow limits. The production costs from PaR along with any capital and transmission cost increases for network upgrades are loaded into the corporate financial model to develop the annual revenue requirements.

Finally, Seminole's staff performed risk analysis on both individual alternatives and each of the remaining portfolios. Seminole produced scorecards for each portfolio which not only took into account a weighted risk rating but also a strategic rating, operational flexibility ratings for fuel, real time operational flexibility, and an economic rating for a short-term (10 year) and long-term (30 year) net present value revenue requirement. These portfolio scorecard assessments are reflected in Exhibit No.___ (JD-4).

**Q. What were the results of your detailed economic evaluation?**

A. Ultimately, the net present value ("NPV") of the revenue requirements is the basis for comparing different portfolios in the economic evaluation. The CPP/CC Portfolio, which includes the SCCF and the SHCCF along with the removal from service of one of the two existing 664 MW SGS coal units, was

the least cost portfolio. The next portfolio in NPV revenue requirement terms was approximately $355 million more expensive over the thirty-three year study period from 2018-2051. Exhibit No.___(JD-3) reflects the differential between the portfolios.

**Q. Did Seminole evaluate the cost-effectiveness of taking the second SGS coal unit out of service?**

A. No, Seminole believes that continuing operation of one SGS coal unit will enable us to continue the utilization of a valuable, high-performing asset within our portfolio and preserve fuel diversity.

**Q. What additional analyses did Seminole perform to evaluate the cost-effectiveness of the various alternatives?**

A. Seminole also performed multiple sensitivity analyses outlined below:

- **Optimistic (**High load growth with low gas prices)
- **Pessimistic** (Low load growth with high gas prices)
- **Flat Backfill** (No escalation of generic unit capacity costs)
- **Solar PPA 400 MW** (400 MW of additional solar PPA)
- **Various Carbon Tax** (based on Minnesota PSC Carbon tax assumptions)
    - Low – starting at $9.00/ton in 2019 and escalating
    - Mid – starting at $21.50/ton in 2019 and escalating
    - High – starting at $34.00/ton in 2019 and escalating

The results of these analyses are shown in Exhibit__(JD-5) and they support the conclusion that the SCCF and SHCCF together with PPAs (CPP/CC Portfolio) provide the most cost effective solution for Seminole's need.

**Q. Did Seminole consider the utilization of additional solar resources?**

Seminole also considered the utilization of solar in its sensitivity analysis, Seminole evaluated two different solar alternatives as reflected in Exhibit___(JD-5). Both sensitivity analyses show that the SCCF and SHCCF together with PPA's (CPP/CC Portfolio) is the most cost effective solution. Because Seminole is a winter peaking system, solar is not a viable capacity source to offset our need, but Seminole does acknowledge the energy value of solar and therefore has included 40 MW (summer rating) of new solar in our final recommendation. Seminole does account for the summer capacity benefit in the portfolios.

**Q. Did Seminole consider any other factors in its evaluation?**

A. In addition to cost-effectiveness and risk impacts, Seminole considered the value of having optionality. One of the new PPAs in this portfolio provides Seminole with the advantage of optionality, giving Seminole the flexibility to modify its commitment up or down with one year's notice. Given the uncertainty of load forecasts, having the ability to modify resource commitments will give Seminole an advantage against economic accelerations/downturns or faster/slower load growth rates.

**Q. What was the recommendation of Seminole's Staff to the Board regarding SCCF and SHCCF, and what was the result?**

A. At the September 27, 2017 meeting of the Board of Trustees, staff provided an overview of the planning activities and a review of the objectives along with portfolio economics, sensitivity results and risk assessments. Staff also reviewed the components of the portfolio being recommended. Staff then recommended, and the Board unanimously approved, proceeding with the planning, permitting and construction of the SCCF along with the SHCCF tolling agreement with GE and additional PPAs to round out the portfolio.

## UPDATED ECONOMIC ANALYSIS

**Q. Has Seminole updated its assessment since the September 27, 2017 Board of Trustees approval?**

A. Yes. At the October meeting of the Board of Trustees, the 2018 Budget was presented and approved. Staff has updated the economics to incorporate the 2018 Budget assumptions. These assumptions include a new load forecast that was approved by Seminole's Board in September 2017 and a new fuel price forecast updated in June 2017.

**Q. Please describe Seminole's updated economic assessment.**

**A.** Seminole conducted a present worth revenue requirements comparison for all four portfolios with the 2018 Budget assumptions. While the total dollar values changed, the rankings between the portfolios did not. The CPP/CC Portfolio, which includes the SCCF and the SHCCF along with the removal from service of one of the two existing 664 MW SGS coal units, remained the least cost

portfolio. The next portfolio in NPV revenue requirement terms was approximately $~~530~~ million more expensive over the study period. Exhibit No.___(JD-6) reflects the differential between the portfolios.

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## ADVERSE CONSEQUENCES OF DENIAL

**Q. What will be the projected impact on the reliability of service to Seminole's Members and their member/consumers if the SCCF and GE SHCCF projects are not constructed to meet the identified capacity need in 2021 and beyond?**

A. In combination, the SCCF and SHCCF projects would provide a total capacity of 1,623 MW and make up approximately 40% of Seminole's generation capacity requirement. If both projects were to be denied, , Seminole would not be able to take an SGS coal unit out of service (664 MW). Moreover, Seminole would still be short by up to 680 MW of capacity, leaving us at the mercy of the market for finding replacement capacity at a higher cost and possibly leaving our Members and their member-consumers at high risk of service interruptions.

If only the SCCF was denied, then again Seminole would utilize the optionality available via our PPAs (350 MW) to offset some of the lost capacity. Here again, however, Seminole would not be able to take an SGS coal unit out of service (664 MW). While these actions would mitigate the capacity need so our Members and their member-consumers would not be at

risk of service interruptions, they would increase costs compared to the resource plan with SCCF.

If the SHCCF was denied, then again Seminole could pursue one of two options. One option would be to leave the SGS coal unit in service which would cover our Members and their member-consumers' needs but at a higher cost. The second option would be to utilize the optionality available via our PPAs (350 MW) leaving Seminole with a need for capacity of approximately 220 MW. Seminole would be forced to go to the market to find replacement capacity at a higher cost, possible leaving our Members and their member-consumers at risk of service interruptions.

**Q. What will be the projected economic impact on Seminole's Members and their member/consumers if the SCCF and SHCCF projects are not constructed to meet the identified capacity need in 2021 and beyond?**

A. The projected economic impact to Seminole's Members and their member-consumers would have the following NPV revenue requirement impacts:

- If both projects were to be denied the adverse impact would not only be the remaining in service of a coal unit but approximately $530 million of additional NPV revenue requirements without consideration of any potential transmission impacts.
- If only the SCCF is denied, the adverse impact would be the continuation of service of the coal unit and approximately $502 million of additional NPV revenue requirements.

- If only the SHCCF is denied, the impact would be approximately $363 million along with the continuation of service of the coal unit.

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

A. Yes

BY MR. PERKO:

**Q Ms. Diazgranados, have you prepared a summary of your direct testimony?**

A Yes, I have.

**Q Could you please provide that to the Commissioners at this time.**

A Good evening, Mr. Chairman and Commissioners. My name is Julia Diazgranados. I am the director of treasury and planning for Seminole Electric Cooperative. I hold Bach- -- a Bachelor's of Science in business administration and an Associate of Science in electronic data processing.

I have been in the electric utility industry for 26 years, with the last decade primarily focused on resource planning. I am Seminole's representative on FRCC's resource subcommittee. In addition, I have held the position of secretary, vice president, and president of the Generation and Transmission Resource Planning Association.

My primary role in this proceeding was to develop portfolios and perform economic evaluations of each portfolio. Seminole conducted a comprehensive analysis over the last two years in order to determine the most cost-effective poli- -- portfolio solution for meeting our members' needs.

Seminole's power supply planning process began with the development of our load forecast. From the load forecast, we took the winter-peak demands plus 15 percent for reserve margins to determine the amount of capacity need to meet our members' needs.

When comparing peak demands to Seminole's available capacity, a need became obvious in the summer of 2021 and through 2022. The majority of this need resulted from the expiration of purchase power agreements; 900 hundred megawatts in 2021, and an additional 300 megawatts the following year.

After identifying the need, Seminole issued a self-build request for proposals to three different vendors for advanced class combined-cycle alternatives and a request for proposals to the market for form -- firm capacity up to a thousand megawatts with 600 megawatts of need beginning as early as June of 2021.

The response was robust, with two equipment manufacturers offering two-on-one and one-on-one combined-cycle self-build alternatives, 200-plus market alternatives from 38 counter-parties with proposals providing generation from renewables, existing, and new gas-fired facilities, as well as system offers from investor-owned utilities.

After reviewing the offers for completeness, creditworthiness, and technical-operational viability, Seminole utilized ABB's system optimizer and ABB's planning and risk, both utility-industry-recognized tools, to develop and analyze portfolios under four different scenarios.

The first scenario is a self-build portfolio which includes the Seminole two-on-one combined-cycle facility, along with various purchase power agreements. Another is the limited-build portfolio consisting of the Shady Hills combined-cycle facility along with various purchase power offers.

In addition, we developed a no-build risk portfolio, which consists of only purchase power offers from existing units and system purchase power agreements.

And lastly, given the regulatory uncertainty around coal, we developed a Clean Power Plan portfolio, which includes the removal of one of the existing coal units, along with the Seminole combined-cycle facility, the Shady Hills combined-cycle facility and various purchase power agreements.

Revenue requirements were developed for each portfolio, not only for a base case, but for multiple sensitivities. Additionally, Seminole staff performed

risk analysis on individual alternatives and developed a score card for each portfolio. The score card considered risk, strategic initiatives, operational flexibility for fuel and real-time operations and economics.

After taking all of these factors into consideration, Seminole concluded that the Clean Power Plan portfolio consisting of Seminole's combined-cycle facility and Shady Hills combined-cycle facility, along with the additional purchase power agreements, was the least-cost alternative to reliably meet Seminole's members' needs.

Thank you for your time.

MR. PERKO: We proffer the witness for cross-examination.

CHAIRMAN GRAHAM: Thank you.

Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

EXAMINATION

BY MR. WRIGHT:

**Q Good evening, Ms. Diazgranados.**

A Good evening.

**Q I -- I apologize for this being slightly redundant, but what, if any num- -- what, if any, numbers have changed in your revised testimony from**

**the -- the revised testimony that I have as filed? I know we got 363 and 388 and 502 and 530. I'm just trying to get it straight in my head.**

A So, on Page 13 --

**Q Yes.**

A -- Line 2 --

**Q Yes.**

A -- the 363 that was changed to the 530 should have stayed 363.

**Q Thank you very much. That's it?**

A That's it.

**Q Great. Thank you very much for that.**

**So, was -- was there still an error in the planning-and-risk analysis as reported in the response to Staff's Interrogatory No. 68?**

A Correct.

**Q Okay. But that -- that --**

A That --

**Q You originally thought that changed to 363, but it turned out it didn't.**

A Correct.

**Q Okay.**

A We got a little rambunctious on changing numbers.

**Q In the -- in the company's response to the**

**staff's interrogatory, or in explanation associated with that, there was a statement that -- that ABB did not, at that time, have a fix for the -- for the glitch in PAR. Does -- has a fix been discovered yet?**

A No.

**Q Thank you.**

**Do I have it correct that system optimizer is also an ABB product?**

A Correct.

**Q Thank you.**

**I would like to ask you to look, if you would, please -- I'll get the right number. It's one of your exhibits. It's what you call the gap -- the gap chart, which I think maybe is No. 2 -- yeah, your Exhibit No. JAD-2. That's now been marked as Exhibit 45 for the hearing.**

**We -- I'm just going to ask you a few questions that we discussed during your deposition. Looking at the available resources from 2017 through 2020, it appears that Seminole has excess capacity. Is that an accurate interpretation of this exhibit?**

A Yes.

**Q And is it true that that came about when a power purchase agreement with Duke kicked in -- or Progress Energy kicked in, upon the abandonment of the**

**Levy nuclear project?**

A The purchase power agreement was -- if I recall correctly, was signed after SGS. We decided to not move forward with SGS-3.

**Q Okay.**

A There --

**Q Please continue.**

A There was a particular purchase power agreement that bumps up -- the capacity bumps up in that time period. And that's why you see the bump here.

**Q In the -- did the capacity in 2017, '18, and '19 have anything to do with -- with replacement capacity that kicked in when -- or because Seminole had planned on getting some of the Levy nuclear project capacity?**

A I don't know if it was Levy nuclear. I don't recall.

**Q Okay. Was it a nuclear project?**

A I believe.

**Q Okay. Do you know whether the company made any financial commitment to get that -- to sign up for the nuclear capacity?**

A I don't believe so.

**Q When was the SGS-3, the -- the third coal unit -- when did y'all terminate pursuit of that**

**project?**

A I believe in 2007 or eight. I don't recall specifically.

**Q And the contract -- the capacity of which is reflected in -- in this table -- was signed shortly thereafter; is that what you said a few minutes ago?**

A Correct.

**Q And that contract terminates in -- in 2020 -- or at the end of 2020; is that accurate?**

A It steps down. You can step down.

**Q Thank you.**

**Sum- -- summarizing, I recall your deposition testimony regarding the preparation of your testimony for this case as indicating that you started shortly after board approval of the CPP at the end of September and continued up close to the filing date in December; is that correct?**

A Preparing our testimony? Yes, correct.

**Q Thank you.**

**Mr. Wagner said that I might better ask you questions about fuel diversity. Were you in the room when he said that?**

A Yes, unfortunately.

**Q At least -- at least you're prepared.**

**Briefly, your current ten-year site plan shows**

**in 2023 projected coal -- the projected percentage of Seminole's energy from coal at about 35-and-a-half percent, correct?**

A Correct.

**Q And your projected percentage from gas at about 61 percent?**

A Correct.

**Q And if you do close one -- or cease operating one of the Seminole SGS coal units --**

A Uh-huh.

**Q -- by about how much will that reduce the coal percentage?**

A The coal percentage in 2023 would be roughly 19 percent.

**Q Thank you. And that's -- so, that's about 16 percent less than currently projected?**

A Correct.

**Q And correspondingly, then, would the natural-gas percent be approximately 77 percent?**

A Around 75 is what I have.

**Q Okay. There's a slight difference there. You're taking away 16 percent from coal, but only adding 14 percent back to gas. What's that difference, if you know?**

A I know part of it is the solar because we're

getting 2 percent from solar.

**Q Thank you.**

**I had a conversation with Mr. Ward this morning along the lines of a conversation you and I had during your deposition. Will you agree that the outstanding principal indebtedness on the Seminole coal plants or associated with the Seminole coal-plant financings is more than half of the 1.35 billion of long-term debt and capital lease obligations reported in Seminole's annual report?**

A Yeah, it's roughly half.

**Q Thank you.**

**And approximately, what is the additional debt that Seminole expects to take on with -- with -- if you are -- if you proceed to construct the Seminole combined-cycle facility?**

A I believe it's around 660 million.

**Q Thank you.**

**There was some discussion I had with Mr. DeMelo regarding transmission upgrade costs. Are they going to be debt financed, if you know?**

A The transmission upgrades will be part of the rates that get rolled into the transmission rates that we pay.

**Q Got it. Thank you.**

(Discussion off the record.)
BY MR. WRIGHT:
**Q You should have in the stack of red folders there --**
A Okay.
**Q -- a copy of what has been marked -- actually admitted as Exhibit No. 100. It's the big spreadsheet.**
A Okay.
**Q This is a question that I asked you in your deposition. And you probably are going to remember the answer, and we can move on. Is it -- is it correct that of the SCCF costs of the 8.22 billion reported at the bottom of the first page of that table, something more than half would be fixed costs?**
A So, on a system total, our fixed cost and our production cost -- it's about 50/50. When looking at just the SCCF facility, it's more like 40-percent fixed, 60-percent variable. It has to do with the capacity factor. It runs at a higher capacity factor.
**Q So, it runs on a higher capacity factor; more fuel, more variable --**
A Correct.
**Q -- changes the percentage.**
A Correct.
**Q Okay. Thank you.**

**And in that context, fixed costs would include the original capital, capital replacement in fixed O & M?**

A Uh-huh.

**Q Do you know if the -- not talking about the numbers, but do you know if the associated natural gas transportation gets counted in as a -- fixed costs there or does that just stay completely separate?**

A It's completely separate, to the side.

**Q When you discovered the -- the error in response to your -- in your work, answering staff's Interrogatory No. 68, I believe you told me at your deposition or, perhaps, told the Commission directly, that that reduced the cost differential on the ten-year time horizon for the no-build risk, all-PPA portfolio versus the Clean Power Plan from 136 million to 69 million?**

A Correct.

**Q Does that stay the same?**

A Yes.

**Q That -- so, it did change those numbers; they just weren't in your testimony.**

A They were revised. It's Exhibit 7, I believe.

**Q Sorry -- oh, Exhibit 6 maybe?**

A There was a revised Exhibit 6 --

**Q (Indicating.)**

A -- that was submitted.

**Q Yeah, Exhibit 6. You said seven. I just wanted to make sure --**

A Oh, I'm sorry. I'm sorry.

**Q That's okay.**

A Yes.

MR. WRIGHT: Okay. And so -- okay. So, I see the difference there in your revised Exhibit 6 is $69 million. Okay.

I -- I have an exhibit, Mr. Chairman.

CHAIRMAN GRAHAM: Sure. We're at 116.

MR. WRIGHT: Yes, sir.

116, correct?

CHAIRMAN GRAHAM: That's correct.

MR. WRIGHT: Thank you, Mr. Chairman. The description: Seminole annual income statements/ revenue projections, CPP and no-build risk, all-PPA portfolios, 2017 to 2051.

And this is a confidential Seminole document that was furnished to us in discovery. I -- I'm treating it all as -- as confidential. And my questions are not to ask the witness to divulge any specific confidential numbers.

(Whereupon, Exhibit No. 116 was marked for

identification.)

BY MR. WRIGHT:

**Q Have you seen these documents before?**

A Yes.

**Q Okay. You probably had something to do with preparing them, didn't you?**

A Just a little.

**Q Okay. I -- I want to just ask you to -- I want to do just a brief comparison of the total revenue numbers for the two portfolios here. The first 12 pages beginning with Bates SECI002 -- I don't know if that says six or an eight, 26- -- it looks like 2603.**

**CHAIRMAN GRAHAM: 2608 -- well, depending on what page you're on.**

THE WITNESS: Yeah.

MR. WRIGHT: I'm on the second page of the exhibit, Mr. Chairman.

THE WITNESS: 2603.

MR. WRIGHT: It's Page -- also noted as Page 1 of 12?

CHAIRMAN GRAHAM: Yep.

THE WITNESS: Uh-huh.

MR. WRIGHT: Okay.

BY MR. WRIGHT:

**Q So, the first -- the next 12 pages --**

MR. PERKO: I'm sorry. I'm confused. What's the Bates page?

MR. WRIGHT: SECI002603.

MR. PERKO: Thank you.

BY MR. WRIGHT:

**Q And the first 12 pages are financial statements associated with the CPP portfolio. And the next 12 are the -- the corresponding 12 pages for the no-build risk, all-PPA portfolio, correct?**

A Yes.

**Q I'll go ahead and ask this. I -- were these prepared before you discovered the change that led to the 136-to-69 change? If you know.**

A This was Interrogatory --

**Q I'm sorry?**

A Which interrogatory was this?

CHAIRMAN GRAHAM: 33.

**Q I am sorry. I don't know.**

A I believe these were prepared before that error was found.

**Q Okay. I would like to ask you to look at just a couple of rows on these corresponding page -- Pages 1 of 12 for each of the portfolios. Looking at the total operating revenue numbers, it appears to me that, with the exception of a very-slight difference in 2017, all**

**the way through 2026, the no-build risk, all-PPA portfolio has lower total operating revenue requirements than the CPP portfolio. Is that what's shown there?**

A That is what's shown there.

**Q And then, in 2027, it flips to where the no-build risk, all-PPA portfolio is greater by the amount shown than the CPP, correct?**

A In '27?

**Q In 2027.**

A Correct.

**Q Okay. And it appears to me that the other income values shown for the no-build risk portfolio are greater than the corresponding values for the CPP portfolio in every year?**

A Correct.

**Q And the net margins appear, to me, to be identical. Is that also correct?**

A Correct.

**Q Okay. So, I'm going to go ahead and ask this question: How, if at all, would the relationships that we just discussed change when you go to the -- to the -- when you fix the glitch?**

A So, the first -- through 20 --

**Q Uh-huh.**

A Those revenue requirements would be the same.

**Q Yes.**

A And then, in '21 through '26, they would be lower, but they'd be more than what's shown here on this report, but they would still be lower than the CPP plan.

**Q Thank you. And then, in '27, it would flip.**

A It flips.

MR. WRIGHT: Great. Thank you. That -- that concludes that line of questioning. So, set this aside.

I will move this to be admitted at the appropriate time, Mr. Chairman.

CHAIRMAN GRAHAM: Mr. Wright?

MR. WRIGHT: Yes, sir.

CHAIRMAN GRAHAM: Are you done with this witness?

MR. WRIGHT: Oh, no, sir.

CHAIRMAN GRAHAM: Okay.

MR. WRIGHT: No, it was -- just I -- I tried to make it clear, I was saying that line of questioning that I was -- was done with.

BY MR. WRIGHT:

**Q I just have a quick question for you with respect to a couple of interrogatory answers. And these are answers to Quantum's interrogatories, 65 and 66, which have been, I think -- yeah, they have been**

**admitted as part of Exhibit No. 81, according to the list -- no. No. That's -- I'm sorry. That's staff's.**

(Discussion off the record.)

CHAIRMAN GRAHAM: Mr. Wright?

MR. WRIGHT: Yes, sir.

CHAIRMAN GRAHAM: Are you finished with this witness?

MR. WRIGHT: No, sir.

BY MR. WRIGHT:

**Q Will you agree that the escalation rates that Seminole uses -- are those prepared by Moody's?**

A Correct.

**Q And those range from roughly 2.2 percent to roughly 2.9 percent over the 2018-to-2051 analysis period?**

A Roughly.

**Q Thank you.**

**Will you also agree that Seminole, for capital escalation purposes, uses these escalation rates, as it does for other cost factors?**

A In our models, that is the escalation rate that we use.

MR. WRIGHT: I have a couple of questions for you about optionality. And these key off a brief response to Quantum's Interrogatory No. 26. I

don't intend to mark it as an exhibit, Mr. Chairman. I just want --

CHAIRMAN GRAHAM: Sure.

MR. WRIGHT: Would like to hand the witness a copy.

CHAIRMAN GRAHAM: Just as long as you have a copy for her attorney.

MR. WRIGHT: I do. And for the record, this is part of what has been admitted as Exhibit 90 to the hearing record.

BY MR. WRIGHT:

**Q The simple response is that Seminole considered and incorporated optionality in all portfolios, correct?**

A Correct.

**Q And do you agree that optionality is -- is potentially significant and important to a utility buying generating resources?**

A It gives you flexibility. It allows us to shape our capacity needs with our load changes.

MR. WRIGHT: Thank you.

I've got another exhibit, Mr. Chairman.

CHAIRMAN GRAHAM: Sure. We're at 116 -- 117.

MR. WRIGHT: Short title, Mr. Chairman, is: Direct testimony of Timothy S. Woodbury, on behalf

of Seminole Electric Cooperative, Inc., 12/4/2000, in Commission Docket 001748-EC.

(Whereupon, Exhibit No. 117 was marked for identification.)

CHAIRMAN GRAHAM: All right. Mr. Wright.

MR. WRIGHT: Thank you, Mr. Chairman.

BY MR. WRIGHT:

**Q You started at Seminole in 2005?**

A Correct.

**Q Thank you.**

**Mr. Woodbury was still there when you got there, was he not?**

A Correct.

**Q Yeah. And in your deposition, you told me that the Seminole -- that the Seminole Calpine PPA for the purchase of the output of the Osprey Energy Center was still on the books when you got there, correct?**

A Correct.

**Q Do you know how long Seminole purchased power from Osprey?**

A I would be guessing. I know it was on our books when I first got there, but I don't know when it came off.

**Q Would you accept, subject to check, that -- that it rolled off in 2014?**

A Subject to check.

**Q If you would, please, start -- look at the document at Page 10. There's a section entitled "Overview of the memorandum of understanding in Mr. Woodbury's testimony."**

**If you look, beginning at the very bottom of the page, there's a sentence that begins, at the end of Line 24, and then continues over to Line 2 on Page 11, that states that the MOU provides for the purchase and sale of 350 megawatts of firm capacity and associated energy for the period up through to 2020, subject to periodic reopeners, correct?**

A That's what it states here.

**Q And those were -- is it your understanding those were five-year reopeners?**

A I believe so.

**Q Is -- is that an example of beneficial optionality for Seminole?**

A Yes.

**Q And it goes on to talk, at Lines 7 through 15, about the ability to acquire optional additional firm capacity up to the full capacity of the plant, above the 350-megawatt minimum take, correct?**

A Yes, that's what it says here.

**Q Okay. And would you agree that that's an**

**example of optionality that's beneficial, in favor of Seminole?**

A Yes.

**Q Thank you.**

**I would like to ask you to look -- probably near the top of the stack of red folders -- Exhibit No. 115 -- I just discussed this exhibit with Mr. Peters.**

THE CLERK: Here you go. This is --

THE WITNESS: Oh, thank you.

BY MR. WRIGHT:

**Q It's the updated Quantum proposal -- updated as of October of 2016.**

A (Examining document.) Okay.

**Q You've seen this document before, correct?**

A Uh-huh.

**Q Okay. And you'll agree, as did Mr. Peters, that it includes both -- some alternate-start-date PPA proposals and also an asset-sale proposal?**

A Correct.

**Q Thank you.**

**If you know, did you evaluate the purchase option that was offered by Quantum Pasco?**

A I would have to go back and look at all the different studies. I do not recall if we looked at the

purchase option.

**Q I looked in Mr. Taylor's exhibit and it appears that the only option that he evaluated was a 20-year PPA. Is that consistent with your understanding?**

A You would have to ask Mr. Taylor.

**Q Okay. There -- there's been some discussion earlier today with other witnesses about risk and risk metrics. Do I have it right that the risk evaluation that Seminole performed of the various portfolios was a judgmental exercise by the members of the team, assigning values based on different criteria for risk?**

A Certain risks were more objective than others. You got points for being dual-fuel. You got points for being in a balancing area that we needed the resources.

So, I wouldn't say that it was totally subjective.

**Q The question I'm trying to get at is -- is the -- or leading to, I should say, is this: Was there any kind of separate numeric risk analysis of -- of all the cost factors involved?**

A Can you repeat that?

**Q Sure. Was there any kind of nu- -- numeric analysis of the cost risks involved or was it scoring by the participants in the team?**

A So, there was a -- a build risk --

**Q Uh-huh.**

A -- if you're -- if that's what you're referring to. We did look at the -- the build risk. That was one area.

**Q Let's -- let's stick with that. Was that -- was that a factor that the team assign points to each proposal or each portfolio -- let -- let -- are we talking about portfolios?**

A That risk was actually by resource.

**Q Okay.**

A So, there was -- each resource was looked at for the amount of risk in different areas. And then there was a weighted average, based on megawatts of all the resources within a portfolio for the risk factor.

**Q The points there were points assigned by the members of the team; is that correct?**

A Correct.

**Q Are you familiar with the concept called Monte Carlo simulations?**

A I'm familiar with it.

**Q Okay. Did you do any kind of Monte Carlo-type simulation of all the different cost risks that could have -- that could occur with respect to different --**

A We did not.

**Q -- portfolios? Okay. Thank you.**

**To what extent, if at all, did you consider the risk that other technologies might overtake the SCCF or the SHCCF during the life of those assets?**

MR. PERKO: I -- overtake with respect to what? I'm not sure what the question is asking.

**Q Oh. The risk that other -- the cost and efficiency of other generating technologies might render those assets uneconomic during their lives -- to what extent, if all, did you consider that?**

A We did not consider that. That would be highly speculative and it would -- could overtake any of the resources.

CHAIRMAN GRAHAM: Mr. Wright, we need to move along.

MR. WRIGHT: I'm -- I'm trying, Mr. Chairman. Thank you. Thank you for the nudge.

CHAIRMAN GRAHAM: My pleasure.

BY MR. WRIGHT:

**Q Moving back briefly to the optionality benefits that we discussed with respect to the Osprey transaction, will you agree that the Osprey PPA optionality benefits in terms of capacity flexibility and term flexibility offered better strategic advantages to Seminole than the 30-year tolling agreement?**

A No, I would not agree with that.

**Q Why not?**

A We've built optionality into our portfolio. We have a balanced portfolio. We have tried to balance long-term with short-term. We've balanced resources with system-type purchase power agreements. We've -- have purchase power agreements that are rolling off at different times to take advantage of the market or new technologies as they come about.

**Q You answered that question with respect to your proposed portfolio. Does -- does the tolling agreement offer Seminole any flexibility as to the amount of capacity that it takes and pays for once the tolling agreement takes effect?**

A No, it does not.

**Q Does it offer Seminole any flexibility with respect to the term, once it takes effect?**

A There -- there is a buyout option.

**Q It's a 30-year deal, subject to the buyout option, correct?**

A Correct.

**Q Has any deal pricing been established for the buyout option?**

A Not that I am aware of.

**Q It may be better for me to pursue this with Mr. Taylor, but I -- I am correct that Seminole did not**

**evaluate a no-build risk all-PPA portfolio with the coal unit -- a coal unit being taken out of service, correct?**

A That is correct. There was no indication that an all-PPA with a coal unit taken out of service would be more economical. Through our analysis, as we went through the system-optimizer runs, when we removed the two-on-one combined cycle and used other resources to fill in, the cost differential took quite a jump, about 8-percent increase.

**Q Am -- am I correct that you -- you or the Seminole team identified an alternate no-build all-PPA portfolio to the one that's shown in your exhibits?**

A Yes. We had multiple portfolios under each of the sensitivities.

**Q And am I also correct that one of those did include the Quantum Pasco --**

A -- facility?

**Q -- proposal?**

A Yes, it did.

**Q But it didn't -- it didn't -- it didn't -- it wasn't as cost-effective as the no-build risk portfolio reported here.**

A Correct.

**Q Was system optimizer allowed to assume different in-service dates for either the SCCF or the**

**SHCCF in analyzing future portfolios?**

A It was, but not beyond 2022.

**Q Thank you.**

**Will you agree that, on a CPVRR basis, and assuming your escalation rates, building new generation plant later in the 30-year planning horizon would reduce CPVRR of payments from customers?**

A No, I would disagree with that. The all-PPA portfolio -- the generic backfill of when those units are -- the purchase power agreements are rolling off -- that is using our 2-percent escalation. And over the time period, that is more costly.

**Q But you didn't evaluate it with respect to rolling it in, in -- later in the twenties, say, when the all-PPA portfolio is about to become less cost-effective on an annual basis than the CPP, correct?**

A I'm not sure I understand the question.

**Q Well, your analysis shows that the all-PPA portfolio stays more cost-effective than the CPP portfolios through 2026, correct?**

A Correct.

**Q So, if your discount rate is greater than your escalation rate, wouldn't it reduce CPVRRs to add in something like the SCFF or SHCCF in 2025 or 2026?**

A And I'm saying no because we have generics

coming in, and the pricing on those generics is the pricing that we got from the market, escalated at this escalation rate. So, if that was the case, then that would have been a more-costly por- -- or a more-beneficial portfolio.

**Q Does your system-optimizer program optimize both the entry of new resources, including PPAs, and the retirement of existing resources, if cost-effective to do so?**

A It brings -- it looks at what's available when you have a need. It does not remove a unit unless you tell it to remove a unit. It looks at when purchase power agreements are expiring and it fills in.

**Q Have -- have you received or -- and reviewed any reports on ex-ante load-forecast error? And by that, I mean forecast value versus observed value, three, four, or five years out?**

A No, I have not.

CHAIRMAN GRAHAM: Mr. Wright.

MR. WRIGHT: Thank -- thank you, Mr. Chairman.

If I can have just a minute -- I'm real close. In fact, I'm real, real close. I'm done. Thank you.

CHAIRMAN GRAHAM: Staff --

MR. WRIGHT: Thank you, Ms. Diazgranados.

CHAIRMAN GRAHAM: Staff?

MS. DZIECHCIARZ: Staff has no questions for this witness.

CHAIRMAN GRAHAM: Commissioners?

Redirect?

MR. PERKO: I will be real brief.

FURTHER EXAMINATION

BY MR. PERKO:

**Q Ms. Diazgranados, Mr. Wright asked you a number of questions about optionality associated with the Osprey contract back in the 2005. Do you recall that?**

**Did the Quantum prov- -- proposal provide any optionality other than alternative start dates?**

A No, it did not. They were all 20-year.

**Q So, was -- would Seminole have been able to adjust the amount of capacity taken under that proposal?**

A No, we would not.

CHAIRMAN GRAHAM: Mr. -- Mr. Perko, we have a question from a Commissioner that wasn't in the room.

MR. PERKO: Certainly.

COMMISSIONER POLMANN: My apologies, Mr. Perko.

MR. PERKO: No problem.

COMMISSIONER POLMANN: I have a few questions. And my apologies to my Commissioners.

Good evening, Ms. Diazgranados.

THE WITNESS: Good evening.

COMMISSIONER POLMANN: You had indicated, I believe, in your opening remarks that termination of the PPAs in the time frame of 2021-2022 led to solicitations of self-build and the other offerings.

And I'm trying to understand -- it seems to me, just on its face, that somehow the -- the expectation of determining the PPAs leads to the closure of a coal unit. Can you just briefly help me not have that conclusion?

THE WITNESS: Yeah, that's not the conclusion. When we went out for the RFP, it was a -- very-robust offers --

COMMISSIONER POLMANN: I've heard that from others.

THE WITNESS: Yes.

COMMISSIONER POLMANN: So, can you -- can you inform me with some other information?

THE WITNESS: So, when we started looking and evaluating the different offers that came on the table, plus the fact that it -- there was still a

threat of the Clean Power Plan, we realized we had a lot of good offers and we had plenty of capacity that was being offered to us that we could consider taking a coal unit out of service.

COMMISSIONER POLMANN: Okay. Let me follow up. You had mentioned earlier in response to the comments -- and I believe it may have also been in your introductory remarks -- a regulatory uncertainty around coal.

THE WITNESS: Meaning?

COMMISSIONER POLMANN: That concept -- can you clarify for me that regulatory uncertainty? Is that a cost uncertainty.

THE WITNESS: Meaning not certain if the Clean Power Plan was going to proceed or if there would be a carbon tax initiated.

COMMISSIONER POLMANN: Okay. So, again, is that a cost uncertainty or there is some other consequence that you're -- you have uncertainty around?

THE WITNESS: It's a cost uncertainty.

COMMISSIONER POLMANN: Okay. So, then, beyond the cost uncertainty associated with the coal facility, what other factors of uncertainty were identified in your comparative analysis of the

alternative portfolios, other than -- than that coal-unit-cost uncertainty.

THE WITNESS: With the -- with regard to the environmental or --

COMMISSIONER POLMANN: That's what I'm asking.

THE WITNESS: -- just in general -- okay.

COMMISSIONER POLMANN: That's what I'm asking. You've identified the coal -- aspects of the coal that lead to a cost uncertainty. And so, what other types of uncertainty become factors?

THE WITNESS: For removing a coal unit?

COMMISSIONER POLMANN: Well, in --

THE WITNESS: It --

COMMISSIONER POLMANN: You've analyzed many, many different alternatives.

THE WITNESS: Uh-huh.

COMMISSIONER POLMANN: So, what types of uncertainty? What is the nature of uncertainty? You're looking at --

THE WITNESS: The --

COMMISSIONER POLMANN: -- somehow getting to a best price and a -- and a risk managed. And uncertainties are a nature of risk and so forth. I'm trying to explore this notion of -- of what's included in that analysis.

THE WITNESS: So, the -- the risk is the fear of a carbon tax or -- or a Clean Power Plan coming along.

Also, those are older units. They're -- there's a cost to keeping them running, and we know that we are going to have to eventually look at closing them. And we had a lot of good options, through our RFP, to consider that.

COMMISSIONER POLMANN: Okay. Sem- -- does Seminole currently use coal and gas -- well, let me state, you use coal and gas now as fuels.

THE WITNESS: Correct.

COMMISSIONER POLMANN: Do you have other fuels?

THE WITNESS: We do have oil back-up at our Midulla station.

COMMISSIONER POLMANN: Okay.

THE WITNESS: We have some renewables.

COMMISSIONER POLMANN: Okay. And then, you have various PPAs in place now. And what type of -- do those providers have fuels different from the ones you've just mentioned that you rely upon, that you're aware of?

THE WITNESS: Not that I'm aware of.

COMMISSIONER POLMANN: Okay. You had

mentioned in response to Mr. Wright that, in evaluating the new alternatives, that there was a preference by some measure. You had a -- extra points or some -- some consideration given, for example, for dual fuel that -- that was considered better in some regard than a different proposal that it was a single fuel.

THE WITNESS: Correct. So, when we were looking at fuel di- -- fuel risk and diversity, if a unit had dual fuel or had availability to multiple pipelines, it would look -- be looked upon more-favorably.

COMMISSIONER POLMANN: Okay. So, would you say that -- that Seminole took into account the uncertainty risk of fuel-source availability?

THE WITNESS: I would say, when we were looking at the fuel diversity and the fuel risk, yes, that we took that into account.

COMMISSIONER POLMANN: Is -- is there evidence in the docket that I could look to to find an analysis of the fuel-source availability uncertainty?

THE WITNESS: Right off the top of my head, I would say the risk templates that we did for each individual resource. I don't know how detailed it

is in there. If you would find -- you might just find a rating and not the type of information you're looking for.

COMMISSIONER POLMANN: So, you end up with a rating scale as a comparison, but the type of analysis on the fuel-source availability, that comparative risk or some measure may not be in the docket?

THE WITNESS: Correct.

COMMISSIONER POLMANN: Okay. Now, with regard to the fuel-source availability, that's one type of uncertainty risk. Did -- did you also consider the uncertainty risk of fuel-cost variability?

THE WITNESS: We ran sensitivities with different fuel prices, if that's what you're referring to.

COMMISSIONER POLMANN: Did -- did that sensitivity analysis look only at natural gas?

THE WITNESS: The analysis that we ran, yes, only looked at natural gas.

COMMISSIONER POLMANN: How is the fuel paid for, in your system? Is that a pass-through to your wholesale customers?

THE WITNESS: Correct.

COMMISSIONER POLMANN: Is it your

understanding that the wholesale customers have a pass-through to their consumers of the fuel cost?

THE WITNESS: I cannot answer to that.

COMMISSIONER POLMANN: Okay. That's -- that's fine. Thank you.

So, you have -- your -- the testimony from Seminole has been indicated in various places that least cost is a primary factor, but your analysis here with regard to fuel-cost variability has an accounting of the uncertainty risk in fuel cost, looking at a sensitivity range, as you say --

THE WITNESS: Uh-huh.

COMMISSIONER POLMANN: -- on -- on natural gas.

THE WITNESS: Correct.

COMMISSIONER POLMANN: What is the basis for that? Is that looking at some historical records in natural gas or is there some market information that you've used? Do you have an expert on -- on the natural gas price?

THE WITNESS: So, David -- David Wagner is our expert on natural gas. He develops those forecasts.

COMMISSIONER POLMANN: Okay. Do you know if there's evidence in -- in the docket that looks at

that specifically or -- or did that, again, lead to some grading or ranking process?

THE WITNESS: For the different fuel prices? I believe --

COMMISSIONER POLMANN: For how the uncertainty in that fuel price comes into your selection process. How -- how does the uncertainty of fuel-cost variability weigh into that decision?

THE WITNESS: It would come in on the sensitivity analysis that we did.

COMMISSIONER POLMANN: Okay. Thank you, Mr. Chairman. That's all I have.

CHAIRMAN GRAHAM: Mr. --

COMMISSIONER POLMANN: My apologies for the delay.

CHAIRMAN GRAHAM: Mr. Perko, redirect?

MR. PERKO: Thank you, Mr. Chairman.

CONTINUED FURTHER EXAMINATION

BY MR. PERKO:

**Q Ms. Diazgranados, could -- could you explain the fuel-cost sensitivity analyses that were performed?**

A So, we did what we call optimistic and pessimistic. So, we took a high load growth and a low gas sensitivity as our optimistic, and then we have a pessimistic, which is low load and high gas. We also

did a high gas sensitivity as a separate sensitivity.

**Q And the alternative gas prices that you utilized in those analyses -- those were presented by Mr. Wagner?**

A Correct.

MR. PERKO: And just for the record, those are -- those alternative fuel forecasts are in the record as Mr. Wagner's exhibits.

I have nothing further.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. PERKO: Thank you, Mr. Chairman. We would move Exhibit Nos. 20 through 25 and 44 through 49 at this time.

CHAIRMAN GRAHAM: Mr. Wright, any objections to those?

MR. WRIGHT: No, Mr. Chairman.

MR. PERKO: Okay. Mr. Chairman, we would also move the sections of the need-for-power study, Exhibit 3 and 29, that Ms. Diazgranados sponsored and that would be five -- Sections 5.1, 5.3, 5.4, 6.1, 6.4.1, 6.4.2, 6.44 -- 4.4, 6.5, 6.6, 6.7, 6.8 and Sections 8 and 9.

CHAIRMAN GRAHAM: Okay. We'll move those into the record as well.

MR. PERKO: Thank you.

CHAIRMAN GRAHAM: Mr. Wright.

MR. WRIGHT: We would move Exhibits 116 and 117.

CHAIRMAN GRAHAM: Mr. Perko, any objections to those?

MR. PERKO: No objection.

CHAIRMAN GRAHAM: Okay. We'll move --

MR. PERKO: Subject to our confidentiality claims.

CHAIRMAN GRAHAM: Okay. We'll move 116 and 117 into the record.

(Whereupon, Exhibit Nos. 116 and 117 were admitted into the record.)

CHAIRMAN GRAHAM: Okay. We are right at 7:00, where we said we were looking to quit. So, this is a good quitting time.

Remember, we are starting tomorrow at 9:00 a.m., not 9:30. And we need to finish tomorrow. So, get ready to charge on.

MS. DZIECHCIARZ: Mr. Chairman, if I may, could -- could I just ask everyone to leave their folders and not run out of here, so that we can properly collect everything and keep it for tomorrow?

CHAIRMAN GRAHAM: You mean just the

confidential folders.

MS. DZIECHCIARZ: Yes, please.

CHAIRMAN GRAHAM: All right. That being the case, we are in recess until 9:00 tomorrow morning.

MR. PERKO: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Enjoy your evening.

(Transcript continues in sequence in Volume 4.)

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 26th day of March, 2018.

ANDREA KOMARIDIS
NOTARY PUBLIC
COMMISSION #GG060963
EXPIRES February 9, 2021