BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 20190015-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (FLORIDA POWER & LIGHT COMPANY).
_____/

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COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (GULF POWER COMPANY).
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DOCKET NO. 20190017-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (FLORIDA PUBLIC UTILITIES COMPANY).
_____/

DOCKET NO. 20190018-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (DUKE ENERGY FLORIDA, LLC).
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DOCKET NO. 20190019-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (ORLANDO UTILITIES COMMISSION).
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DOCKET NO. 20190020-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (JEA).
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DOCKET NO. 20190021-EG
COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS (TAMPA ELECTRIC COMPANY).
_____/

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PAGES 267 through 421

PROCEEDINGS:	HEARING
COMMISSIONERS PARTICIPATING:	CHAIRMAN ART GRAHAM COMMISSIONER JULIE I. BROWN COMMISSIONER DONALD J. POLMANN COMMISSIONER GARY F. CLARK COMMISSIONER ANDREW GILES FAY
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APPEARANCES:	(As heretofore noted.)

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I N D E X

WITNESSES

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P R O C E E D I N G S

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CHAIRMAN GRAHAM: Okay. I've got 20 minutes 'til and I have a quorum.

COMMISSIONER POLMANN: And a witness.

CHAIRMAN GRAHAM: And a witness.

SACE, you have the floor.

MR. MARSHALL: Thank you.

Dr. Sim, I just want to make sure that you have with you what was marked before as Exhibit 272 and also the 2019 excerpt of FPL's ten-year site plan.

THE WITNESS: I do have 272 and I do have an excerpt of the site plan.

MR. MARSHALL: Okay. And that -- that excerpt will be marked as Exhibit 279.

CHAIRMAN GRAHAM: Which excerpt?

MR. MARSHALL: This is the 2019 excerpt of the FPL ten-year site plan. It was handed out with Mr. --

CHAIRMAN GRAHAM: Gotcha.

MR. MARSHALL: -- Koch's testimony.

CHAIRMAN GRAHAM: We're giving that 279.

(Whereupon, Exhibit No. 279 was marked for

identification.)

EXAMINATION

BY MR. MARSHALL:

Q Dr. Sim, if I could first start by directing your attention to Exhibit 272, this is the series of interrogatories regarding FPL's load forecasting that was deferred to you.

A I have it in front of me.

Q And looking at Interrogatory No. 123, it's true that -- isn't it, that FPL's load forecast did not assume that there would be no additional adoption by customers of energy-efficiency measures above the baseline codes and standards?

A I'm sorry --

MR. C. WRIGHT: Objection. I'm -- I'm sorry. I don't believe he's established a foundation for this interrogatory.

BY MR. MARSHALL:

Q Was this an interrogatory that was answered by Florida Power & Light?

A Yes.

Q And is that what Florida Power & Light's answer was to this interrogatory?

A I can read what's on the page, but I did not prepare an answer to this interrogatory.

Q And that would have been Mr. Feldman who prepared it -- this interrogatory; is that right?

A That would be the logic -- my logical guess, yes. It's a load-forecasting question, and he's our load forecaster.

Q Mr. --

A I am not a load forecaster.

Q And Mr. Feldman isn't here today, is he?

A No, he isn't.

Q And -- but that is what it says there in the interrogatory answer.

A And --

Q What I read before.

A I did not follow -- I -- it line-for-line, word-for-word. I will assume, subject to check, that you read the response correctly.

Q Okay. It also indicates that the -- at the -- the last sentence there, at the bottom of Interrogatory 123, that the impacts of additional adoption by customers of energy-efficiency measures above the baseline codes and standards is implicitly, not explicitly, captured in the forecast.

MR. C. WRIGHT: Chairman Graham, I -- I apologize to keep interrupting here. Dr. Sim has stated he's not prepared this -- he's not

disagreeing that this is FPL's answer. I believe this is on staff's exhibit list, which has been stipulated in.

You know, we can stipulate that this is into the record, but I don't see the point in asking Dr. Sim pointed questions about what was contained in this response where he's not the person that prepared this for the --

CHAIRMAN GRAHAM: Well, now, I know it was asked earlier about this exhibit, 272, who would be the best person to answer it, and it was said that Dr. Sim was the best person to answer it. So, I'll allow him to try to answer it.

Now, if you just want to stipulate everything that's in 272, I have no problem with that either.

MR. C. WRIGHT: I believe it is already in staff's comprehensive exhibit list.

CHAIRMAN GRAHAM: Okay.

MR. C. WRIGHT: And I -- I believe those were already moved into the record.

CHAIRMAN GRAHAM: Did you have other questions, other than specifically what's in this, 272?

MR. MARSHALL: No, but I -- I do think that there -- I -- I'm not sure that staff actually

moved in all the exhibits. There was some questions back and forth. That was a little confusing. I thought they had all been moved in as well from staff's exhibits, but also, not all of these interrogatories were actually included in staff's comprehensive exhibit list.

CHAIRMAN GRAHAM: Well, he said that he'll stipulate these if you --

MR. MARSHALL: So, if --

CHAIRMAN GRAHAM: -- want those in.

MR. MARSHALL: If Florida Power & Light will stipulate to all of these in, then, you know, we can -- you know, that -- that --

MR. C. WRIGHT: If his line of questioning is to just to get these into the record, we're happy to stipulate and move these into the record, but I -- I don't see the point of asking questions of Dr. Sim about these interrogatory responses.

MR. MARSHALL: Okay. I mean, basically that's what we're trying to do is that --

CHAIRMAN GRAHAM: Let's move on.

MR. MARSHALL: That specific information is correct and that it's in the record.

CHAIRMAN GRAHAM: Okay.

MR. MARSHALL: So --

CHAIRMAN GRAHAM: They stipulate it. Let's move on.

MS. HELTON: Mr. -- Mr. Chairman, be- -- before we move on, can I direct everyone's attention to Page 10 of the order establishing procedure, just to remind the parties -- because I know -- I don't think Mr. Wright has practiced here much and I think some of the parties may not have seen this new language or noticed this new language.

But on a relatively-new provision in the OEP, it says: During cross-examination, if a witness or their counsel responds or objects to a relevant question by referring the question to another party witness, the counsel who is sponsoring the current witness shall confirm the identity of the appropriate party witness who can more-fully address the question.

So, my recollection is that, when Mr. Marshall tried to ask questions of the first FPL witness -- I can't remember his name -- I do believe that Dr. Sim was mentioned as the appropriate witness, and no one corrected the witness.

CHAIRMAN GRAHAM: Okay. So, we're going to put -- 272 will get into the record.

So, let's move on to some -- let's move on to 279.

BY MR. MARSHALL:

Q Dr. Sim, you analyzed FPL's sort of system costs as part of your analysis in this case regarding -- and how that relates to DSM?

A Yes.

Q And in your analysis, you found a trend of overall lower system costs as compared to the 2009 and 2014 goals dockets?

A A trend of lower system costs that are potentially avoided or deferrable by DSM, yes.

Q And one of those, for example, is CO2-compliance costs, which you have projected to continue to decrease.

A That's correct.

Q Now, if I could direct your attention to Exhibit 279, the excerpt of FPL's 2019 ten-year site plan. And if I could direct your attention to Schedule 6.2.

A I'm there.

Q And Schedule 6.2 contains the energy sources for Florida Power & Light by percent, by fuel type?

A That's correct.

Q And so, for example, in 2018, natural gas

applied 74.5 percent of the energy for Florida Power & Light?

A That's what it says, yes.

Q And by 2024, all the natural-gas generation is expected to come from natural-gas combined-cycle plants?

A Yes, that's the projection.

Q And so, that means that the natural-gas combustion turbines are being phased out.

A No, it simply means that the amount of energy is insignificant, on this page. It would be out to the right, but it would not be actually zero. It's just, move decimal points out to the right.

Q It would be significantly smaller than the amount from combustion cycle -- combined cycle. Sorry.

A Yes, as one would expect.

Q And you actually, in your -- in your testimony, you talk about one of the drivers of lower system costs is the projected cost of combined-cycle units.

A Yes.

Q And that has decreased since the last goals proceeding.

A Yes.

Q And you also point out that FPL now projects that there are -- no additional firm gas transportation

will be needed if a 2026 combined-cycle unit is added to FPL's system.

A That is correct.

Q One of the other drivers lowering system costs is lower forecasted natural gas prices.

A Correct.

Q And natural gas is the fuel that Florida Power & Light burns on its margin.

A Yes.

Q And that means that it is the fuel that Florida Power & Light burns for the last kilowatt hour it serves for the kilowatt hour that DSM would potentially reduce.

A Yes.

Q And another thing lowering system costs is Florida Power & Light's natural-gas-fleet efficiency.

A If that's a question, yes.

Q Yes. And that -- that continues to increase that efficiency?

A The efficiency of the units continues to get better, yes.

Q And basically, Florida Power & Light is burning less gas per each kilowatt hour it produces for its customers.

A That's correct.

MR. MARSHALL: Thank you. No further questions.

CHAIRMAN GRAHAM: Okay. Staff?

EXAMINATION

BY MS. DuVAL:

Q Good afternoon, Dr. Sim.

A Good afternoon.

Q Staff handed out two documents. Do you have those with you or in front of you?

A Can you give me numbers, please?

Q Sure. They don't have exhibit numbers on them, but the -- the description of the first is: Excerpt from Exhibit No. 107, FPL's response to staff's 8th -- 8th set of interrogatories.

CHAIRMAN GRAHAM: He's got that one.

THE WITNESS: I have that one.

BY MS. DuVAL:

Q Have that one? Okay.

And the second is just an ex- -- excerpt from your direct testimony.

A I have both of those. Thank you.

Q Okay. Thank you.

So, looking at the first document, which is specifically a response to Interrogatory No. -- staff's Interrogatory No. 90 -- did you prepare this response?

A I either sponsored it or co-sponsored it. The last part of the answer, at least, is mine, yes.

Q Could you please read the first sentence of that response?

A Of the response?

Q Yes, please.

A Ah, yes: There are no existing environmental regulations, nor are there any specific proposed regulations and/or legislation regarding CO2 emissions that FPL believes will cause it to incur CO2-emission-compliance costs during the next ten years.

Q Thank you.

And would that be a driver that decreases cost-effectiveness for demand-side management kilowatt-hour reductions.

A Can you repeat the question, please?

Q In looking at that first sentence that you just read, is that a driver that decreases cost-effectiveness for demand-side management kilowatt-hour reductions?

A I think the answer is yes because, if there are no or low environmental-compliance costs, then that would lower the cost-effectiveness of DSM.

MS. DuVAL: Okay. That's all we have. Thank you.

CHAIRMAN GRAHAM: Commissioners?

Commissioner Brown.

COMMISSIONER BROWN: Dr. Sim, you've been participating in a variety of DSM proceedings over the years. I think your testimony states back to the 1980s; is that correct?

THE WITNESS: Back to the first one in, I think it was 1994, yes. I hold that dubious distinction, yes.

COMMISSIONER BROWN: So, my question for you is: What do you think the intent of the statute is?

THE WITNESS: I think the statute is to require, at least on a five-year period, a look at the cost-effectiveness of DSM in regard to competing supply options and set what are appropriate, achievable, and most of all, cost-effective goals for the utilities to accomplish.

COMMISSIONER BROWN: What about demand- -- DSM renewables?

THE WITNESS: Well, that came a bit later in the -- in the overall time line, but I think it's essentially the same thing, to set appropriate, achievable, and again, most of all, cost-effective goals for demand-side renewables.

COMMISSIONER BROWN: Is this year's proposal the lowest amount of goals that you've seen the company petition the Commission over the years?

THE WITNESS: Yes, it is, and I think that's appropriate because of the -- its competition has -- has gotten so much better; meaning natural gas costs, the cost of competing supply options, and -- and codes and standards.

And if I may use that as a starting point, perhaps, put the codes and standards that we're seeing now over the ten-year period in context -- well, let me -- let me look at summer megawatts and annual gigawatt hours.

In the prior goals, I believe we were looking at 520-odd megawatts. We're now at roughly 350 megawatts being proposed. Over the same ten-year period that we're proposing goals for, the codes and standards will -- will -- are projected to achieve 1,600 megawatts of demand reduction at peak.

In terms of gigawatt hours, I believe the number in the last goals was, again, about 520 gigawatt hours over the ten-year period. Because of the great decrease in costs, that's dropped all the way to one gigawatt hour, but over that ten-

year period, the projected impact from codes and standards on our system is 4,700 gigawatt hours.

So, that is a -- that is a huge chunk of energy efficiency that codes and standards are taking out that utility DSM can't address because it's already taken.

And on top of that, we're seeing costs for combined cycles drop, as mentioned in my testimony.

COMMISSIONER BROWN: No, I understand all of that. I -- I want to -- but the second part of the statute, dealing with demand-side management, renewable resources, and encourage -- having the utilities encourage programs -- how is FPL striving to achieve it, under this proposal?

THE WITNESS: We are not proposing any demand-side-renewable goals because none of those measures were cost-effective. They weren't cost-effective in the 2009 goals, but I believe the statutes had -- or rules had -- had recently been changed to encourage it.

So, the Commission instructed us to proceed with five years worth of cost-capped demand-side renewables, solar water heating, rooftop, photovoltaics. I believe FPL was capped at, I think, 15-and-a-half million a year to spend on

that. We did spend that money. We put those in.

Each year, we check cost-effectiveness. It failed every year. When we were back in 2014, we proposed that those trial projects end because they were not cost-effective at that point, and they're still not cost-effective.

So, we're not proposing any demand-side renewable goals.

COMMISSIONER BROWN: And was that based on a two-year payback period in 2014?

THE WITNESS: No, they simply failed the -- both the RIM and the TRC tests before they ever got to a two-year payback screen is my recollection.

COMMISSIONER BROWN: I asked Dr. -- Mr. Koch earlier about the participation rate. And obvi- -- you know, customers and -- have increased, I guess, the participant -- the participation rate has increased. I think his testimony said something about seven million participants under the DSM programs.

Do you have any data about, over the past five years, since the last goal-setting proceeding, what your participation rate is annually?

THE WITNESS: Commissioner, I do not. I -- I'm sure that we have that and, perhaps, what we

can do is -- Mr. Koch will be back up on rebuttal. He would probably be the best one to gather that data and prepare an answer for you.

So, with your permission, if we could postpone until he -- discussing that.

COMMISSIONER BROWN: Oh, I'm just curious because I -- I know there's an appetite for these programs, with your customers, just looking at the -- the raw numbers from in his testimonies, but what I want to see is if there's an increase in -- since the last goal proceeding and see what that -- what that level is --

THE WITNESS: Yes, I think we understand the ask. I'm, unfortunately, not the right person to answer it, but we can pull that together for you to in time for Mr. Koch to come to the stand.

COMMISSIONER BROWN: So, if we -- if the Commission approves what you are requesting and -- a reduced goal, is FPL going to -- what -- what do you propose your programs are going to look like? How many programs will you be cutting? What -- what do you think the future looks like, over the next five years, if we approve your -- what you're asking for?

THE WITNESS: I hate to keep passing. There's

been some of that already, but Mr. Koch is the -- is the one in charge of programs. And he would be the one who would be sponsoring the DSM plan.

COMMISSIONER BROWN: I just want to ask you a question.

THE WITNESS: No, I -- I understand. I just don't know. I think energy-efficiency programs would be -- would be cut. We would be going with those DSM programs that are cost-effective, which would be our demand-response programs and, as Mr. Koch has indicated, there would be a number of low-income programs or measures that we would be proposing that would be added to our goals.

COMMISSIONER BROWN: So, I'd be curious to see what the participat- -- the participation rate is. I think it's an interesting additional variable in some of those programs that you propose slashing, as a result of what you're asking the Commission to approve.

THE WITNESS: Yes, Commissioner, I understand; however, would one want to encourage participation in programs that are no longer cost-effective and that would raise electric rates would be a question to be answered.

COMMISSIONER BROWN: That is our -- that is

for us to decide.

THE WITNESS: It certainly is.

COMMISSIONER BROWN: Thank you.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: Commissioner Polmann.

COMMISSIONER POLMANN: Thank you, Mr. Chairman.

Afternoon, Dr. Sim.

THE WITNESS: Afternoon, sir.

COMMISSIONER POLMANN: We refer to all of this as DSM and -- and I see the "M" is management. And I'm -- I'm trying to understand if this is just simply a -- a term of art because we -- we talk about this in different ways as reducing demand, but isn't, in fact -- is this a demand reduction or demand management. And I'd like to kind of explore that with you a little bit.

Do you -- do you consider this whole goal-setting to be focused on managing demand and -- and looking at these different elements and trying to understand it as an active assessment -- I mean, assessing active-type demand management where there's an interaction between the supply side and the demand side such as, you know, interruptible supplies and -- and is that part of this goal-

setting? And is that a major part or a minor component of the DSM? I'm -- I'm -- in the big picture.

THE WITNESS: I -- let me try to answer it this way, sir: When we start off, we are looking at what I'll call static demand-side management, which is typically energy efficiency. In other words, ceiling insulation goes in, a high-efficiency air conditioner goes in. There's no utility finger on the button, which it allows -- to activate it.

We also look at those activation-type programs which we refer to typically as demand response, our residential load control, our commercial/industrial load control.

And each year -- or each goal-setting period, we start at zero and we look at all of the updated forecasts as to which one of -- measures in both categories. I think Mr. Whitley said he looked at 6,500-odd measures, and they fell into both camps as to which ones pass the cost-effectiveness screens.

And from that, we get a proposed set of goals. And it -- from one goal-setting period to the next, the mix of energy efficiency and demand response

will shift.

COMMISSIONER POLMANN: I think you've answered both my -- two of my questions in one, which was -- what you're referring to as the efficiency would be the demand-reduction side, like the new appliance, the air conditioner, the --

THE WITNESS: Yes.

COMMISSIONER POLMANN: -- water heater, insulation, things like that.

So, there -- there's no re- -- is there any regard with regard -- is there any consideration to the cost of the program or is it -- is it strictly looking at the cost-effectiveness, the -- the total cost of implementing something like insulation compared to air conditioner compared to -- to demand response or just a cost-effectiveness?

THE WITNESS: I think the answer is yes to both questions. And if I may try to explain it, we look at the cost of -- let's take a -- let's take an air conditioner. We look at the cost of the equipment. We look at the cost of administering the program, advertising, paying checks to contractors for incentives that would be paid. We look at the cost of incentives we can afford to pay, based on the projected benefits. We do that

for all of the energy-efficiency programs.

And then on the demand-response side, we look at the cost of putting our own equipment in the home, which we can activate remotely. We look at the incentives we may have to pay for the customer so that they continue to volunteer for the program.

We also look at the unrecovered revenue requirements that would come from either type of program. So, we're looking at the cost-effectiveness of each program -- or each type of program. And together, those that turn out to be projected as cost-effective -- those go into our DSM goals.

COMMISSIONER POLMANN: Thank you for that answer. It wasn't exactly my question, but I appreciate the explanation.

My -- my question was, more specifically, on the element, itself, whether it's an air conditioner or a device that turns the power on and off -- is there a consideration on the element, itself, in terms of some prescreening ranking of, this element is very expensive versus this element, which is relatively inexpensive -- that there's a pre-ranking and order, per se, that makes it more or less attractive for some reason?

Like, you're -- you're considering, well, residential homeowners are more likely to implement something that costs few dollars compared to everybody is going to want to participate in an $8,000 air conditioner system compared to a hundred-dollar component.

Is there any consideration of that or -- or is it simply, this element, in total -- all of the items you just mentioned -- this element is cost-effective; so, therefore, it's a good idea, and we'll worry about how many people participate in that program later? We'll -- we'll -- that's a separate consideration.

Maybe that's a complicated question.

THE WITNESS: I'll try to answer it. I -- I think the way -- well, the way I look at it is we first need to find out if it is, "A," attractive to a participant. So, we look at the cost and benefits to the participant through the participant test.

We also look at whether it's cost-effective for the utility to offer it. And that could be done through the RIM test. If one wanted, one could try to do that through the TRC test, but with all its shortcomings, we don't recommend that.

So, we're -- the first look at it is: Are these cost-effective to both the participant and to the general body of ratepayers. At that point, then Mr. Koch and his staff would look at how does one package that into DSM programs and then market them to our customers.

COMMISSIONER POLMANN: So, is your answer in all cases that the first question is cost-effectiveness, not cost? You see the distinction I'm making? I said --

THE WITNESS: Not -- not quite because the cost factors into either one or both of the two cost-effectiveness tests.

COMMISSIONER POLMANN: I understand cost is a -- is a major component, but cost-effectiveness is a primary aspect. Otherwise, the element is not going to end up being considered anyway.

THE WITNESS: Yes, sir, I think that's safe.

COMMISSIONER POLMANN: Okay.

THE WITNESS: To get back to your prescreening portion of your question --

COMMISSIONER POLMANN: Yes.

THE WITNESS: We don't look at it and say, wow, that's an $8,000 piece of equipment. Nobody is going to buy that. Let's go with a $50 one

so -- and let's focus on that one. We need -- because the cost is one aspect of it; the benefits is another.

COMMISSIONER POLMANN: Yes, I think you've addressed it. Thank you.

THE WITNESS: Thank you.

COMMISSIONER POLMANN: So -- now, looking at the global question -- and I -- I'm trying to understand, is there a view to the individual customer accounts -- and this is a little bit difficult to formulate the question -- the individual customer accounts compared to the general body of ratepayers?

Because I understand there's a subsidy question that comes into play. And ultimately, the whole program has to be paid for, funded somehow. And the general body of ratepayers has to -- has to fund a program, at the end of the day.

THE WITNESS: Yes.

COMMISSIONER POLMANN: But not everybody participates, so -- individual customers are going to participate.

So, what is -- what is FPL's approach to thinking that through and -- is there a short answer to that or --

THE WITNESS: I'm not sure I quite understand the question, sir. Could -- could you try me again?

COMMISSIONER POLMANN: You -- you've heard discussion and -- and, perhaps, a desire among -- among some to focus on the low-income, to focus on a particular segment of population and -- and so forth.

What is your perspective, in doing the analysis -- are you -- are you ever focused on a particular segment of the population when you're doing the analysis? Or does that, again, come later in the program development? Is that someone else's job?

THE WITNESS: Let me try to answer it this way: Again, the first look is what's cost-effective to participants and what's cost-effective to the general body of ratepayers in order to offer the program.

Then we step back. And your example of low income is -- is an excellent one. We recognize that the programs that we have, perhaps, screened out leave low-income customers with little or nothing that is cost-effective to try to serve them.

So, we recognize that the Commission has a particular interest in those most-vulnerable of our customers. So, we have offered low-income programs that do not pass the cost-effectiveness screening for those customers.

And we think it's -- it's a question for the Commission to balance, knowing that those measures and programs are not cost-effective versus the benefit it gives those vulnerable customers. So, the Commission forms a balancing act -- or performs a balancing act for that. And we have proposed that in -- in this goals docket as well.

COMMISSIONER POLMANN: So, there's a step beyond just the calculation that is a policy question.

THE WITNESS: For low-income customers, yes, sir.

COMMISSIONER POLMANN: All right. I appreciate that.

Thank you, Mr. Chairman.

Thank you, Mr. -- Dr. Sim.

CHAIRMAN GRAHAM: Commissioner Clark.

COMMISSIONER CLARK: Thank you, Mr. Chairman.

Just a couple of quick questions. Looking back and talking about demand-side renewables --

this is kind of a new terminology to me in -- in terms of looking at adding a renewable energy source on and -- and considering that as a demand program, but when you -- you run that through your test. You said it passed RIM test. I see that.

You said it also passed the TRC?

THE WITNESS: No, I believe my statement was just the opposite; that it failed both tests.

COMMISSIONER CLARK: I'm sorry.

THE WITNESS: When we looked at it --

COMMISSIONER CLARK: I thought you said it passed the TRC.

THE WITNESS: Glad we corrected that.

COMMISSIONER CLARK: The primary difference in the TRC and the RIM being the -- the cost of the system is included in your TRC, correct?

THE WITNESS: That's correct.

COMMISSIONER CLARK: On the consumer side.

THE WITNESS: Assuming the customer owns, say, a rooftop solar --

(Simultaneous speakers.)

THE WITNESS: Yeah.

COMMISSIONER CLARK: Customer-owned generation, yes.

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: Would the same theory apply to the cogeneration for, let's say, one of Mr. Moyle's customers, a FIPUG customer?

THE WITNESS: I think the same test could be applied to that and has been applied in the past to that.

COMMISSIONER CLARK: Where does a program that would be, let's just say -- do -- do you offer interruptible rates for large-power customers?

THE WITNESS: We do. We don't call it interruptible. We call it commercial/industrial demand res- -- or commercial demand response and comm- -- commercial/industrial load control.

COMMISSIONER CLARK: That's a fancy way of saying interruptible, right?

THE WITNESS: It's marketing, I think. Yeah.

(Laughter.)

COMMISSIONER CLARK: So, where does that -- where does the interruptible rate fall in your TRC and your RIM test; pass both?

THE WITNESS: Yes, they're among the most cost-effective programs we offer.

COMMISSIONER CLARK: Okay. Has that program ever been considered in a residential application?

THE WITNESS: Yes, sir. We have, I think,

800,000 residential customers on a load-control program now.

COMMISSIONER CLARK: But it's not -- that is a demand-res- -- that is a response program where --

THE WITNESS: A demand response, yes, sir.

COMMISSIONER CLARK: Where you basically trigger the device; it is not them curtailing their own load to response, correct?

THE WITNESS: That's correct. We have the finger on the button.

COMMISSIONER CLARK: You have the finger on the button, but you've never given them a choice to bring their entire system down and be without power for, let's say, two days for a favorable rate?

THE WITNESS: In a sense, we have, for commercial/industrial customers. We had, for a while -- I don't think we have it anymore -- a curtailable rate program where we would call upon them, we need you to curtail, and they would bring down to a specified level what their demand was. How they got there was up to them.

COMMISSIONER CLARK: And -- and an interim -- an interim reaction to getting to that would be a similar program that would be kind of a price-responsive system. Would that fall under a DSM

program as well?

THE WITNESS: It would, and we have considered it. The reason why we don't offer it is because, as was discussed in an earlier question, we burn natural gas at the margin virtually every hour of the year; and therefore -- and let me back up.

The -- the efficiency of our generating units stays fairly constant ever hour of the year. So, there are not big price swings between, say, peak hours and off-peak hours that would be needed for a time-of-use rate or a real-time-pricing rate.

We've looked at it a number of times and we just can't make the math work on our system because of the characteristics of our system.

COMMISSIONER CLARK: And -- and following on that train of thought, your -- your peaking capacity is -- is simple-cycle CT, I would assume? That's --

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: Your primary peaking capacity is simple-cycle CT?

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: That's your lowest-installed cost unit -- your highest-run cost unit?

THE WITNESS: Generally, that's correct.

COMMISSIONER CLARK: And that goes totally contrary to what DSM would work toward?

THE WITNESS: I'm sorry. Can you --

COMMISSIONER CLARK: That -- that would --

THE WITNESS: -- rephrase?

COMMISSIONER CLARK: That type of load -- that type of generating capacity is kind of working against what DSM works to help improve, correct? Trying to get higher efficiency, trying to get a higher load factor, and displacing a high-generating co- -- high-generating -- high-cost generating asset.

THE WITNESS: Well, it's -- DSM is -- is aiming at -- we're looking at incremental DSM versus incremental generating resources, which is the most cost-effective for our customers. And what we have put on our system almost exclusively have been combined-cycle units.

The only time we put combustion turbines on our system has been when our existing combustion turbines, which we need for operational purposes, were -- were becoming so old and decrepit, we couldn't find parts for them, so we had to replace them, but DSM traditionally competes with combined cycles on our system.

COMMISSIONER CLARK: My last question goes to Ms. Corbari's questioning regarding installed solar and potential displacement of future generating assets.

If you reduce a kW of demand in a demand-sponsored system, do you displace that same kW from your generation needs?

THE WITNESS: With one -- yes, with one exception. It -- 1 kW of demand reduction is worth, on our system, 1.2 kW of future generation due to our 20-percent reserve margin.

COMMISSIONER CLARK: 1.2.

THE WITNESS: Yes, sir.

COMMISSIONER CLARK: That assumes that all of your demand response comes off your peak?

THE WITNESS: Well, all of -- whether it's energy efficiency or demand response, we're looking at what that would avoid in terms of having to build new capacity. And it's -- you lower the load by 1 kW, you don't have to build 1.2 kW. And that is in all of our cost-effectiveness work.

COMMISSIONER CLARK: Does the same go -- does the same hold true for renewables?

THE WITNESS: No, because there's not a reserve-margin difference between a renewable

supply option and, say, a gas-fired supply option.

COMMISSIONER CLARK: Do you count it in terms of the capacity of a kW that is generated on a renewable system; have the same kW capacity that you have as -- on a -- with a generating asset a utility owns?

THE WITNESS: Yes, with -- with this explanation: If we push the button on a combustion turbine or a combined-cycle, any time of day, we know what we're going to get.

Solar, for example, because the sun is in different -- different places in the sky at different hours during the day, doesn't give you the same output in the hours of the day.

So, what we do is -- our system peak hour in the summer is around 4:00 to 5:00 p.m. So, if we put, say, a 10-megawatt solar sys- -- solar facility on our system, the question is: What is the output, on average, at 4:00 to 5:00 p.m. And typically, it's been somewhere around 50 percent of the nameplate. So, it would get 5 kW -- or 5 megawatts of firm capacity instead of the nameplate 10.

COMMISSIONER CLARK: How would it affect you in the wintertime?

THE WITNESS: Wintertime, it would give us essentially zero because we peak generally in winter at an hour when the sun is either not up or is just beginning to come up over the horizon.

COMMISSIONER CLARK: What's the difference right now between your summer-peak capacity and your winter-peak capacity?

THE WITNESS: Winter-peak capacity is ex- -- is significantly higher because of -- we have about 20,000 megawatts of combined cycle. And in winter temperatures, the -- the cold air allows much more capacity on those units than during summertime. So, we have several thousand more megawatts of generating capacity in winter --

COMMISSIONER CLARK: I'm sorry. I said generat- -- I meant demand. I'm sorry. Demand.

THE WITNESS: We're typically a summer-planning utility. We may get, once every ten years, a -- a cold winter peak like we had in 2010, but we don't typically plan for that.

COMMISSIONER CLARK: But you -- you have had winter peaks during the year that exceeded your summer peaks.

THE WITNESS: We did in 2011, that's correct, January of 2011 -- 2010, excuse me. I think it was

January 11th of 2010.

COMMISSIONER CLARK: It's safe to say that, in January of 2010, you had to have generating assets online and available to meet that winter peak.

THE WITNESS: Yes, sir, and with the amount of solar we're putting on our system, that is something that both our planning group and our operations group is keenly aware of.

And we're trying to make sure that, if we get -- not a P50 winter, but a P80 or a P90 winter, we have enough capacity on the system to handle that, knowing that, however much solar we put on isn't going to contribute anything, unless we connect it to storage systems. And that's one of the things we're looking at.

COMMISSIONER CLARK: And until we get to the storage system, for every kW of solar capacity that you have to meet winter-demand requirements, what do you have as back-up? Does it actually displace a generating asset at this point?

THE WITNESS: Meaning solar?

COMMISSIONER CLARK: Yes.

THE WITNESS: Yes, sir, it does.

COMMISSIONER CLARK: In wintertime.

THE WITNESS: In winter, it does not displace,

but we're looking be- -- we're looking at how much additional capacity we have from our combined-cycle units.

For example, on that January 11th, 2010, day, we went into that year with a projected summer reserve margin of 20 percent -- a shade over, 20.4, I think it was. The projected winter peak -- or winter reserve margin was slightly over 50 percent, again, due to -- in combination with higher capacity out of our generating units in colder temperatures and, in that year, we were projecting a lower winter load than what we had for summer, based on the P50.

We experienced a P90-plus load that day, and we needed enough generation to meet it. And we were able to meet it with our generating units and with a -- some load-control usage.

COMMISSIONER CLARK: Thank you, sir.

THE WITNESS: Yes, sir.

CHAIRMAN GRAHAM: Commissioner Fay.

COMMISSIONER FAY: Thank you, Mr. Chairman.

Thank you, Dr. Sim. I -- I was impressed to see you've been doing this since 1994 and you still showed up today. So, we appreciate that.

My question specifically goes to you -- you've

got some testimony, let's see, on Page 30 here on the T and D factor that you -- you include. And you basically -- I -- I understand the -- out of the eight factors, seven of them, the costs are being driven down and, therefore, limit your opportunities.

Can you help me understand the -- the change in T and D and how that impacts the analysis?

THE WITNESS: I'll certainly try. There were a couple of factors that drove the T-and-D-avoided cost projection higher. One of them was kind of a timing issue. With -- as I talked to our transmission and distribution planners, they tell me that you can go a certain period of time until -- without making significant additions to the transmission and distribution system, but past a certain point, you need to spend money, and significant money.

And when we looked at this earlier this year, we were -- we were at that point, where a significant amount of expenditures in both the transmission and distribution systems needed to be spent. And that kind of drove our numerator up in the dollars per kW.

We also had a projected year-to-year growth in

summer peak that was a little bit lower than what it had been in prior DSM goals dockets.

So, the numerator went up because cost projections were higher. The nominator, kW growth, went down. So, the two factors drove up the dollars per kW. Each of them contributed.

Contributing to it, after I've had further discussions with them -- the storm work that has been done and the projected storm-hardening work that is coming will tend to -- to keep contractor costs higher than they were in prior years.

And that was also factored into the budget, projections that we looked at when we came to this higher dollar-per-kW number. So, that was contributing to this numerator going up.

COMMISSIONER FAY: Okay. Thank you.

That's all I have, Mr. Chairman.

CHAIRMAN GRAHAM: Thank you.

Commissioner Brown.

COMMISSIONER BROWN: Thank you.

Just one follow-up question from my earlier line of questions, and I would be remiss if I didn't ask you how that portion of the statute regarding encouraging development of demand-side renewables came about, since you said that you were

starting to go down the path of that was added later to the statute.

Could you --

THE WITNESS: I believe the Legislature amended the -- the statute or rule to add that in demand-side renewables. I don't believe it was really a consideration when FEECA was first created because solar energy was so expensive.

But as we saw -- or as the Legislature and the rest of us saw the cost of solar dropping, I believe the interest level was piqued and said, this is something that we need to look at. And so, starting in the '09 goals docket, the statute had been changed and we began to look at it and have been ever since.

COMMISSIONER BROWN: Got it. So, when -- and this is just regarding the demand-side renewables -- so, if FPL knows that all of their programs do not meet the RIM-participants cost-effectiveness test, is there any other type of program that FPL would look to explore to achieve the mission of that statute provision?

THE WITNESS: For demand-side renewables?

COMMISSIONER BROWN: Yeah.

THE WITNESS: Well, we -- we did screen -- in

our screening, look at rooftop solar, solar water heating. We looked at those again. We -- again, it failed both tests, again.

COMMISSIONER BROWN: So, if you're failing to comply with the requirements of the statute and you're not proposing any other alternatives to meeting the demand-side renewables, how are you achieving the -- the goal of the statute?

THE WITNESS: I read the statutes as having language in it that helps explain that stance. One of them is to set appropriate goals. Another one is to take into account cost-effectiveness. I view those two kind of in tandem.

I don't believe the Legislature would -- had in mind -- again, I wasn't there when they wrote it. I didn't help them write it. Just reading the language, I don't think they would believe it would be appropriate to set goals for items that were not cost-effective.

If circumstances change and avoided costs go up or that DSM or demand-side renewables could address, certainly FPL would -- would put forward those programs. And if that day comes, that's what we'll do.

COMMISSIONER BROWN: Do you think a zero goal

would achieve the mission of the statute?

THE WITNESS: I believe the Commission, in 2014, set a goal of zero for demand-side renewables because they were not cost-effective.

COMMISSIONER BROWN: No, I'm not talking about demand side now. I'm talking about all of the DSM goals. Would that achieve -- would a zero, as proposed by other utilities?

THE WITNESS: Are you speaking for other utilities or FPL?

COMMISSIONER BROWN: Since you've been doing this for 30 years plus, would you -- do you think that a zero goal for DSM, as proposed by other utilities, achieves the mission of the statute?

THE WITNESS: I think it's consistent with the statute due to the language of "appropriate" and "cost-effective." If -- if a measure is not cost-effective, it shouldn't be included in -- there shouldn't be a goal set for it because you're just harming your ratepayers by -- by setting a goal and saying, go do that.

COMMISSIONER BROWN: So, if a utility comes in and seeks cost recovery for programs with zero goals, would -- do you think that the utility should be entitled to obtaining cost recovery when

they have zero goals?

THE WITNESS: Commissioner, at that point, I think I'll punt.

COMMISSIONER BROWN: Okay.

THE WITNESS: I think that's more of a legal question.

COMMISSIONER BROWN: Thank you.

THE WITNESS: I've -- I've had enough passed to me today.

COMMISSIONER BROWN: I tried.

THE WITNESS: I -- it's time to punt.

COMMISSIONER BROWN: Thank you.

CHAIRMAN GRAHAM: Redirect.

MR. C. WRIGHT: FPL has no redirect at this time.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. C. WRIGHT: FPL moves in exhib- -- Staff Exhibits 20 through 24.

CHAIRMAN GRAHAM: Exhibits 20 through 24. No objections, we will enter those into the record.

(Whereupon, Exhibit Nos. 20 through 24 were entered into the record.)

CHAIRMAN GRAHAM: SACE.

MR. MARSHALL: I believe Exhibit 272 was stipulated to, but we move that 272 and 279 be

moved into the record.

CHAIRMAN GRAHAM: 272 and 279, no objections? 272 and 279 go into the record.

(Whereupon, Exhibit Nos. 272 and 279 were entered into the record.)

CHAIRMAN GRAHAM: Staff, you're good?

MS. DuVAL: We are good. Thank you.

CHAIRMAN GRAHAM: Okay. Dr. Sim, thank you very much.

THE WITNESS: Thank you.

MR. GUYTON: FEECA utilities call Mr. Herndon.

CHAIRMAN GRAHAM: Okeydoke.

Ms. Clark, your witness.

MS. CLARK: Thank you, Mr. Chairman.

EXAMINATION

BY MS. CLARK:

Q Mr. Herndon, you have been sworn in, have you not?

A Yes.

Q Okay.

CHAIRMAN GRAHAM: You need to pull your mic down.

MS. CLARK: And the -- the green light needs to be on for him as well, right?

CHAIRMAN GRAHAM: That's correct.

MS. CLARK: Got it?

THE WITNESS: Got it. I hope so.

BY MS. CLARK:

Q Would you please state your name and business address.

A My name is Jim Herndon. My business address is 2000 Regency Parkway, Suite 455, Cary, North Carolina 27518.

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

A I'm employed by Nexant. I'm a vice president in our strategic planning consulting practice.

Q And have you prepared and caused to be filed 25 pages of direct testimony in this proceeding?

A Yes, I have.

Q If I asked you the same questions today -- well, do you have any changes to your direct testimony?

A No, I do not.

Q And if I asked you the que- -- the same questions today contained in your direct testimony, would your answers be the same?

A Yes, they would.

MS. CLARK: And are you sponsoring -- let me ask that the direct testimony be inserted into the record as though read.

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

(Whereupon, Witness Herndon's prefiled direct testimony was inserted into the record as though read.)

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: COMMISSION REVIEW OF NUMERIC CONSERVATION GOALS

DOCKET NO. 20190015-EG (Florida Power & Light Company)

DOCKET NO. 20190016-EG (Gulf Power Company)

DOCKET NO. 20190017-EG (Florida Public Utilities Company)

DOCKET NO. 20190018-EG (Duke Energy Florida, LLC)

DOCKET NO. 20190019-EG (Orlando Utilities Commission)

DOCKET NO. 20190020-EG (JEA)

DOCKET NO. 20190021-EG (Tampa Electric Company)

DIRECT TESTIMONY OF JIM HERNDON

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

A. My name is Jim Herndon. I am Vice President in the Strategy and Planning Practice within the Utility Services business unit of Nexant, Inc. (Nexant). My business address is 1255 Crescent Green Drive, Suite 460, Cary, North Carolina 27518. A statement of my background and qualifications is attached as Exhibit JH-1.

Q. Please discuss your areas of responsibility.

A. I am responsible for providing consulting services for Nexant clients in the field of Demand-Side Management (DSM) initiatives. In this capacity, I primarily focus on DSM planning, including analysis of DSM market impacts, and assisting utilities in the identification of DSM opportunities and the development and design of DSM

program initiatives. This includes the development of market baseline and potential studies, cost-benefit analyses, and design of comprehensive DSM programs and portfolios.

Q. Please describe Nexant including its history, organization, and services provided.

A. Nexant, founded in 2000, is a globally recognized software, consulting, and services firm that provides innovative solutions to utilities, energy enterprises, chemical companies, and government entities worldwide. Nexant's Utility Services business unit provides DSM engineering and consulting services to government agencies and utilities, and helps commercial, institutional and industrial facility owners manage energy consumption and reduce costs in their facilities. Nexant also conducts development and implementation services of DSM programs for public and investor-owned utilities, governments, and end-use customers. Our range of experience in the field of energy efficiency includes, but is not limited to:

- Market Potential Studies;
- Program design;
- Program implementation;
- Marketing;
- Vendor outreach, education, and training;
- Incentive processing and fulfillment;
- Turnkey customer service;
- Online program tracking and reporting; and
- Evaluation, measurement and verification (EM&V).

Q. What specific projects or studies has Nexant done to assess DSM potential?

A. Nexant has conducted over 25 Market Potential Studies (MPS) to identify opportunities for DSM in the United States and Canada. Examples of recent clients include Georgia Power Company, Duke Energy, CPS Energy, Los Angeles Department of Water and Power, Pennsylvania Public Utilities Commission, the Independent Electricity System Operator (IESO) of Ontario, Canada, NorthWestern Energy, Platte River Power Authority, Nicor Gas, Cascade Gas, and Sacramento Municipal Utility District.

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

A. The purpose of my testimony is to introduce and summarize the methodology and findings of the MPS we conducted for each of the seven utilities subject to the requirements of the Florida Energy Efficiency and Conservation Act (FEECA), collectively the FEECA Utilities.

Q. What exhibits are you sponsoring?

A. Exhibit JH-1 – Herndon Background and Qualifications
Exhibit JH-2 – MPS for Florida Power & Light
Exhibit JH-3 – MPS for Tampa Electric Company
Exhibit JH-4 – MPS for Duke Energy Florida
Exhibit JH-5 – MPS for Gulf Power Company
Exhibit JH-6 – MPS for Florida Public Utilities Company
Exhibit JH-7 – MPS for Orlando Utilities Commission
Exhibit JH-8 – MPS for JEA

Exhibit JH-9 – 2019 Measure Lists

Exhibit JH-10 – Comparison of 2014 Measure List to 2019 Measure List

Q. What was the scope of work for which Nexant was retained?

A. As described in Section 2 of Nexant's MPS report for each utility, Nexant was retained by the FEECA Utilities to independently analyze the Technical Potential (TP) for energy efficiency (EE), demand response (DR) and demand-side renewable energy (DSRE) across their residential, commercial and industrial retail customer classes. In addition, Nexant was retained by five of the seven utilities to estimate the Economic Potential (EP) and Achievable Potential (AP) for their respective service territories.

More specifically, the scope of work included disaggregation of the current utility load forecasts into their constituent customer-class and end-use components, development of a comprehensive set of DSM measures and quantification of the measures' impacts, and calculation of potential energy and demand savings at the technology, end-use, customer class, and system levels.

Q. How, if at all, did the work performed by Nexant differ across the seven FEECA Utilities?

A. The assessment of TP, including the utility forecast disaggregation and customer segmentation, and development of a DSM measure list, was the same for all seven FEECA Utilities. The subsequent assessment of EP and AP varied in the work conducted by Nexant for individual FEECA Utilities, as follows:

- Florida Power & Light (FPL) and Tampa Electric Company (Tampa Electric) conducted their own EP and AP analyses.
- Duke Energy Florida (DEF) and Gulf Power Company (Gulf Power) conducted EP and AP measure screening and provided Nexant with the screening results. Nexant then performed the EP and AP analyses.
- For JEA, Orlando Utilities Commission (OUC), and Florida Public Utilities Company (FPUC), Nexant conducted the economic screening for the economic and achievable scenarios and analyzed the EP and AP based on the passing measures.

Q. What reports have been produced in the scope of Nexant's work?

A. Nexant has produced seven separate MPS reports, one for each FEECA Utility under this scope of work. As described above, for two utilities, FPL and Tampa Electric, the studies included TP only. For the other five utilities, the studies included analysis of TP, EP and AP.

Q. What were the major steps in the analytical work Nexant performed?

A. As summarized in Section 2 of each utility's MPS report, and illustrated in Figure 2-1 of each report, the major steps in assessing the DSM market potential consist of the following:

Step 1: Load Forecast Disaggregation. To disaggregate the load forecast, Nexant collected utility load forecast data, relevant customer segmentation and end-use consumption data, and supplemented this with existing secondary data to create a disaggregated utility load forecast broken out by customer sector and segment, as

well as by end-use and equipment type. This disaggregated forecast, which is calibrated to the overall utility forecast, forms the basis for the development of market potential.

Step 2: Measure Development. Nexant worked collaboratively with the FEECA Utilities to develop a comprehensive list of DSM technologies currently commercially available in Florida. For all measures included in the study, Nexant developed estimates of energy and demand savings, useful life, and incremental cost.

Step 3: TP Analysis. Using the disaggregated utility load forecast and the DSM measure impacts, Nexant analyzed the TP for the application of all measures to each utility's retail customers.

Step 4: EP Analysis. For a subset of the FEECA Utilities, Nexant conducted an economic screening based on the parameters described in Section 6.1.2 of each MPS report to determine which measures and technologies were preliminarily cost-effective under a Rate Impact Measure (RIM) test scenario or the Total Resource Cost (TRC) test scenario. Nexant then analyzed the EP for the application of all preliminarily cost-effective measures to each utility's retail customers. Nexant also performed this analysis using a set of economic sensitivities.

Step 5: AP Analysis. For a subset of the FEECA Utilities, Nexant incorporated utility program costs and then conducted an economic screening for the AP analysis under both the RIM and TRC scenarios. Nexant then applied adoption curves to the measures that remained passing based on the incentives determined in Step 4 and as modified by the first part of Step 5. This produced the estimated levels of customer adoption over the 2020-2029 study period to estimate the AP of the cost-effective measures for each utility's retail customers.

MEASURES IDENTIFICATION AND SELECTION

Q. Please explain the process by which DSM measures were identified.

A. The starting point for measure identification was the list of measures included in the 2014 Florida TP Studies. Using this set of measures, the FEECA Utilities initially reviewed and added proposed measures, and provided the combined list to Nexant. Nexant reviewed the preliminary list against Nexant's DSM measure library, compiled from similar MPS conducted in recent years, as well as from other utility DSM programs that Nexant has designed, implemented or evaluated. Through discussion with the FEECA Utilities, the parameters for measures to be considered were established, and included the following: measures were limited to those that are currently commercially available in Florida; behavioral measures without accompanying physical changes or utility-provided products and tools were excluded; and fuel-switching measures, other than in the context of DSRE measures, were excluded.

Through an iterative process with the FEECA Utilities, a proposed measure list was developed for the study at the appropriate granularity to apply to the disaggregated utility load forecasts. Additionally, the proposed list was shared with an external party, the Southern Alliance for Clean Energy (SACE), whose input the FEECA Utilities considered. The process to identify DSM measures is more fully described in Section 4 of each MPS report.

Q. Was the process of measure identification and selection appropriate for the objectives of the study?

A. Yes. The measure identification process was robust, comprehensive and appropriate for the objectives of the study. The final measure list was developed to account for DSM measures that have been considered in prior Florida studies, and was based on current Florida Building Code and federal equipment standards, current program offerings by FEECA Utilities, and incorporation of DSM measures considered in other MPS reports and other utility DSM program offerings around the country.

Q. Did it allow for the assessment of the full TP for FEECA Utilities?

A. Yes. The thorough process for developing the list resulted in a comprehensive set of 278 unique EE, DR, and DSRE measures that fully addressed DSM opportunities across all electric energy-consuming end-uses at residential, commercial, and industrial facilities in the FEECA Utilities' service territories. The final measure list is provided in Exhibit JH-9.

Q. How does the final DSM measure list compare with the measures included in the 2014 TP Study?

A. Exhibit JH-10 compares the measure list for 2019 to the measure list for the 2014 Goals Dockets (Docket Nos. 20130199-EI – 20130205-EI). Compared to the 2014 TP, the 2019 TP update added 107 unique measures and eliminated 12 unique measures.

Q. Once measures were selected, what was the next step in Nexant's analysis?

A. Once measures were selected, the next step in Nexant's analysis was to develop individual impacts for each measure. These impacts included quantifying demand (kW) and energy (kWh) savings, equipment useful life, and incremental costs of the measure. The measure impacts were subsequently applied to the disaggregated utility load forecasts to estimate TP in each utility service territory.

TECHNICAL POTENTIAL

Q. Please define Technical Potential.

A. FEECA requires the Commission to "…evaluate the full technical potential of all available demand-side and supply-side conservation and efficiency measures, including demand-side renewable energy systems." (Section 366.82(3), F.S.) Therefore, a TP analysis is the first in a series of steps in the DSM Goals development process. Its purpose is to identify the theoretical limit to reducing summer and winter electric peak demand and energy. The TP assumes every identified potential end-use measure is installed everywhere it is "technically" feasible to do so from an engineering standpoint regardless of cost, customer acceptance, or any other real-world constraints (such as product availability, contractor/vendor capacity, cost-effectiveness, normal equipment replacement rates, or customer preferences). Therefore, the TP does not reflect the MW and GWh savings that are achievable through real-world voluntary utility programs, but rather it establishes the theoretical upper bound for DSM potential.

Q. Do Nexant's MPS reports provide a detailed description of Nexant's methodology, data, and assumptions for estimating TP?

A. Yes. As stated earlier, Nexant developed individual MPS reports for each of the seven FEECA Utilities. The reports describe Nexant's overall methodology, data, and assumptions for disaggregating each utility's baseline load forecast, development of DSM measures, and determination of TP.

Q. Do these MPS reports identify the full TP for the FEECA Utilities?

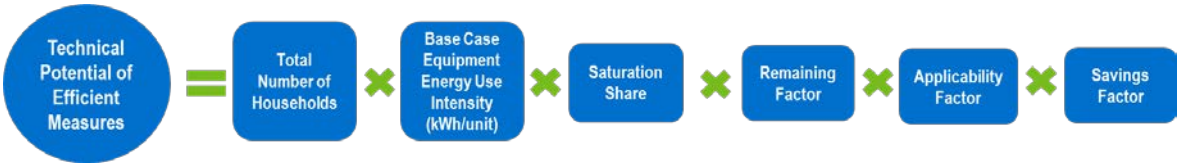
A. Yes. Each utility report identifies the full TP for the DSM measures analyzed against the utility's baseline load forecast.

Q. Please summarize the methodology, source of data, and assumptions used to develop the TP for EE measures for the FEECA Utilities.

A. As stated above, TP ignores all non-technical constraints on electricity savings, such as cost-effectiveness and customer willingness to adopt energy efficiency. Nexant's methodology for estimating EE TP begins with the disaggregated utility load forecast. For the current analysis, Nexant used the 2020 load forecast from each FEECA Utility, which, for all except FPUC, is based on the most recent Ten-Year Site Plan available at the time the MPS was initiated, which were the 2017 Ten-Year Site Plans.

Next, all technically feasible measures are assigned to the appropriate customer segments and end-uses. The measure kW and kWh impact data collected during

DSM measure development is then applied to the baseline forecast as illustrated in the following equation for the residential sector:



The savings factor, or percentage reduction in electricity consumption resulting from the application of the efficient technology, is applied to the baseline energy use intensity to determine the per-home impact, and the other factors listed in the equation above inform the total number of households where the measure is applicable, technically feasible, and has not already been installed. The result of this equation is the total TP for an EE measure or technology.

The final component of estimating overall TP is to account for the interaction between measures. In some situations, measures compete with each other, such as a T-8 lamp and a linear light emitting diode (LED) lamp. The saturation share factor in the equation above accounts for this competition between measures. The other interaction is measure overlap, where the impacts of one measure may affect the savings for a subsequent measure. To account for overlapping impacts, Nexant's model ranks measures that interact with one another and reduces the baseline consumption for the subsequent measure based on the savings achieved by the preceding measure. For TP, interactive measures are ranked based on total end-use energy savings percentage with the measures having a greater savings being ranked first.

Q. Please summarize the methodology, source of data, and assumptions used to develop TP for DR measures for the FEECA Utilities.

A. TP for DR is effectively the total of customer loads that could be curtailed during conditions when utilities need capacity reductions. Therefore, Nexant's approach to estimating DR TP focuses on the curtailable load available within the time period of interest. In particular, the analysis is focused on the end-uses available for curtailment during peak periods and the magnitude of load within each of these end-uses that is beyond existing DR enrollment for each utility.

Similar to the estimation of EE TP, the DR analysis begins with a disaggregation of the utility load forecast. Nexant's approach for load disaggregation to identify DR opportunities is more advanced than what is used for most potential studies. Instead of disaggregating annual consumption or peak demand, Nexant produced end-use load disaggregation for all 8,760 hours of the year. This was needed because the customer loads available at times when utility system needs arise can vary substantially. For this study, curtailable load opportunities coincident with both the summer system peak and winter system peak were analyzed. Additionally, instead of producing disaggregated loads for the average customer, the study produced loads for several customer segments. Nexant examined three residential segments based on customer housing type, four different small commercial and industrial (C&I) segments and four different large C&I customer segments, for a total of 11 different customer segments.

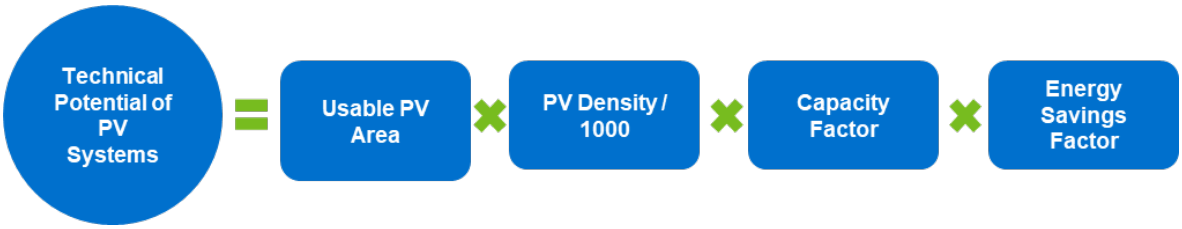
Next, Nexant identified the available load for the appropriate end-uses that can be curtailed. Nexant's approach assumed that large C&I customers will forego virtually all electric demand temporarily if the financial incentive is large enough. For residential and small C&I customers, TP for DR is limited by the loads that can be controlled remotely at scale. For this study, it was assumed that summer DR capacity for residential customers was comprised of air conditioning (A/C), pool pumps and water heaters. For small C&I customers, summer capacity was based on A/C load. For winter capacity, residential DR capacity was based on electric heating loads, pool pumps, and water heaters. For small C&I customers, winter capacity was based on heating load. For eligible loads within these end-uses, the TP was defined as the amount that was coincident with system peak hours for each season. System peak hours were identified using 2016 system load data. For DR TP, no measure breakout was necessary because all measures targeted the end-uses estimated for TP.

Finally, Nexant accounted for existing DR by assuming that all customers currently enrolled in a DR program did not have any additional load that could be curtailed. As a result, all currently-enrolled DR customers were excluded from the analysis.

Q. Please summarize the methodology, source of data, and assumptions used to develop TP for DSRE measures for the FEECA Utilities.

A. TP for DSRE measures was developed using three separate models for each category of DSRE: rooftop photovoltaic (PV); battery storage systems charged from PV systems; and combined heat and power (CHP).

For PV systems, Nexant's approach estimated the square footage of residential and commercial rooftops in the FEECA Utilities' service territories that are suitable for hosting PV technology, and applied the following formula to estimate overall TP:



To determine usable PV area, the first step was to use utility forecast and customer segmentation data, supplemented with U.S. Energy Information Administration's (EIA) Residential Energy Consumption Survey (RECS) and Commercial Building Energy Consumption Survey (CBECS) data, as well as U.S. Census data for the South region, to characterize the existing building stock in each utility's service territory. Based on the estimated total square footage, and other typical facility characteristics, such as average number of floors per segment, estimated mix of pitched and flat roofs, and usable area due to other rooftop equipment, the total available roof area feasible for installing PV systems was calculated.

Next, PV density, system capacity factors, and energy savings factors were estimated based on an average PV module, and the U.S. Department of Energy National Renewal Energy Laboratory's solar estimation calculator, PVWatts©, along with secondary research and utility-specific EM&V data from FEECA Utilities.

For battery storage systems, the TP analysis considered the fact that battery systems on their own do not generate power or create efficiency improvements, they simply store energy for use at different times. Therefore, battery systems that are energized

directly from the grid do not produce additional energy savings, but may be used to shift or curtail load from one period for use in another. Because the DR potential analysis focused on curtailable load opportunities, Nexant concluded that no additional TP should be claimed. Similarly, battery systems connected to rooftop PV systems do not produce additional energy savings; however, they do create the opportunity to store excess PV-generated energy during hours where the PV system is generating more than the home or business is consuming and use the stored power during peak periods. Therefore, to determine additional peak demand reduction available from PV-connected battery storage systems, Nexant used the following methodology: first, 8,760 hourly annual load shapes for a PV system were developed. The load shapes were compared with annual load shapes for residential and commercial facilities to determine the hours that the full solar energy is used, and the hours where excess solar power is generated. Finally, Nexant developed a battery charge/discharge 8,760 hourly load profile to identify available stored load during summer and winter peak periods, which produced the estimate of the battery storage TP.

TP for CHP systems was based on identifying non-residential customer segments with thermal load profiles that allow for the application of CHP where the waste heat generated can be fully utilized. First, minimum size thresholds were determined for each non-residential segment using a segment-specific thermal factor that considered the power-to-heat ratio of a typical facility in each segment. Next, utility customers were segmented into industry classifications and screened against the size thresholds. Premises with annual kWh consumption that met or exceeded the thresholds were

retained in the analysis. Finally, the facilities that were of sufficient size were matched with the appropriately-sized CHP technology. Nexant assigned CHP technologies to customers in a top-down fashion, starting with the largest CHP generators, which yielded the estimated quantity of CHP TP in each utility's service territory.

Q. Did your TP analysis account for interaction among EE, DR, and DSRE technologies?

A. Yes. While TP was estimated using separate models for EE, DR, and DSRE, Nexant did recognize that there is interaction among the TP for each, similar to the interaction between EE measures applied to the same end-use. For example, the installation of a more efficient A/C would reduce the peak consumption available for DR curtailment. Therefore, to account for this interaction, Nexant incorporated the following assumptions and adjustments to the identified TP:

- EE TP was assumed to be implemented first, and therefore was not adjusted for interaction with DR and DSRE.
- DR TP was applied next, and to account for the impact of EE TP, the baseline load forecast for applicable end-uses was adjusted by the EE TP, reducing the available load for curtailment.
- DSRE technologies were applied last and incorporated EE TP and DR TP. For PV systems, the EE potential and DR potential did not impact the amount of PV TP. However, for PV-connected battery systems, the reduced baseline due to EE TP resulted in more PV-generated power available from storage and usable during peak periods. The impact of DR events during the assumed curtailment

hours was incorporated into the modeling of available battery storage and loads available to be served by batteries. For CHP systems, the reduced baseline, as a result of EE resulted in a reduction in the number of facilities that met the annual energy threshold for CHP. Installed DR capacity was assumed to not impact CHP potential as the CHP system feasibility was determined based on the energy consumption and thermal parameters at the facility.

Q. Once TP estimates were developed, what was the next step in your analysis?

A. Upon completion of the TP estimates, the next analysis step for a subset of the utilities was to apply the measure economics (incremental cost) and utility system economics (avoided supply cost, utility electric revenues, and customer bill impacts) in order to conduct the economic screenings for the EP analysis.

ECONOMIC POTENTIAL

Q. For which FEECA Utilities did Nexant assess EP?

A. Nexant worked collaboratively with DEF, Gulf Power, OUC, JEA, and FPUC on EP, as follows:

JEA, FPUC, and OUC provided Nexant with utility-specific economic forecast data, including avoided supply costs and retail rate forecasts. Nexant incorporated this data into the economic screening module of Nexant's Technical, Economic, and Achievable Potential (TEA-POT) model to analyze the cost-effectiveness for individual measures under the cost-effectiveness tests required by the Order Consolidating Dockets and Establishing Procedure (Order No. PSC-2019-0062-

PCO-EI). Nexant then analyzed the measures passing the economic screening in the TEA-POT model to determine the EP.

Gulf Power and DEF used the measure impacts developed by Nexant to run the cost-effectiveness screening in each utility's model. Both utilities then provided Nexant with the list of RIM and TRC passing measures for Nexant to estimate EP demand and energy savings using Nexant's TEA-POT model.

Q. How was EP defined and estimated for this study?

A. EP is a subset of TP, which assumes every identified potential end-use measure is installed everywhere it is "economically" feasible to do so, regardless of customer acceptance, or any other real-world constraints (such as product availability, contractor/vendor capacity, normal equipment replacement rates, or customer preferences). Therefore, the EP does not reflect the MW and GWh savings that are achievable through real-world voluntary utility programs but establishes a theoretical upper bound for DSM potential that has passed the EP cost-effectiveness screening.

For this study, EP was estimated for two Base Case scenarios: the RIM scenario and TRC scenario. In both scenarios, all measures that achieved a cost-effectiveness ratio of 1.0 or higher were considered cost-effective from that test's perspective.

For Nexant's cost-effectiveness screening for JEA, OUC, and FPUC, additional considerations were:

- Individual measures did not include any utility program costs (program administrative or incentive costs), and therefore were evaluated on the basis of measure cost-effectiveness without any utility intervention.
- Both scenarios also required the measures to pass the Participant Cost Test (PCT), which analyzes the measure from the participating customer's perspective. Similar to the TRC and RIM perspectives, the PCT screening was done without any utility's incentive costs applied to the measure.
- Consistent with prior DSM analyses in Florida, free ridership was reflected by applying the two-year payback screening criterion which eliminated measures having a simple payback of less than two years.

Q. What was the next step in the development of EP?

A. Once the list of passing measures was identified for EP under each Base Case scenario, the measures were re-analyzed in Nexant's TEA-POT model to estimate EP demand and energy savings for each utility. The updated modeling included updated measure rankings to account for changes in measure interaction and overlap. For EP, the ranking was based on the applicable test perspective in each scenario (RIM ratio or TRC ratio) with the measures with a higher ratio being ranked first.

Q. Were any additional sensitivities considered for EP?

A. Yes. As specified in the Order Consolidating Dockets and Establishing Procedure (Order No. PSC-2019-0062-PCO-EI) in this docket, the following four sensitivities, in addition to the Base Case scenarios, were required: 1) higher fuel prices; 2) lower fuel prices; 3) shorter free ridership exclusion period (one year); and 4) longer free

ridership exclusion period (three years). Additionally, for both DEF and OUC, Nexant performed an additional sensitivity that reflected costs associated with carbon dioxide emissions.

The methodology for each sensitivity was consistent with the analysis of the Base Case scenarios for EP. JEA, OUC, and FPUC provided Nexant with avoided supply cost forecasts for the higher and lower fuel price scenarios. DEF and Gulf Power conducted their own sensitivity screenings and provided Nexant with the list of measures passing each sensitivity.

Nexant then analyzed each sensitivity scenario in the TEA-POT model to estimate associated EP demand and energy savings for each utility.

Q. After these additional screenings were performed, what was the next major activity?

A. After the EP was estimated for the Base Case scenarios and the sensitivities for each utility, the next step in the study was to estimate AP for a subset of the utilities.

ACHIEVABLE POTENTIAL

Q. Were any additional economic screening criteria applied for estimating AP?

A. Yes. For the AP analysis, the associated program costs, including program administrative costs and customer incentives, were included in the economic analysis. All EP measures were re-screened for both the RIM and TRC scenarios with the inclusion of these program costs.

Q. How were measure incentives determined for this study?

A. Measure incentives were developed for both the RIM and TRC scenarios. Under each of these scenarios, the maximum incentive that could be applied while remaining cost-effective was calculated for each measure.

- For the RIM scenario, the RIM net benefit for each measure was calculated based on total RIM benefits minus total RIM costs. Next, the amount required to drive the simple payback down to two years for each measure was calculated. The maximum incentive was based on the lower of these two values.
- For the TRC scenario, since the TRC test does not include utility incentives as a cost or benefit, the maximum incentive was based on the amount required to drive the simple payback down to two years for each measure.

Q. Please explain the methodology used by Nexant to develop AP estimates for the cost-effective EE measures.

A. Nexant's methodology for estimating AP consists of applying estimates of market adoption based on utility-sponsored program incentives for all cost-effective EE measures in each Base Case scenario. Nexant's market adoption estimates are based on the Bass Diffusion Model, which is a mathematical description of how the rate of new product diffusion changes over time. Nexant's TEA-POT model includes a collection of typical DSM market adoption curves that apply to a range of end-uses and program offerings, developed from primary and secondary research on utility DSM accomplishments. For this study, these adoption curves were applied to the appropriate cost-effective EE measures. For measures currently offered, the adoption rates were calibrated based on past FEECA Utility programs' performance. For new

measures, applicable secondary sources were used to calibrate adoption rates to the Florida market.

To account for the influence of incentives on market adoption, Nexant also incorporated an elasticity function based on a regression analysis performed on the EIA's Annual Electric Power Industry Report, also known as Form EIA-861. The regression analysis compared utility-reported savings and incentive rates to estimate the relative changes in savings based on differing incentive rates. The regression result was then incorporated into the overall market adoption rates. Nexant's TEA-POT model then calculated AP demand and energy savings by applying all cost-effective measures at the estimated market adoption rates to the baseline load forecast.

Q. Please explain the methodology used by Nexant to develop AP estimates for the cost-effective DR measures.

A. Similar to EE measures, Nexant's methodology for DR AP included calculating market adoption as a function of the incentives offered to each customer group. For DR measures that are currently offered by each utility, Nexant used the current incentive level offered to estimate market adoption. For measures not currently offered by a utility, Nexant used the net RIM benefits as the incentive level to estimate market adoption. The utility-specific incentive rates for each DR measure, along with historic participation rates for the DR programs offered by DEF and Gulf Power, were used to calibrate Nexant's collection of DR market adoption curves for

each technology and customer segment. The calibrated adoption rates were applied to the baseline load forecast to estimate the AP for cost-effective DR technologies.

Q. Please explain the methodology used by Nexant to develop AP estimates for the cost-effective DSRE measures.

A. Nexant did not produce estimates of AP for DSRE measures because none of the measures passed the cost-effectiveness screening for either the RIM or TRC scenarios.

Q. Are the methodology and models Nexant employed to develop AP estimates for the FEECA Utilities analytically sound?

A. Yes. Nexant's approach is aligned with industry-standard methods and has been applied and externally reviewed in numerous regulated jurisdictions. Nexant's TEA-POT modeling tool has been specifically developed to accommodate and calibrate to individual utility load forecast data, and enables the application of individual DSM measures and analysis of market potential at a high resolution – by segment, end-use, equipment type, measure, vintage, and year, for each scenario analyzed.

Q. Have these methodologies and models been relied upon by other commissions or governmental agencies?

A. Yes. Nexant's MPS methodology and TEA-POT modeling tool has been used in numerous MPS in the United States and Canada. Nexant's tools and results have undergone extensive regulatory review and have been used for the establishment of

utility DSM targets in multiple jurisdictions including North Carolina, Georgia, California, Pennsylvania, Texas, and Ontario.

REASONABLENESS OF NEXANT'S ANALYSES

Q. Are the estimates of the TP developed by Nexant analytically sound and reasonable?

A. Yes. The TP was performed under my direction and resulted in a thorough and wide-ranging analysis of DSM opportunities technically feasible in the FEECA Utilities' service territories. The TP process is in line with industry standards and included a greater level of analytic detail than that of comparable models and methodologies. The process included extensive iterative analytical work and continuous collaboration with the FEECA Utilities to ensure that it was comprehensive and aligned with the characteristics of their service territory and forecasted load.

Q. Are the estimates of the EP developed by Nexant analytically sound and reasonable?

A Yes. The EP was based on applying defined economic screening metrics to each TP measure to determine cost-effectiveness. The analysis included utility-provided economic forecasts to ensure alignment with other aspects of utility resource planning and to determine a reasonable estimate of EP for each utility.

Q. Are these estimates of AP a reasonable and appropriate basis for FEECA Utilities to propose DSM Goals?

A. Yes. Nexant's estimate of AP identifies cost-effective DSM opportunities for FEECA Utilities based on the test perspectives included in each scenario analyzed. This AP represents a reasonable estimate of the cost-effective savings that can be attained at the incentive levels and program delivery costs specified in the study. Along with other resource planning considerations, these estimates are an appropriate basis for FEECA Utilities to develop DSM goals.

Q. Does this conclude your testimony?

A. Yes.

BY MS. CLARK:

Q And Mr. Herndon, are there exhibits to that testimony?

A Yes, there are.

Q And were those Exhibits JH-1 through JH-10?

A Yes, they were.

Q And were those exhibits prepared by you or prepared under your direction and supervision?

A Yes, they were.

Q And do you have any corrections to those exhibits?

A Yes, we filed errata to those exhibits on August 5th.

MS. CLARK: Mr. Chairman, Mr. Herndon's exhibits have been premarked by staff as 25 through 34.

CHAIRMAN GRAHAM: Duly noted.

BY MS. CLARK:

Q Mr. Herndon, do you have a summary for your direct testimony?

A Yes, I do.

Q And would you give it at this time.

A Yes.

Good afternoon, Commissioners. Nexant was engaged by the seven FEECA utilities to determine the

technical potential for DSM, for energy efficiency, demand response, and demand-side renewable energy across the residential and the commercial/industrial classes for each utility.

In addition to determining technical potential, we were also retained by five of the utilities to determine the economic potential and achievable potential in their service territories.

The studies for the FEECA utilities were conducted using Nexant's robust set of analytical modeling tools that support our approach to estimating DSM potential, which align with industry-standard methods and provided an accurate and detailed assessment of the potential for DSM in Florida.

Technical potential, which represents a hundred percent instantaneous adoption of all technically-feasible measures by all applicable customers without regard for economics or real-world market constraints, was conducted first.

This analysis started with receiving and disaggregating each utility's load forecast so that the DSM measures are applied to the appropriate portion of the forecast and to make sure that they identify DSM potential was in addition to what's already included in the forecast.

Next, all technically-feasible DSM measures were applied to that disaggregated forecast using Nexant's modeling tools, which calculate the potential demand and energy savings by customer class and by end-use and then are rolled up to the technical-potential totals at the sector and the portfolio levels.

For economic potential, the DSM measures were individually screened to determine which were preliminarily cost-effective under both a RIM scenario and a TRC scenario. These measures were then rerun through Nexant's modeling tools to calculate the economic potential, demand, and energy savings.

Like the technical potential, economic potential represents 100-percent instantaneous adoption of all passing measures without regard to real-world market constraints.

And finally, the achievable potential analysis determined the market adoption of each measure over the 10-year study period, based on the utility's maximum cost-effective incentive for both the RIM and the TRC scenarios.

The passing measures were analyzed using market-adoption rates over the study period and rerun through Nexant's modeling tools to calculate achievable potential demand and energy savings.

This study followed Nexant's standard approach for assessing DSM market potential, which aligns with industry-standard methods and resulted in a reasonable and accurate assessment of DSM potential for the FEECA utilities.

Q Does that conclude your summary?

A Yes, it does.

MS. CLARK: Mr. Chairman, we tender the witness for cross.

CHAIRMAN GRAHAM: Thank you.

Mr. Herndon, welcome.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: OPC.

EXAMINATION

BY MS. FALL-FRY:

Q Good evening. Thank you for being here.

A Yes. Sure.

Q You provided -- for each of the utilities you did the achievable potential, you provided that based on multiple tests, correct -- multiple measures?

A Multiple meas- -- multiple tests and multiple measures, yes.

Q Okay. Sorry.

And specifically, your study provided that potential based on RIM, TRC, and PCT, correct?

A Well, so, we did a RIM scenario that considered RIM and PCT, and then we did a TRC scenario that considered TRC and PCT.

Q So, separately, but never on top of -- not stacked?

A The RIM and the TRC were never combined.

Q Okay.

A But we did -- we did look at those two different scenarios.

MS. FALL-FRY: Thank you. That's all.

THE WITNESS: Okay.

CHAIRMAN GRAHAM: Mr. Moyle.

MR. MOYLE: Thank you.

EXAMINATION

BY MR. MOYLE:

Q How are you, Mr. Herndon?

A I'm doing good. Thanks.

Q Good.

I just have a couple of questions, and they track some of the things I asked you in our deposition that we had earlier this year.

But you would agree, from a -- a cost-effectiveness standpoint, demand-response programs such as interruptible, curtailable, and generators, where you can -- you've got a peak load, somebody says, uh-oh,

we've got a peak load, and you can call somebody up and say, can you turn on your internal generators, can you shed load -- that all of those are very efficient and cost-effective programs, correct?

A Generally they are efficient to run. Sometimes there are some start-up costs for a utility to get the systems in place to -- to run those and track those, but generally there's not that much in the way of equipment costs actually to run those types of programs.

Q Right. And in terms of your review and analysis, those programs pass your -- your test, do they not?

A I'm not -- I can't recall that all of them passed, but generally, demand response did pass our economic screening for -- for most of the utilities.

Q Yeah, and -- and if -- if you were being asked -- the company you work for, it gets asked sometimes by non-utility folks to come up with plans for it to implement energy-efficiency measures; do -- is that -- is that not right?

A That's right. We help utilities design efficiency programs.

Q Okay. So, you do utilities.

If you -- if you were asked to put together a list of best practices, you would include on that list

of be- -- best practices things like interruptible and curtailable as -- as demand responses, correct? As a -- as a demand-response measure that you would -- you would suggest to them as a best practice?

A The -- the interruptibles are a best practice for demand response?

Q That's right.

A Is that what you mean?

I mean, it depends on the needs of the utility. I think we would propose doing a study, like we did here, to see what -- what makes sense for that utility, but that would -- interruptibles would probably be one thing we looked at, you know, and considered.

Q All right. So, I -- do you recall I asked you a question about best practices in your deposition?

A I believe we discussed best practices, yes.

Q And I can show you your deposition, but the answer you gave me during your deposition was -- is that it would be part of your -- your best practices; would it not?

MS. CLARK: Mr. Chairman, I'd like to ask him to identify where he is in the deposition, please.

MR. MOYLE: Sure. I'm on the deposition of Mr. Herndon. I've got an excerpt of it. So, it's on my Page 15, 16. It may not match up with yours,

but -- I can approach -- I can show her.

(Discussion off the record.)

MS. CLARK: Hang on a minute.

MR. MOYLE: Maybe I can go out of order, I can get a copy for Ms. Clark and we'll come back to him.

CHAIRMAN GRAHAM: We'll come back to you.

Let's see if Ms. Wynn has got any questions for this witness.

MS. WYNN: No questions, Mr. Chairman.

CHAIRMAN GRAHAM: Okay.

MS. CLARK: Mr. Chairman, I'm going to --

CHAIRMAN GRAHAM: We'll come back to Mr. Moyle after SACE.

MS. CORBARI: FDACS has no questions for the witness.

CHAIRMAN GRAHAM: Okay. SACE.

MR. MARSHALL: We do. We have a -- we have a lot of questions, for --

CHAIRMAN GRAHAM: Sure.

MR. MARSHALL: -- Mr. Herndon.

CHAIRMAN GRAHAM: By the way, I used to be in the paper business, and my former colleagues probably appreciate this.

(Laughter.)

EXAMINATION

BY MR. MARSHALL:

Q All right. Mr. Herndon, we're going to try to take this step by step and hopefully we don't get lost on the way, but if any time we're having trouble keeping the documents straight, just -- just let me know. Okay?

A Okay. Sure.

Q So, do you see the exhibit that's marked with the description: FPL's response to SACE's first POD No. 13 to FPL, then in quotation marks, "FEECA residential measured costs_020719, Tab, res cost extract"?

A Yes, I do.

MR. MARSHALL: This will be Exhibit No. 280.

CHAIRMAN GRAHAM: Mr. Herndon, can I make sure you mark these as well, just in case --

THE WITNESS: Oh.

CHAIRMAN GRAHAM: -- if they have to save them for the next witness.

MS. CLARK: What was the number?

CHAIRMAN GRAHAM: 280.

(Whereupon, Exhibit No. 280 was marked for identification.)

BY MR. MARSHALL:

Q And this is a -- a Nexant document?

A Oh, yes, we prepared this spreadsheet.

Q And this spreadsheet shows the development of incremental measure costs applicable in the residential sector?

A Yes, that's correct.

Q And there is a column for -- for baseline material.

A Yes, that's correct.

Q And where applicable, that would be the cost of the baseline technology for the specific measure.

A For the base -- yeah, that's correct.

Q And the efficient material cost -- do you see the column "efficient material"?

A Yes.

Q And that would be the cost -- that would be the cost of the measure.

A Yes, that's correct.

Q And so, the incremental cost would be the efficient material plus efficient labor minus baseline material and minus the baseline labor costs.

A That's correct.

Q And so, in other words, the incremental cost is the cost of the measure over the baseline for that measure.

A That's correct.

Q And these incremental costs were used for all of the Florida utilities in this proceeding?

A As I understand it, yes.

Q And if I could direct your attention to Page 3 of Exhibit 280.

A Okay.

Q Do you see the measure for the residential water-heater blanket?

A Yes, I do.

Q And it was assumed that it would take two hours of work to install a residential water-heater blanket, in this analysis.

A Yes, that's correct.

Q And -- and that meant, for the residential water-heater blanket, that there was a total labor cost of $140.

A Yes, that's correct.

Q And you would agree that some people could install a residential hot-water blanket on their own?

A It's possible. I mean, I know from some utility programs that we've dealt with that sometimes there's concerns about voiding a warranty on a water heater, so I know that's a concern by some homeowners, but I mean, it is something that they could do, but it's not as simple as, say, screwing in a light bulb.

Q Nexant has had a model known as the -- the TEAPOT model; is that right?

A That's correct.

Q And the TEAPOT model was used to help establish the technical potential for all of the utilities in this case.

A Yes, that's correct.

Q And you believe that the TEAPOT model has undergone extensive regulatory review.

A Yes. It's been reviewed in other jurisdictions, that's correct.

Q And do you see the document that has a description in quotes: 20190018 DEF response to staff POD 1 -- 1 to 9, POD 3?

A Yes, I do.

MR. MARSHALL: And this will be Exhibit 280- --

CHAIRMAN GRAHAM: -- 1.

MR. MARSHALL: -- 1. Thank you.

(Whereupon, Exhibit No. 281 was marked for identification.)

BY MR. MARSHALL:

Q If I could direct your attention POD 3 on Exhibit 281, staff asked for a copy of the TEAPOT model, didn't they?

A That's what it appears to be asking for here.

Q And subject to a confidentiality agreement, Nexant offered to brief staff's representatives regarding the information on how the TEAPOT models work; is that right?

A Let's see. I -- well, the offer that we made -- which we've done in other jurisdictions -- is to -- to do a live demo; to have our technical folks walk -- you know, sit down, open up the model, walk through the model, answer all the questions that the staff may have about the model, show them how it works, you know, and sit for as long as we need to, to show the model.

I mean, it's a propri- -- a proprietary model. So, we typically don't provide it -- or have not provided it in the past in other jurisdictions in the -- the demo has been the offer that's been taken up by outside parties in those cases.

Q And in this case, Nexant did not offer to actually hand over the model to staff for examination, even under a confidentiality agreement.

A That's correct. And I -- like I said, that's consistent with what we've done in other markets where staff and their technical consultants or other states other jurisdictions have reviewed -- reviewed the model.

The other part of that is the model is pretty complex. So, just simply handing over the model is not -- I don't -- probably wouldn't even be that useful because you kind of have to know -- it takes several months to train up our staff on how to use it.

So, just handing over a model without any explanation or any kind of demo probably wouldn't be that useful of an exercise, but -- but yeah, but we did make the offer for -- for walking through it and answering all the questions about it, how it works.

Q And if I could direct your attention to -- it should hopefully be the next one, where it's a description -- it's: 20190018 DEF Response to SACE POD 1 -- 118, POD 10?

THE WITNESS: Okay.

MR. MARSHALL: And this will be Exhibit 2- --

CHAIRMAN GRAHAM: 282.

MR. MARSHALL: -- 82.

(Whereupon, Exhibit No. 282 was marked for identification.)

BY MR. MARSHALL:

Q If I could refer you to SACE's POD 10 on this document, Nexant had a -- had a similar response that it gave staff regarding the availability of the TEAPOT model; is that right?

A You mean SACE?

Q Yes.

A Yes.

Q Well, that -- that Nexant had a similar response to SACE's request as it did to staff's request.

A That's correct. That's correct.

Q And just to be clear, that -- that did not include actually handing over the model.

A That's correct, for the same reasons stated before.

Q I would like to next direct your attention to the document with the description: Excerpt Nos. 33 to 34, from JEA's response to staff's third set of interrogatories to JEA, Nos. 25 through 52.

Do you see that document?

A Yes, I do.

MR. MARSHALL: All right. This would be Exhibit 283.

CHAIRMAN GRAHAM: Correct.

(Whereupon, Exhibit No. 283 was marked for identification.)

BY MR. MARSHALL:

Q If I could direct your attention to Interrogatory No. 33, you sponsored the answer to this interrogatory?

A (Examining document.) Yes, it looks familiar. I believe so.

Q Okay. And the answer indicates that the measures eliminated in each step are included in Tab 33A-RIM and Tab 33A-TRC in the attached spreadsheet?

A Yes, that's correct.

Q And so, Tab 33A-TRC would be for the TRC patent?

A Yes, that's correct.

Q And if I could direct your attention to the attached spreadsheet that has -- it says "33A-TRC" at the bottom.

A Okay.

Q And under the -- so, this would be for the TRC scenario.

A Yes, that's correct.

Q And under the economic -- so, just going left to right across the first page here of Tab 33A-TRC, the first column would be the economic potential TRC perspective with measured permutations that were eliminated.

A That's correct.

Q And the next tab would be economic potential step two from the participant's cost-test perspective, measure permutations eliminated.

A Correct.

Q And the answer under that column was "none."

A That's correct.

Q Similarly, none were eliminated under the participant cost-test perspective under the achievable potential, step two.

A That's correct.

Q And staying on this exhibit, if I could direct your attention to Interrogatory 34, you also sponsored the answer to this interrogatory?

A Yes.

Q And so, program costs were applied to end-use categories on a unit basis of dollars per kilowatt hour, and averaged across the utilities; is that right?

A That's right. We -- what we did -- since -- because this -- for a potential study, we are not designing programs. So, we don't know specific program costs.

So, what we typically do in these potential studies -- we did it for this one and we typically do it in other potential studies -- is come up with a reasonable approximation based on either available data from this specific utility or available -- what we consider applicable data because we're looking at, you know, two to 300 measures typically, and a single

utility might not offer programs or have program-cost data on all those measures.

So, we use what we feel like is a reasonable approximation of program costs based on historic program savings and program budgets from that utility or -- or similar utilities.

Q And so, the way Nexant conducted this analysis, the administrative costs are not related to the cost of the measure.

A You mean, the incremental cost of the measure?

Q Yeah, the --

A That's right.

Q The incremental cost of the measure.

A Correct.

Q Instead, they're based on the kilowatt hour savings of the measure?

A Yes, that's the metric we used.

Q And these administrative costs calculated by Nexant were used by JEA, OUC, and Gulf?

A And FPUC and Duke.

Q And if I could -- so -- and the program costs for each measured permutation was provided in Tab 34B-EE and Tab 34B-DR in the attached Excel spreadsheet, according to Interrogatory Answer 34B?

A Yeah -- (examining document). That -- yes,

that's what it looks like from the response.

Q And Tab 34B-EE would include the administrative costs for the energy-efficiency measures?

A Oh, there it is. Let's see. Yeah, 34B-EE has the, yeah, assumed program costs with the energy-efficiency measures, that's correct.

Q And so, directing your attention to that tab now, 34B-EE, Page 1, for the CFL13 watt, you have a program cost of 27 cents?

A Yep, that looks right.

Q And that would be on a -- a -- basically a per-light-bulb measure -- cost?

A It's based on the kilowatt-hours savings. I -- I bel- -- let's see. Yes, I believe that kilowatt-hour savings is equivalent for -- for a single light bulb.

Q And kind of in the similar range, for the LED 9-watt flood, you have program costs of 38 cents per light bulb.

A Which measure?

Q LED, 9-watt flood?

A Oh, yeah, right, 57 cents. Right.

Q I'm sorry, yes.

And for the 21 SEER air-source heat pump from base electric resistance, you have a program cost of almost $1,500?

A 1478.

Q And then for ceiling insulation, R2 to R38 for single family, you have program costs of $640?

A That looks right, yes.

Q And also for single families, by comparison, for ceiling insulation, R12 to R38, you have program costs of $166.95?

A Yes, that looks right.

Q If I could next direct your attention to the exhibit that has the description: JEA response to SACE POD 14, utility program EE budgets_confidential -- I assure the Commission, it wasn't -- this is not a confidential document -- Bates 1 to 11, Tab, TPS program categories.

A Yes.

MR. MARSHALL: All right. This will be Exhibit No. 284.

CHAIRMAN GRAHAM: That is correct.

(Whereupon, Exhibit No. 284 was marked for identification.)

MS. CLARK: Mr. Marshall, would you give me that number again?

MR. MARSHALL: Sure.

MS. CLARK: What exactly I'm looking at.

MR. MARSHALL: Yeah, the description is JEA

response to SACE POD 14, "Utility program EE budgets_confidential" --

CHAIRMAN GRAHAM: It's the second one back.

MR. MARSHALL: Yeah. I think it should be the one -- the next one in the docket -- in the packet. We tried to make the packet as close to the order as -- as we could, but -- but 40 copies is a lot to make sure we have everything in the exact right order.

MS. CLARK: And you are marking that as 284.

CHAIRMAN GRAHAM: Correct.

MR. MARSHALL: Yes.

BY MR. MARSHALL:

Q Mr. Herndon, this was a -- do you recognize this document?

A I do.

Q And what is it?

A This was the data that we used to develop those unit costs, program costs that we applied to the measures.

Q And if you follow the -- the -- so -- so -- well, first -- on the first page, where it says "TPS program categories" on -- on the bottom?

A Okay.

Q What -- what's happening on this page?

A So -- so, that's where we actually calculated those program costs that we assumed by, in this c- -- typically by end-use. There's a couple of commercial ones that are more programmatic, like commercial custom, but -- but this is the supporting data that we collected from individual utilities, either FEECA utilities or regional utilities where maybe the FEECA utility didn't offer that -- the type of program or that -- or that end-use, but it shows the individual utility costs that we calculated based on actual savings achieved and actual dollars spent and got that down to the unit value, which is those recommended values on the right side.

And those recommended values on a dollar-per-kilowatt-hour basis were -- are what we applied to the measures within each of those end-use cat- -- sector and end-use categories.

Q And so, those recommended values were -- were applied to those utilities that you listed before that use these --

A I will -- yes, although, I will say that Duke had their own programmatic cost. So, what -- what we did was we compiled this list and we shared it with the utilities that we were doing economic and achievable potential for.

We asked them, you know -- or -- or discussed with them, you know, if they thought these costs were appropriate or what they thought would be reasonable for the -- the set- -- goal-setting process. And Duke actually had more data available on their existing residential and commercial programs that they thought would be more appropriate.

But -- but this blended data is what we used for -- for FPUC, JEA, Gulf, and OUC.

Q And those recommended values at -- at the top -- at the right side of that page, those -- those are -- those are a blend of the data from -- that was supplied by the utilities. That -- that's in that table to the left?

A That's correct.

Q And in the following spreadsheets, there's actually data from those utilities; is that right?

A Right. I mean, this -- the electronic version of this, this table, actually references the data that's in those -- that we got from -- that were supplied by each of those individual utilities.

Q And I -- I'd ask that you keep Exhibit 284 handy as we go to -- do you have the document "OUC supplemental response to SACE POD 14, utility program EE budgets, Tab, TPS program categories"?

A Okay.

MR. MARSHALL: And this will be Exhibit 285.

THE WITNESS: Okay.

(Whereupon, Exhibit No. 285 was marked for identification.)

BY MR. MARSHALL:

Q If I could direct your attention to the first page --

MR. S. WRIGHT: Mr. Chairman, I'm -- excuse me. I'm -- I'm lost. 284 is OUC's supplemental response to SACE POD 14?

CHAIRMAN GRAHAM: 284 is JEA's response to SACE --

MR. S. WRIGHT: Got it. Thank you.

MR. MARSHALL: So, 285 will be the OUC --

MR. S. WRIGHT: Thank you.

MR. MARSHALL: -- supplemental response.

CHAIRMAN GRAHAM: Yep.

MR. S. WRIGHT: Thanks.

BY MR. MARSHALL:

Q If I could direct your attention to the first page of the -- the TPS program categories of that POD.

A Okay.

Q For all of the Florida utilities, except for OUC, we just have reference errors; is that right?

A This version, apparently, has that. I mean, this looks like the same spreadsheets. So, I don't know what happened along the way, but -- but, yeah, I mean, this version looks like it has that. I mean, all the reference errors -- going back to Exhibit 284, all the reference errors relate back to whatever number is listed in Exhibit 284.

Q And to be clear, when -- when -- when this document was -- this document was handed over to OUC at some point.

A I don't know that this specific one -- I mean, the O- -- the version we discussed with OUC had all the appropriate costs, per Exhibit 284. I mean, the decisions for program costs were made based on the full range of -- of all -- I mean, the correct version of the spreadsheet.

Q And so, what was used for OUC didn't include -- well -- well, didn't have the -- actually had all the data that was included on the JEA one.

A Correct. Like I said, we used the same data. I mean, the same file was sent to those utilities. So -- so, I don't know what happened on this -- this version of it.

Q And as far as you know, Nexant had that data included when it handed the document over.

A Yes. Like I said, I mean, we sent the same spreadsheet to all -- all of the utilities, so -- and then -- and we actually did the cost calculation. So, we used our files. So, it wasn't -- it wasn't like we handed OUC something that would have reference errors that they ran with. We -- we were the ones running the analysis.

Q Next I'm going to be talking about load forecasting, Mr. Herndon. Nexant's methodology for estimating energy-efficiency technical potential begins with the disaggregated utility load forecast?

A That's correct.

Q And Nexant used the 2020 load forecast from each FEECA utility.

A We used the 2020 load forecast that came out of, I believe, the 2017 ten-year site plans, which was what was the most current at the time we were doing the forecast disaggregation.

Q And just to sort of set you up, this is going to handle the bulk of the remaining documents --

A Okay.

Q -- the line of questioning --

A Okay.

Q -- is we are going to be confirming, with one exception, that it actually was the 2017 ten-year site

plan, 2020 load forecast that was used by Nexant.

A Okay.

Q And we'll start with -- do you see FPL response to Interrogatory 39 from staff's second set of interrogatories?

A Yes.

MR. MARSHALL: And this will be Exhibit 286?

CHAIRMAN GRAHAM: Correct.

(Whereupon, Exhibit No. 286 was marked for identification.)

BY MR. MARSHALL:

Q And at the same time -- well, let me first ask this: You sponsored the answer to this interrogatory?

A This is No. 39? Yes, it looks like I did.

Q And you indicate that Nexant only considered the utility baseline load forecast from FPL's 2017 ten-year site plan for the market-potential study?

A That's correct.

Q And if I could direct your attention to a document that has in quotes: 20190015-SACE's First POD's No. 11-FPL_Result Comparison, Tab, Dashboard from FPL Response to SACE -- SACE First POD No. 11?

A Okay.

Q And this would be a --

MS. CLARK: Mr. Chairman, I apologize. I'm

not there yet.

MR. MARSHALL: Sure. I can hold on for a second.

MS. CLARK: (Inaudible.)

MR. MARSHALL: Yes, this is 20190015-SACE's first PODs No. 11-FPL_result comparison, Tab, Dashboard from FPL response to SACE's first POD No. 11.

CHAIRMAN GRAHAM: It's about six or seven back.

MS. CLARK: I'm sorry, Mr. Marshall. I have something that says: 2017 excerpt from FPL ten-year site plan.

CHAIRMAN GRAHAM: Keep going back.

MR. MARSHALL: Yeah, if you -- it's -- it's a few more -- it's a bit back, but we will be using the ten-year site plan shortly. So, I'd keep that handy.

MS. CLARK: I have it now.

CHAIRMAN GRAHAM: Okay. You can continue. You want to give that No. 287?

MR. MARSHALL: 287.

(Whereupon, Exhibit No. 287 was marked for identification.)

BY MR. MARSHALL:

Q And the attachment of the exhibit here, the -- the Dashboard -- do you see that?

A I do.

Q And this is a Nexant document?

A Yes.

Q And on the first page of this document, in the top left, is Table 1?

A Yes.

Q And that includes the theoretical technical-potential savings for residential, commercial/industrial sectors?

A Yes.

Q And the first row there is the 2020 baseload gigawatt hours?

A Yes, that's right.

Q And this is what was used by -- by Nexant for its analysis?

A Well, that's the roll-up of the -- it should be the roll-up of the disaggregated forecast that we used.

Q And for residential, that was 58,174 gigawatt hours.

A Yes, that's what it looks like.

MR. MARSHALL: If I could direct your

attention to the excerpts of FPL's ten-year site plan. We have 20- -- 2017 will be Exhibit 288, and the 2018 will be 289.

CHAIRMAN GRAHAM: 2017 excerpt of Florida Power & Light ten-year site plan is 288, correct?

MS. CLARK: Yes.

CHAIRMAN GRAHAM: And the 2018 Florida Power & Light ten-year site plan is 289.

MR. MARSHALL: Yes.

CHAIRMAN GRAHAM: Okay.

(Whereupon, Exhibit Nos. 288 and 289 were marked for identification.)

BY MR. MARSHALL:

Q Mr. Herndon, if I could direct your attention to Schedule 2.1 of those excerpts.

A Okay.

Q And if you look at the 2020 gigawatt-hour forecast for residential customers, the 58,174 number is found in FPL's 2018 ten-year site plan.

MS. CLARK: Mr. Chairman, it would be helpful to me if he would give a page number as to what he's looking at.

MR. MARSHALL: This is Schedule 2.1. So, this would be Page 38 in the 2018 FPL ten-year site plan, and Page 40 in the 2017 ten-year site plan.

MS. CLARK: Thank you.

And may I hear his question, again?

BY MR. MARSHALL:

Q Sure. The -- the question is: Isn't it true that the 58,174 gigawatt hours projected for 2020 for the residential on the Dashboard matches that number from the 2018 FPL ten-year site plan?

A It does appear so.

MR. PERKO: Mr. Chairman, I -- I'm going to have to object. I'm not sure that he's established the foundation that this witness is familiar with the ten-year site plan submitted by the FEECA utilities so that he could answer that question.

CHAIRMAN GRAHAM: I'm going to allow the question.

Continue.

THE WITNESS: Yeah, I mean, it -- it appears so. I mean, I -- I would say, generally, when we put these things together, we use the best, current information.

As I recalled, and I think as we said, you know, as the 2017 site plans for the disaggregated forecasts, so -- but yes, it does appear that the 2018 forecast, in fact -- which would mean that it's actually based on more-current data, if that's

true.

But these studies are always a snapshot of what the forecast is available, what's costs are available, those kind of things, so -- yeah, I -- I -- I would have to dig back, actually, into the electronic versions of this to find the -- the references, but that appears -- it appears it does match the 2018.

BY MR. MARSHALL:

Q And so -- thank you, Mr. Herndon.

Just to give you sort of a road map to speed things up here -- because for -- for us, it's important to know that it matches the -- the -- which ten-year site plan.

For the rest, we believe it does match the 2017 ten-year site plan. So, we're just going to be asking you to confirm that your Dashboards do --

A Right.

Q Do match.

A Well, so -- so, the other thing I would point out about the Dashboard is that was a reporting file. So, this doesn't necessarily -- this -- this was something that we provided to the utilities, right?

So, it's -- it might not be the basis of the analysis. It might be -- at some point, our analysts

might have updated this Dashboard file because it looks like April 2018 is right around when we were doing -- you know, would have been done with the disaggregation, but maybe as this Dashboard was assembled.

So, I'd have to look at the underlying data. I mean, it doesn't look like it's that -- you know, it's not far enough off to make a substantial difference. It's, what, a hundred megawatt hours? So -- but I would have to dig back into the data to see if that's -- if the reporting and the Dashboard just got updated or if -- which I assume happens if -- because these -- like I said, this is April 2nd, 2018, data on this. We would have already disaggregated the forecast at that point, so...

Q Okay. And so, I'm going to try to speed this up as we -- as we go through here to -- to confirm that the others are from the 2017 ten-year site plans.

A Okay.

MR. MARSHALL: So, if you could get the Excerpt No. 18 from Gulf response to staff second set of interrogatories -- which will be Exhibit 290?

CHAIRMAN GRAHAM: Correct.

THE WITNESS: 290.

(Whereupon, Exhibit No. 290 was marked for

identification.)

MR. MARSHALL: And then the Gulf Results Comparison, Tab, Dashboard from Gulf response to SACE PO- -- first POD No. 11, which would be 291.

THE WITNESS: Okay.

CHAIRMAN GRAHAM: Hold on a second. Back up to that. You said Gulf?

MR. MARSHALL: Yes.

CHAIRMAN GRAHAM: Gulf response comparison Dashboard to Gulf response, SACE first POD No. 11?

MR. MARSHALL: Yes.

CHAIRMAN GRAHAM: Okay. So, that's going to be 290 -- or 291?

MR. MARSHALL: That's 291.

And then the 2017 excerpt of the Gulf ten-year site plan will be 292.

CHAIRMAN GRAHAM: Okay.

(Whereupon, Exhibit Nos. 291 and 292 were marked for identification.)

MR. S. WRIGHT: Mr. Chairman --

CHAIRMAN GRAHAM: Yes.

MR. S. WRIGHT: I apologize again, but -- but I have gotten lost again.

CHAIRMAN GRAHAM: Sure.

MR. S. WRIGHT: I've got --

CHAIRMAN GRAHAM: What -- what was the last number you have?

MR. S. WRIGHT: Well, I had 289 as the excerpt of FPL's ten-year site plan from 2018.

CHAIRMAN GRAHAM: Sure.

MR. S. WRIGHT: 290, I had excerpt of Gulf Power ten-year site plan from 2017.

CHAIRMAN GRAHAM: That is not correct.

MR. S. WRIGHT: Okay.

CHAIRMAN GRAHAM: 290 --

MR. S. WRIGHT: 290, yes, sir.

CHAIRMAN GRAHAM: -- is Excerpt No. 18 from Gulf response staff's second set of interrogatories, 15 through 25.

MR. S. WRIGHT: Got it. Thank you.

CHAIRMAN GRAHAM: 291 is Gulf result -- result con- -- consp- -- excuse me -- comparison --

MR. S. WRIGHT: Got it.

CHAIRMAN GRAHAM: -- Tab, Dashboard -- you've got that one?

MR. S. WRIGHT: I do.

And then the 2017 excerpt from the Gulf ten-year site plan is --

CHAIRMAN GRAHAM: 292.

MR. S. WRIGHT: -- 292. Thank you.

CHAIRMAN GRAHAM: Okay. SACE.

BY MR. MARSHALL:

Q Mr. Herndon, in Exhibit 290, in res- -- you sponsored the -- this response to this interrogatory?

A 290 -- 290, yes.

MS. CLARK: 290 or 291?

MR. MARSHALL: 290, the -- is the interrogatory.

THE WITNESS: Yes, that's correct.

BY MR. MARSHALL:

Q And then, if you could just take -- well, Exhibit 291 is the Nexant Dashboard for Gulf Power?

A Correct.

Q And then the -- if I could have you flip in 292, Exhibit 292, to what's marked on the bottom as Page 28, Schedule 2.1.

A Right.

Q And the 5,532 gigawatt hours forecasted for 2020 matches what's on the Dashboard?

A Looks like it, right.

So -- I mean, I -- I can tell you, just from a timing perspective on all -- I don't know if there's -- you want to go through the other -- the rest of these for other utilities, but looking at these, I think -- it looks like all these come out in April each year, is

that right, the ten-year site plans?

So, we did -- we started this study in the fall of 2017 and put all the measures together. It was over the winter -- 2017 to 2018 is when we did the forecast disaggregation. So, at that point, the 2017 site plan was all that was available.

So, looking at this, it looks like maybe the Dashboard for FPL got updated down the road, but our forecast disaggregation happened between, say, January and March of 2018.

At that time, the 2018 site plans, I believe, according to these dates, would not even be out. So, I think the general answer is that -- that what we said was correct, that our disaggregation and the analysis was based on the 2017 ten-year site plans.

Q All right. And so, we're going to try to do the same thing for -- for Duke real quick. And it's just important to get it in the record because a lot of these documents are actually not in the record.

So, if I could direct your attention to the document with the description: Excerpt No. 61 to 62 from DEF response to staff's fourth set of interrogatories, Nos. 59 through 69.

A Okay.

MR. MARSHALL: And this will be Exhibit 293.

(Whereupon, Exhibit No. 293 was marked for identification.)

BY MR. MARSHALL:

Q And do you have the Dashboard for -- do you see the "DEF result comparison, Tab, Dashboard"?

A Yes.

MR. MARSHALL: That will be Exhibit 294.

(Whereupon, Exhibit No. 294 was marked for identification.)

BY MR. MARSHALL:

Q And then, do you see the 2017 excerpt of DEF ten-year site plan?

A Yes.

MR. MARSHALL: That will be Exhibit 295.

(Whereupon, Exhibit No. 295 was marked for identification.)

BY MR. MARSHALL:

Q And in Interrogatory 62, in Exhibit 293, you do confirm that they just used the utility baseline load forecast from Duke's 2017 ten-year site plan.

A That's in -- which question?

Q Question 62.

A Yes, that's correct.

Q And then, if you look at the result comparison Dashboard from 294 -- again, the 2020 baseload gigawatt

hours for residential -- and Schedule 2.1 on Page 2-4 of Exhibit 295 for the forecast for residential gigawatt hours for 2020 -- they match.

A Yes.

Q If I could direct your attention to the exhibit that says: Excerpt No. 45 from OUC responses to staff's second set of interrogatories, Nos. 42 through 51.

CHAIRMAN GRAHAM: It's 296.

MS. CLARK: Mr. Marshall, would you give those again? I'm --

MR. MARSHALL: Sure.

MS. CLARK: -- still shuffling through my papers.

MR. MARSHALL: Yeah --

CHAIRMAN GRAHAM: Excerpt No. 45 from O- -- OUC response to staff's second set of interrogatories is No. 296.

(Whereupon, Exhibit No. 296 was marked for identification.)

BY MR. MARSHALL:

Q And then the OUC -- do you see the OUC result comparison, tab, Dashboard document?

A Yes.

MR. MARSHALL: All right. And that will be

Exhibit 297.

(Whereupon, Exhibit No. 297 was marked for identification.)

BY MR. MARSHALL:

Q And then, do you see the excerpt of the OUC ten-year site plan from 2017?

A Yes.

MR. MARSHALL: That would be Exhibit 298.

THE WITNESS: Okay.

(Whereupon, Exhibit No. 298 was marked for identification.)

BY MR. MARSHALL:

Q So, directing your attention to Exhibit No. 296, Interrogatory No. 45 -- you sponsored this answer?

A Yes.

Q And again, you clarified that -- that Nexant only considered the utility baseline load forecast from OUC's 2017 ten-year site plan for the market-potential study, as this was the currently-available utility load forecast at the time of the analysis.

A Yes.

Q Then, if you could take Exhibit 297 with the Dashboard and compare that to Exhibit 298, Schedule 2.1 -- has Page 12-3 at the bottom -- the 2020

load forecast for residential matches the Dashboard.

A Yes.

Q If I could direct your attention to -- do you see the exhibit, Excerpt No. 18 from JEA responses to staff's second set of interrogatories, Nos. 15 through 24?

A Okay.

MR. MARSHALL: And this will be Exhibit No. 299?

CHAIRMAN GRAHAM: Correct.

(Whereupon, Exhibit No. 299 was marked for identification.)

BY MR. MARSHALL:

Q And then do you see the document, "Exhibit JEA result comparison Bates 5-28, Tab, Dashboard"?

A Yes.

MR. MARSHALL: That will be Exhibit 300.

(Whereupon, Exhibit No. 300 was marked for identification.)

BY MR. MARSHALL:

Q And then do you see the 2017 excerpt of the JEA ten-year site plan?

A Yes.

MR. MARSHALL: That will be Exhibit 301.

(Whereupon, Exhibit No. 301 was marked for

identification.)

BY MR. MARSHALL:

Q If I could direct your attention to Exhibit No. 299, Interrogatory No. 18.

A Okay.

Q You sponsored the response to this interrogatory?

A Yes.

Q And again, you confirmed that, for JEA, you only -- Nexant only considered the utility baseline load forecast from the 2017 ten-year site plan.

A Correct.

Q And if I could direct your attention to Exhibit 300, the Dashboard, and Exhibit 301, Schedule 2.1 indicates it's Page 20 at the bottom. The 2020 load forecast in Exhibit -- for residential, Exhibit 301, matches the number in the Dashboard.

A Yes.

Q And if I could direct your attention to -- do you see Excerpt No. 48 from TECO responses to staff's third set of interrogatories, Nos. 45 to 56?

A Okay.

MR. MARSHALL: This will Exhibit No. 302.

(Whereupon, Exhibit No. 302 was marked for identification.)

BY MR. MARSHALL:

Q And do you have the exhibit that's marked BS722, TECO_result comparison, Tab, Dashboard?

A Yes.

MR. MARSHALL: That will be Exhibit 303.

(Whereupon, Exhibit No. 303 was marked for identification.)

BY MR. MARSHALL:

Q And then do you have the 2017 excerpt of TECO ten-year site plan?

A Yes.

MR. MARSHALL: That will be Exhibit 304?

THE WITNESS: Okay.

(Whereupon, Exhibit No. 304 was marked for identification.)

BY MR. MARSHALL:

Q First, directing your attention to Exhibit 302, Interrogatory No. 48, you sponsored the answer to this interrogatory?

A Yes.

Q And in -- you, again, clarify for -- for TE- -- for Tampa Electric this time -- that Nexant only considered utility baseline load forecasts from the 2017 ten-year site plan?

A That's correct.

Q And if I could direct your attention to Exhibit 303, the Dashboard for TECO, and their Exhibit 304, their excerpt of the 2017 ten-year site plan Schedule 2.1, looking at the load forecast for residential for 2020 -- that matches what's on the Dashboard?

A Yes.

Q Okay. Switching gears, do you see the document with the description "Excerpt Nos. 21 through 22 from JEA response to SACE's first set of interrogatories, Nos. 1 through 65"?

A Yes.

MR. MARSHALL: This will be Exhibit 305.

THE WITNESS: Okay.

(Whereupon, Exhibit No. 305 was marked for identification.)

BY MR. MARSHALL:

Q If I could direct your attention to Interrogatory No. 22.

A 22?

Q It was asked whether you believe that all measures with a payback of less than two years necessarily have very high free-rider rates, regardless of the program design, and the basis for that belief; is that right?

A That is the question, yes.

Q And your response was that: Nexant did not analyze free-rider rates and does not have a position.

A That's right.

Q Would you agree that free riders are typically understood as customers who participate in a DSM program and take an incentive or rebate that would have installed that DSM measure on their own?

A That's -- yeah, that's the standard definition.

Q And in this case, a two-year payback screen was used to account for free riders.

A Yes, that's correct.

Q And what that means is that, if a measure would pay for itself within two years, it was screened out from consideration at the economic-potential phase of the analysis?

A Yes, that's correct.

Q If I've done things correctly, there should be one document left. That is Excerpt Nos. 15 through 21 from OUC response to SACE first set of interrogatories?

A Yes.

MR. MARSHALL: All right. This will be Exhibit 306.

(Whereupon, Exhibit No. 306 was marked for

identification.)

BY MR. MARSHALL:

Q If I could direct your attention to Interrogatory No. 17.

A Okay.

Q And you sponsored the answer to this interrogatory?

A I'm not sure I did -- yes.

Q And so, no other market-potential studies that you have been involved with at Nexant have used a two-year payback screen to account for free riders.

A That's correct, but I would say most of the potential studies we've done -- or I've done at Nexant only don't account for free-ridership at all. I mean, usually, the potential studies we've done are the first step of a multi-step process in program planning.

Free-ridership is usually considered somewhere in the program-planning or program-design process, but where the potential study is step one of, say, three or four or five, free-ridership may get included along the way. Where the goals in Florida are set on the results of the potential study, it was included within the study.

So -- so, it's kind of apples to oranges to compare just potential studies we've done to this one,

since this one is used more directly for goal-setting than -- than the other potential studies in other markets.

Q And you've personally been involved in about a dozen market-potential studies?

A That's about right.

Q And I think you were starting to get at this, but you're not aware of any jurisdictions that use the two-year payback screen to eliminate measures as part of a market-potential study?

A None -- none of the studies I've done have. I mean, I -- I am aware of DSM programs that use the two-year as a cap on incentives. Like they'll buy down an incentive -- or I'm sorry. They use -- that's a cap on the incentive. They'll buy down the customer cost to a -- the two-year mark and they won't pay incentives past that because they figure that two-year mark is an appropriate metric for determining when it's economically attractive to customers to do things on their own.

So, the two-year -- I've seen the two-year mark used in DSM planning and DSM programs, but this was the first time -- you know, like I say, it's a little bit apples and oranges because this is the first time we did it in a potential study.

Q But -- but you're not aware of any other jurisdictions that do it this way, that -- that --

MS. CLARK: Asked and answered.

CHAIRMAN GRAHAM: I agree.

Move on.

BY MR. MARSHALL:

Q You don't have an opinion as to how effective the two-year payback screen is to limit free-ridership?

A I don't have an opinion on that.

Q And you don't have an opinion as to whether there is a better method for accounting for free riders?

A I don't have an opinion on that.

Q As part of the achievable potential -- potential incentives for customers are calculated.

A I'm sorry. Say that again?

Q As part of the achievable-potential stage of the analysis that Nexant conducted, potential incentives for customers are calculated?

A Yes, that's correct.

Q And these incentives are limited to a two-year-payback-index analysis?

A So, the calculation, incent- -- well, not -- in some cases. I mean, for the RIM scenario, what we looked at was what would be the available incentive to continue to pass RIM and to continue to meet the

two-year payback screen.

So, we looked at what would be the maximum incentive that could be offered to either buy down that payback to two years or -- and keep the RIM at 1.0 or greater. So, we did both of those analyses so it -- so it -- and so, we kept the -- or we sent the incentive at the level that complied with the two-year payback screen and complied with the RIM -- keeping the RIM being a -- a pos- -- being positive.

Q And it -- you know, like on the TRC side, for example --

A Yeah.

Q -- those were all --

A Yeah.

Q -- brought to two years.

A Yeah. So, the TRC scenario didn't have that RIM consideration. So, yes, they were -- they were all looking at what would be -- it would take to buy down the incentive to a two-year payback -- or buy down the cost to a two-year payback.

Q And the idea of these incentives is to increase the level of adoption?

A That's what DSM -- yeah, utility DSM incentives typically do.

Q And if the dissent to -- if the -- sorry. If

the incentives decrease the payback period even more from that two years to one year, for example, that would increase the adoption rate.

A I mean, typically, we look at incentive rates -- I mean, the way our adoption curves and the way our elasticity in the model works is we look at incentives as a function of cost, right. So, the two-year payback is -- is sort of -- it's a similar calculation, but yes, typically the higher the incentive, the more amount that's getting paid by the utility. We -- it typically results in higher adoption rates.

Q And so, for example, if those measures were even given enough incentive to be a zero payback, especially fr- -- essentially free to customers, you would expect that would increase the adoption as compared to a two-year payback.

A Yes, if you gave measures away, I would expect there would be higher adoption.

Q Turning your attention to the -- the -- the RIM test, you're not aware of any state outside of Florida that exclusively uses RIM to establish goals?

A No. I know RIM is taken into account in other states. So, it's -- it's -- so, like, here, it's RIM and participant-cost tests. In other states, some of

them look at TRC and RIM, some of them look at all four -- you know, four tests. So, RIM is a consideration in other states.

Q But you're not aware of any state that exclusively uses RIM to establish goals.

A No.

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

CHAIRMAN GRAHAM: Mr. Moyle.

MR. MOYLE: Thank -- thank you. I have copies of the deposition excerpt that -- I would give -- give a copy to the witness. I've provided Ms. Clark a copy as well.

CHAIRMAN GRAHAM: Okay.

MR. MOYLE: I can hand them out, if you would like.

CHAIRMAN GRAHAM: Staff will take it for you.

(Discussion off the record.)

CHAIRMAN GRAHAM: Mr. Moyle?

MR. MOYLE: Thank you -- thank you, Mr. Chairman.

Just so -- so, the record is clear, this is an excerpt from the deposition. So, I didn't -- I just wanted the part that I asked questions on. So, that's been a little bit of the confusion as --

because it doesn't match the entire deposition, but Ms. Clark and I have, I think, sorted it out.

So, I was in the middle of asking the witness about best practices. And let me -- let me direct the question to the witness.

CONTINUED EXAMINATION

BY MR. MOYLE:

Q But Mr. -- Mr. Herndon, you recall at the deposition that I asked you the question, "I think that you were asked this, but in terms of -- you had mentioned best practices, you are familiar with best practices.

"Do y'all have a listing of those; like, here are the best practices that you provide to people who call up and say, hey, we are looking at -- at doing a program for energy efficiency, and is that something that you develop as a document anywhere?"

And your answer was, "I don't know that we have a specific document. I think we -- like I said earlier, I think there are different best practices that apply depending on the goals of the program and the goals of the utility."

Question, "Right."

Answer, "But I think we would be able to develop a specific -- you know, if a utility called us

up and said, hey, we want to run this type of program, can you help us design it and tell us what the best practices are, chances are that we have been involved in that type of program somewhere else in the country, either designing it or assisting with the implementation or evaluating it, so we could use our past experiences to pull together best practices."

Question, "Yeah. And I take from your prior answer, with respect to interruptible and standby generation and things like that, that those likely would be on a best-practices menu, if you were asked to do that, correct?"

Answer, "We have done a lot of demand-response evaluation."

Question, "So, the answer would be yes to that?"

Answer, "Yes."

Was that your -- your testimony?

A Looks like it.

Q Okay. And -- and just so we're clear, you're not -- you're not, today, backing up from that and saying that interruptible and curtailable was not a best practice, are you?

A What -- what do you mean by "best practice?"

Q Well, I mean, as you used the term in your

deposition.

A Right. So, in the deposition, what I said was, when we do program design, there may be different -- different best practices, depending on the type of program, right? The best practice for running a demand-response program may be a -- there may be different best practices for running an energy-efficiency program.

So, what I said here on this first page was, yes, if a utility came and said, we want to run this type of demand-response program, we have experience with demand response and we could come up with a list of best practices for, hey, here is how you would r- -- either -- here are the things to look at as you design a demand-response program, or here are some best practices if this is -- if you're running a direct load-control program or you're running interruptibles; that we would be able to pull from our experience and create, here is the best practices for you as a utility in running that kind of program.

Q Okay. So -- so, with respect to -- just to clarify, with respect to a utility asking for demand-response programs, it's more than likely than not that interruptible and -- and curtailable and things like that would be on your list?

A They would be on -- be on our list of things to evaluate to understand what the utility's needs are, what types of customers they have, but it would be a -- yes, it would be a measure to be considered, but I -- you know, I -- you'd have to look at the specific utility profile to understand what's the best opportunity for them.

Q Yeah. Okay.

We had another conversation about utilities in the payback period for -- for evaluating energy-efficiency matters, correct?

A That's -- yes.

Q And -- and -- and in addition to providing counsel and advice with respect to utility energy-efficiency measures, businesses will sometimes come to you and ask you to help them with -- with energy-efficiency measures, correct?

A Yeah, and as a company, we do energy audits and identify measures.

Q All right. And when businesses do that -- I think I used the term "corporate America." When corporate America comes and asks you to do that, you provide them with an array of options that -- that exceed a two-year payback, correct?

A So, typically, what we try to do -- and I

think if this is what -- and I don't have a copy of my deposition in front of me, but I think the way I explained it then and I would explain it now, is, right, we would go into a facility and we would identify all of the things that they could do.

And then we would give them a ranking and say, hey, the first thing you can do is, Item 1, and it has a payback of a month. And then you can do Item 2, Item 3, all the way through to Item 50 and, depending on their preference -- I mean, they may want it ranked based on cost or they may want it ranked on timing, but one of the ways we -- we have ranked things is based on payback and rank those from, like I say, a month to 20 years.

And then they decide where in that mix they want to -- you know, which ones they want to do now, which ones they might want to do later.

Q Right. And -- and I -- I'm just trying to get at, with respect to what you provide them is the payback options -- you don't break it off at two years and say, we're only going to give you two years worth of -- of measures here, correct?

A No, I mean, typ- -- well, typically, we give them the full report, right. We do a full energy audit. We would say, here's all the things we found at your facility. And when we find those things, we don't know

the payback that day. So, we'd go back and do the analysis and say, here's all the 50 things we found, here's the potential benefits, here's the potential costs, and the payback. Reporting the payback on each of those opportunities would be one of things we would give them.

Q Right. And -- and not to get into your business a great detail, but companies, in your experience, have used a greater payback period than two years; isn't that correct?

A I mean, we're more in the business of making the recommendations, not making the decisions on what utilities choose to do. I mean --

Q So, you don't have a follow-up and find out what they did or --

A No.

Q -- or do you know or --

A Not necessarily. Usually, we move on to the next customer.

MR. MOYLE: Okay. All right. Well, thank you. That's all -- that's all I have.

CHAIRMAN GRAHAM: Staff?

EXAMINATION

BY MS. DuVAL:

Q Good evening, Mr. Herndon.

A Good evening.

Q Were the effects of measure-bundling on administrative costs that may occur during the DSM program design process incorporated into your market-potential studies?

A Well, that -- that's why we like to use the actual costs that it -- it's taken utilities -- I mean, the exhibits that we went through that show -- by end-use, show what does it take to run a residential HVAC program or what -- what has it taken utilities to run a residential lighting program.

And then, when you run programs, there's usually some amount of fixed costs and there's some amount of variable costs and -- I should back up. We didn't do any program design here, but typically, from -- again, Nexant also does program design and program implementation.

So, I would say, at -- we -- since we didn't design programs here, we tend to keep the estimate at a high level, but we say, it took these utilities this dollar per kilowatt hour to achieve this amount of savings for a residential lighting program. And that would include bundling or that would include whatever they -- you know, it's a different mix of meas- -- that's why we like to use, sometimes, multiple

utilities because they have different mixes of measures, different bundles.

But keeping that cost at that unit basis avoids having to make those decisions at this point, since we're not designing programs, but it says, if you run a residential lighting program, it typically costs this amount, and we applies that -- that cost to all the residential lighting measures.

Q And given that, does the administrative-cost assumption -- I'm going to just refer to a response that Duke provided, and that should be a handout that you received from staff. A description is: Excerpt from Exhibit 171 DEF's response to staff's fifth set of interrogatories, No. 70 through 79.

So, I'm specifically looking at Page 2, the response to No. 72. And does the administrative-cost assumption in Duke's market-potential study take into consideration that different measures benefit from measure-bundling to different degrees?

A Right. So, in Duke's case, we used actual DEF costs. I mean, we used their -- I guess we say here, the 2016 and 2017 costs, and did it by sector. So, we said their residential programs -- I don't know if I have it listed here, but their -- their 2016, 2017 programs achieved a certain amount of kilowatt-hour

savings, and that came at a certain cost.

So, we determined that was a dollar-per-kilowatt-hour basis for the residential sector. We applied that co- -- and assumed that accounted for them providing a variety of measures in their programs. And so, we assigned that cost to the residential measures we looked at for Duke in the potential study.

Q And do you recall, did you have similar responses that were provided, as far as Gulf, FPUC, Gulf, OUC, and JEA were concerned as well?

A Yeah. So -- so, the same way -- I mean, it was similar. With them -- with Duke, we used -- again, we talked with each utility and said -- you know, asked the preference on -- or asked what programs they have because, like I said, we're looking at, you know, 250, 300 measures, and not every utility has -- offers a program -- or has costs, historical costs, for each measure.

And so, it's -- sometimes -- we talk to each utility as far as their preference or what they thought would be most appropriate. So, Duke, we used their data and used it at the sector level. The other utilities, we com- -- used the combination of FEECA utility data, but did it at more of the sector and the end-use level.

So, with the other utilities, yeah, I would

say it's sort -- it's the same approach, right, where you look at what was the total cost to achieve savings over the last few years by these utilities and say, we assume that's a similar cost going forward for similar types of measures.

Q Thank you. Thank you for clarifying my question.

A Yeah.

Q Isn't it likely that a given measure's assumed administrative costs in the market-potential study will differ from the measure's actual administrative cost when part of a demand-side management program?

A I would expect so. I mean, yes, I -- I would expect that, when you design a -- because there's many ways you could design a program for the same type of measure; so, the way the measure is offered, and also just the volume of measure.

When we're -- when we're calculating the potential, we don't know how many measure -- what the achievable potential is going to be. This is before the achievable potential is determined.

So, when you run a program, if you only have ten people participating, that's not many participants to spread the cost over versus having a million customers participating. So, when you're designing a

program, you already have those metrics in place.

But when we're doing a potential study, you're at the front end of that. So, you need a way to create an estimate. So, we don't know how the program is going to be offered, so that's why we try to get the most reasonable approximation that we can for program costs.

MS. DuVAL: Thank you. You just answered my last question well.

THE WITNESS: Okay.

MS. DuVAL: Staff has no more questions. Thank you.

COMMISSIONER CLARK: Thank you, Mr. Chairman.

Just a couple of kind of technical questions, but something I -- I'm kind of curious about. In your analysis and -- and specifically, in working with consumers, what we're seeing as we look at the -- as we look at the incremental program costs -- for example, some of the best benefits that we see in DSM has come from the achievements between 14 SEER, 21 SEER, in a heat pump, for example.

Do you evaluate your costs on an incremental basis or are you comparing everything back to a baseline of -- a minimum standard of, let's say, 14 when you look at the savings from a --

THE WITNESS: Oh --

COMMISSIONER CLARK: From a 21 -- are you comparing that back to a 14?

THE WITNESS: We are. We are. So, we -- for -- each measure is analyzed individually. We look at what's the o- -- you know, if a customer -- for a measure, you know, if a customer has that choice, right, they can buy a 14 SEER. They can go with a code minimum, which is typically the cheapest, or they can go to a higher-efficient option. So, they could go to a 16 or they could go to an 18 or they could go to a 21.

But for this study, we always compared it back to them just doing the code minimum to that, whatever that efficiency level is.

COMMISSIONER CLARK: Was that -- was that a practical, real-world experience? Would you see that, I mean, in -- in the real world? Would -- or would that be a situation where you're trying to get an incremental improvement from a 16 or an 18 to a -- a 20 or 21.

THE WITNESS: Well, what we -- what we tie the studies back to is what are the savings that are achievable relative to the code or the standard. In this case, it would be -- an example would be 14

SEER, right? So, that customer has the choice and the opportunity to save that amount.

I mean, if you're looking -- you can kind of -- if you compare the 18-SEER and 16-SEER measures side by side, you could look at those incremental costs, but from a potential study perspective, there's not an implicit assumption that, you know, you're -- we're -- the potential looks at it, kind of that minimum level, the measure -- that minimum level to the high-efficient level, not saying that some portion of the market is already buying 16 and let's get them to get 17 or let's get them to get 18.

So, we look at it -- at it from that perspective.

COMMISSIONER CLARK: Did you do any evaluations on heat-pump water heaters or passive heat recovery for residential applications?

THE WITNESS: No. We did -- we definitely did heat-pump water heaters. I'd have to look back at the measure list on the recovery.

COMMISSIONER CLARK: I -- I didn't see them. What was the -- what was the outcome on the performance of the heat-pump water heaters?

THE WITNESS: I mean --

COMMISSIONER CLARK: Did they pass the RIM?

THE WITNESS: I can't recall offhand. Yeah, I -- I can't remember offhand.

COMMISSIONER CLARK: Anything on passive heat recovery for water heating?

THE WITNESS: Yeah, I -- I mean -- so -- passive water heat -- I would as- -- I mean, I can't recall offhand. It's not -- it's not something that typically coincides with peak, you know, as far as when hot -- when hot water is used, but I don't remember offhand what the individual measure results were.

COMMISSIONER CLARK: Thanks.

THE WITNESS: All right.

COMMISSIONER CLARK: That's all, Mr. Chair.

CHAIRMAN GRAHAM: Commissioner Polmann.

COMMISSIONER POLMANN: Thank you, Mr. Chairman.

Mr. Herndon, I believe you indicated that your model has been reviewed by others. I understand it's proprietary. Can you just give me some idea what -- what type of review -- was there some type of audit validation? I -- I'm just trying to understand the level of scrutiny on this.

THE WITNESS: Yeah. Sure. So, yeah, I mean,

typically, we've done responses to similar discovery requests. And you know, the discovery -- or the responses we provided give all the inputs that go into the model and everything that comes out of the model.

So, really it's just the inner workings of the model that we consider propri- -- proprietary. So, in other -- in other territories, including -- like Georgia is another one we've done multiple potential studies.

We've provided similar information ahead of time on, here's the inputs on the model, here's the outputs to the model. And then we would go there in-person, typically, at the utility.

And like I say, we would have our model up on a screen and they would say, walk us through, you know, what are the inputs, and we would take, here is the forecast data, here's where it goes in the model, here's all the measures, here's how they flow into the model.

Then here is, you know, the -- how the forecast disaggregated. And we kind of walk them through -- our EE model is just a -- is an Excel workbook -- I shouldn't say just. Folks will get mad -- it's a pretty complicated model, but --

COMMISSIONER POLMANN: Understood.

THE WITNESS: But we walk them through each step of the process. We say, the forecast goes in here, the measures go in here. The forecast disaggregated, and then, this is the output. And then they can see that the model outputs live -- you know, on the demo, match the discovery that we gave them.

And so, we show -- and then we sit there and, if they have questions about, okay, well, like a heat pump or, you know, water-heater measure, can you talk -- show us where that is in there, and we'll go into the model. So, it's that kind of thing where we -- we have a -- and like I say, part of it is the proprietary nature; part of it is, if we just hand over the model --

COMMISSIONER POLMANN: No, I understand that.

THE WITNESS: You know, you probably can't find that -- you can't follow that logic because the models are -- are pretty complex.

COMMISSIONER POLMANN: No, I understand complex models. It takes, like you said, months and months --

THE WITNESS: But --

COMMISSIONER POLMANN: -- for that -- people

to understand.

THE WITNESS: So, I -- I would say -- so, the model has been typically reviewed by the Commission staff and, in some cases, they'll hire a technical consultant, one of our competitors or, you know, another firm that does this kind of work, and they'll review the model, you know, sit there along with staff. So, it's been reviewed by, you know, peer firms of ours that are working on behalf of the commissions.

COMMISSIONER POLMANN: Okay. Well, thank you for that.

THE WITNESS: Uh-huh.

COMMISSIONER POLMANN: Was it necessary to do any type of updates or changes to the model specific to this assignment? Or was it the model that you use -- that you have -- use elsewhere?

THE WITNESS: It's the model we've used elsewhere.

COMMISSIONER POLMANN: Okay.

THE WITNESS: I mean, the inputs and outputs have to be somewhat --

COMMISSIONER POLMANN: Sure.

THE WITNESS: -- customized.

COMMISSIONER POLMANN: The data is specific.

I was just wondering if there's --

THE WITNESS: Yeah.

COMMISSIONER POLMANN: -- any change to the workings of the model.

THE WITNESS: No, not the model, itself. Sometimes you have to change, like the -- how the -- because the utility forecasts are broken out differently --

COMMISSIONER POLMANN: Sure.

THE WITNESS: -- in some cases.

COMMISSIONER POLMANN: Sure.

THE WITNESS: So, those -- the inputs and outputs may vary, but the model, itself, is -- is what we've used in other places.

COMMISSIONER POLMANN: Okay. Well, thank you. That's all I have, Mr. Chairman.

THE WITNESS: Okay.

CHAIRMAN GRAHAM: Commissioner Fay.

COMMISSIONER FAY: Thank you, Mr. Chairman.

Thank you, Mr. Herndon. When -- there's a lot of discussion about the previous years that these criteria have been set in -- in the reports that have come from them. From what I understand, from what you've said today, what -- what you did essentially was a new evaluation. So, I think from

previous dockets when this has come up, they've updated some of the information.

I realize that you used some of the historical information, but was your analysis something you would consider an update from previous years or new -- or new --

THE WITNESS: No, I wouldn't. I would consider it a new evaluation. The one thing we did take from prior -- the prior cycles was the -- we start- -- the measured list we started with was the measured list used in 2014. So, one of the starting points was what DSM measures should we consider.

But really it was just the measure names. I mean, we didn't even -- we used all of our own market -- or measure research. We got our own savings, est- -- incremental costs.

So, everything -- the only carryover would be the -- the initial measure list, which we added to or -- or modified as appropriate for 2018, 2019 time frame when we were doing the study, but otherwise, everything was a fresh look.

COMMISSIONER FAY: Sure. And then you -- it looked like you had -- for the TP analysis, you had, like, net positive -- like, 95 new measures.

Is -- when you're looking at something like this, is that -- is that normal to have almost a hundred new measures added?

THE WITNESS: It depends. I mean, it's hard to say. I mean, I think, in this case, some of the new measures were the fact that, this time, for the demand-side renewables, we looked at combined heat and power, and battery storage. So, that added a bu- -- packet -- you know, bundle of new measures that weren't considered before.

So, I -- I'd say -- I mean, that's probably a little high relative to when we've done refreshes -- refreshes of other studies, but yeah, I mean, it's -- it's pretty common to just look at what the technology -- you know, what's new in the market and add those to the study and when we do -- when we update a prior study.

COMMISSIONER FAY: Sure.

One more question, Mr. Chairman?

CHAIRMAN GRAHAM: Sure.

COMMISSIONER FAY: Thank you.

Can -- I just want to get some clarification about some of the discussion that -- that we've had. So, the -- I -- I understand you do these types of evaluations for a lot of different

entities.

Using the RIM test as some form of a determination, under these conservation goals is, I guess, somewhat normal, but I -- the distinction that seems relevant to me, is it the only or is it the primary or is it just part of the analysis?

And when -- when you were stating earlier that you can't think of another jurisdiction that -- that has it as the sole analysis, I -- I just want to make sure I -- I don't understand that to be the case here either, but I also understand that you're good at what you do, but you might not be in all 50 states and you might not know what everyone does.

And so, can you put that in a context for me?

THE WITNESS: Yes, and I -- that's absolutely true. I mean, I would say Nexant works in all 50 states, but I don't. And we haven't done potential studies -- I haven't done potential studies in all -- so, I'm not familiar with the regulatory rules in all states.

I mean, typically, the first step when we come in and start a study is to kind of get those parameters to understand, you know, what are the rules and the policies in that jurisdiction.

So -- and then -- and then I'd also say

it's -- the process is different in the ones that I -- so, I'm not familiar with the entire country. We've -- I've -- the ten or 12 potential studies I've done have been mostly in the southeast and midwest. We've done a few in California, a couple in Texas. So, we've -- you know, a smattering over the country.

But -- but the process is, like I say, sometimes different, in that, sometimes you do the potential study and then there's another year of program planning before goals are set.

And in that -- in that case, sometimes you do the potential study based on the single test, like the TRC or, you know, the utility-cost test or some other test, but then RIM is -- then gets factored in when programs are actually designed or planned.

So, that -- here it just happens at the same time. So, that's why I say it -- and the ones -- in the states I'm familiar with, it's -- it's factored -- it is sometimes factored in, but just in di- -- you know, it depends on the process in that state as far as when.

COMMISSIONER FAY: Okay. Great. Thank you.

CHAIRMAN GRAHAM: Okay. Redirect?

Ms. Clark, how much redirect do you have?

MS. CLARK: I -- I would say ten minutes.

CHAIRMAN GRAHAM: Okay. Let's go.

FURTHER EXAMINATION

BY MS. CLARK:

Q Turning to the analysis you did, as part of your analysis, you did the TRC, the RIM, and par- -- participants, right?

A Yes.

Q That's what you did for the -- the utilities.

A Yes.

Q Well, some of the utilities.

A Yes.

Q And is it your understanding that, in Florida, the participant test is also part of the analysis?

A Yes. So, those -- both in the RIM scenario and the TRC scenario, the participant test was an- -- was also applied.

Q You were asked several questions about administrative costs and how you developed them. You consulted with the utilities, am I correct, in developing those administrative costs?

A That's right. We -- we talked to the utilities about what historic costs they had and then, as we developed some represent- -- what we considered representative program costs, that we consulted with

them to make sure they considered them to also be appropriate for -- for this potential study.

Q So, it was a collaborative effort to come up with reasonable administrative costs; is that correct?

A Yes, that would be a good way to characterize it.

Q You were asked several questions having to do with the Dashboard and comparing it to ten-year site plans. And I think there were a few where the Dashboard was not exactly the same as the ten-year site plans. Do you recall that?

A I do. I think just one, though. Just one.

Q Did that have any impact on your analysis?

A No. The Dashboard is a reporting file. And like I say, I -- and I mean, the 2018 ten-year site plans wouldn't have even been available when we did -- you know, we did the disaggregation.

So, no, I -- like I say, I assume that somebody along the way just updated that in the Dashboard, itself, but not -- it wouldn't have affected the analysis because that had already happened before that was available.

Q Commissioner Polmann asked you about your model and you explained how you walked people through that model to have them understand how it -- how it's

done and the validity of the inputs and the outputs.

Did you make those same -- that same offer to SACE?

A Yes, we -- we -- when the request was made to hand over the model, we offered to do the same sort of demo that we've done in other territories.

Q And you also made that offer to staff as well, correct?

A Yes, that's correct.

Q And to your knowledge, did they ever follow up and ask you to do that?

A No, I don't believe they ever did.

Q And to your knowledge, did SACE ever file a motion to compel the production of TEAPOT model?

A Not that I'm aware of.

Q Regarding how you developed administrative costs, is that similar to the way you developed in other studies you have done?

A Yes. As I can recall, the -- the last several studies we've done, we've -- we've assembled administrative costs that way -- or program costs that way.

Q And to your knowledge, do other consultants do it in a similar way?

A I'm not super familiar with specific methods,

but I would assume that that's a -- that's a standard approach.

Q And to your knowledge, in addition to the RIM test, what other test does the Commission use to set goals?

A As I understand it, the participant cost test and then the two-year payback is used for -- for free-ridership -- the consideration of free-ridership.

Q And during all those tests, were you following the information that you got from the utilities as to how cost-effectiveness is done in Florida?

A Yes.

MS. CLARK: Mr. Chairman, that's all I have.

CHAIRMAN GRAHAM: Exhibits?

MS. CLARK: Mr. Chairman, I would move Exhibits 25 through 34 into the record.

CHAIRMAN GRAHAM: Is there any objections to Exhibits 25 through 34? Seeing none, we'll enter that into the record.

(Whereupon, Exhibit Nos. 25 through 34 were entered into the record.)

CHAIRMAN GRAHAM: SACE.

MR. MARSHALL: We move Exhibits 280 through 306 into the record.

CHAIRMAN GRAHAM: 280 through 306. Is there

any objection to entering 280 through 306? Seeing --

MS. CLARK: No objection, Mr. Chairman.

CHAIRMAN GRAHAM: Seeing none, we'll enter all those into the record.

(Whereupon, Exhibit Nos. 280 through 306 were entered into the record.)

CHAIRMAN GRAHAM: Staff?

MS. DuVAL: We have none that we'd like to enter. Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Okay.

MR. MOYLE: Mr. Chairman, could I -- could I mark that depo excerpt and move that as well, please?

CHAIRMAN GRAHAM: We will give that 307.

Is there any objection to entering -- which is, now, labeled 307 into the record?

MS. CLARK: No objection.

CHAIRMAN GRAHAM: We will enter 307 into the record.

(Whereupon, Exhibit No. 307 was marked for identification and entered into the record.)

CHAIRMAN GRAHAM: I think that was all of the exhibits. We are pretty darn close to 7:00. So, I think we are done for the day. Remember that we

are starting tomorrow at 9:00, and taking a lunch break around 1:00. So, plan accordingly. And everybody travel safe. We'll see you in the morning.

(Transcript continues in sequence in Volume 3.)

CERTIFICATE OF REPORTER

STATE OF FLORIDA)
COUNTY OF LEON)

I, ANDREA KOMARIDIS, Court Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 20TH day of August, 2019.

ANDREA KOMARIDIS
NOTARY PUBLIC
COMMISSION #GG060963
EXPIRES February 9, 2021