BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. 150009-EI

NUCLEAR COST RECOVERY CLAUSE.
_____/

VOLUME 6

(Pages 693 through 975)

PROCEEDINGS:	HEARING
COMMISSIONERS PARTICIPATING:	CHAIRMAN ART GRAHAM COMMISSIONER RONALD A. BRISÉ COMMISSIONER JULIE I. BROWN COMMISSIONER JIMMY PATRONIS
DATE:	Wednesday, August 19, 2015
TIME:	Commenced at 9:31 a.m. Concluded at 3:00 p.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	LINDA BOLES, CRR, RPR Official FPSC Reporter (850) 413-6734
APPEARANCES:	(As heretofore noted.)

I N D E X

WITNESSES

EXHIBITS

NUMBER:		ID.	ADMTD.
38A			707
21 - 26			973
80			713
81			713
82	PTN 3 & 4 EPU Costs and Contingency	729	791
83	FPL Response to OPC Interrogatories 22 through 30	729	791
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P R O C E E D I N G S

(Transcript continues in sequence from Volume 5.)

CHAIRMAN GRAHAM: Good morning, everyone. All right. I think we will reconvene Docket 150009-EI.

We left off -- we left off with Witness Scroggs. OPC was going to make sure that interrogatory 16 and 18 were responsive -- were responsive to the question that she asked, then I was going to let Ms. Barrera or staff conclude to make sure that what they want for their cross-examination is done, and then we're going to go to the Commission, we'll go to redirect, and then we'll be done with Mr. Scroggs and we can move on to Witness Reed.

So, Ms. Christensen.

EXAMINATION

BY MS. CHRISTENSEN:

Q Okay. Good morning, Mr. Scroggs.

A Good morning.

Q Do you have a copy of interrogatories Nos. 16 and 18 that were sent in response to OPC's questions?

A Yes, I believe -- 38A?

Q Correct.

A Okay.

Q Okay. And I want to read the question and

ask -- the question that was asked of you or propounded to FPL was -- on page 12 of Witness Scroggs' states that the feasibility analysis is part of the NRC process that enables FPL to obtain a COLA. And the question asked was, "Please provide the initial assessment activities that are required to obtain the COL from the Nuclear Regulatory Commission, NRC, including the NRC requirement that the activity is meeting." Is that the correct question that was asked?

A Again, with the exception that the first acronym was NCR, which I believe is nuclear cost recovery, rather than NRC.

Q Okay. But that would be the question that was asked, propounded of you.

A Yes, the question was asked. That's right.

Q Okay. Do you recall yesterday receiving a copy of hearing Exhibit 43, which is the presentation that you made to your board? Do you have a copy of that in front of you?

A I do.

Q Okay. And in that exhibit on pages 10 and 11 of the May presentation, you list all of the initial assessment activities; is that correct?

A That's correct.

Q And you subdivided those in categories A, B,

C, and D; correct?

A That's correct.

Q In response to question 16, you would agree that none of the category -- none of the studies listed under Category A are listed anywhere in that response; correct?

A Correct, not specifically.

Q Okay. And for Category B, the same question, none of those studies listed under Category B are specifically listed in that response.

A Correct.

Q Category C, none of the studies for Category C are specifically listed in that response; correct?

A Correct.

Q And for Category D, none of those studies are listed in that response; correct?

A That's correct.

Q Okay. Let me move to exhibit -- or interrogatory 18. The question propounded in interrogatory 18 was, "Please refer to page 6, lines 9 through 10, of Witness Scroggs' rebuttal testimony." The first question was, "At what stage would Witness Scroggs expect actual bids or actual binding bids could be obtained?" And in the response to that -- well, let me ask you first, is that the first -- the question

contained in (a)?

A Correct.

Q In the response, do you -- can you point to where in that response you specifically state what stage actual binding bids will be obtained?

A I believe the response stands for itself. The last sentence remarks, "with this as a foundation," implying and relating to the previous sentences, "FPL will be able to obtain actual bids for portions of the work which meet the requirements for competitive bidding."

Q In the previous statements that were given, were any of the stages of the process identified?

A Yes.

Q Where?

A It discusses, "Upon receipt of the COL and Commission approval to proceed, FPL will begin preconstruction work."

Q So is your response that upon -- with the beginning of preconstruction work, FPL will get actual -- actual binding bids at the preconstruction phase?

A No. FPL will conduct the preconstruction work in order to lay the foundation to obtain binding bids.

Q So at what stage will FPL be getting actual

binding bids, which was the question?

A When the preconstruction work is completed.

Q So would that be at the construction phase?

A No. It would be at the end of the preconstruction work.

Q Okay. So at the end of the preconstruction phase was when FPL would be getting actual binding bids. That's your response today?

A Yes.

MS. CHRISTENSEN: Okay. And as far as question (b), I would withdraw my objection because I think that actually is responsive to the question that was posed.

CHAIRMAN GRAHAM: Okay.

MS. CHRISTENSEN: But I would renew my objection to the whole of the response that was provided in interrogatory No. 16 as being nonresponsive to the question that was asked. I think today demonstrates that there was no -- the question doesn't either answer no, none, or refer to any of the assessment activities in the response. And as I said yesterday, this is hearsay. It's an out-of-court statement being offered for the truth of the matter asserted. Even though this is an administrative proceeding, hearsay does still have limitations. It has to be of a type that is commonly --

commonly relied upon.

This was obviously a document created in anticipation of litigation, so it would not be a document that would be commonly relied upon by FPL in the course of its business or in the course of his conducting his normal activities.

So the hearsay objection -- it's, as I said, nonresponsive. And as I renew my objection, it's beyond the scope of what his direct and rebuttal was, and it's an attempt to add additional testimony after surrebuttal -- or rebuttal was filed. So for all of those, I would move to strike everything in 16.

CHAIRMAN GRAHAM: Let me see if I understand. It sounds to me just because his answer doesn't have the specificity that you're looking for, it doesn't split it down into the different categories is the reason, one of the main reasons why you're not -- you feel that it's not responsive.

MS. CHRISTENSEN: It's more specific than that. The question specifically asked him to list the activities that were required to obtain the COLA from the NRC. The question doesn't respond to that. The question talks about how it's related and goes on and gives a very long, detailed explanation of why they think it's related to it, but that doesn't answer the

question. It doesn't identify activities which they think are required to be produced to the NRC. It's -- it doesn't answer and is not responsive to the question asked.

I think the answer the question asked has been -- and he's responded with an answer here in live testimony, which is the appropriate way to use the interrogatory, is none of those activities are specifically required to be provided to the NRC to obtain its license, and that response does not say that.

And, you know, the other issue that I have is this being produced by staff. The appropriate use of an interrogatory, similar to the use of a deposition at a hearing, which is for -- to be propounded by a party opponent for impeachment or ask questions, and staff has many times said that they are neutral and to the point that they are not a party.

So, you know, he's answered the -- he's essentially answered the question to the interrogatory in the hearing and, therefore, it's irrelevant, the rest of the response to the -- to the question for this proceeding.

CHAIRMAN GRAHAM: Okay. Mary Anne, walk me through this.

MS. CANO: Chairman Graham, may --

MS. BARRERA: Can I respond prior to your obtaining advice from your advisor?

CHAIRMAN GRAHAM: Sure.

MS. BARRERA: Because I think there are things that need to be explained.

The reason -- well, first of all, it's not hearsay because he's here and he wrote it. That's number one.

CHAIRMAN GRAHAM: Well, hold on.

MS. BARRERA: Number two --

CHAIRMAN GRAHAM: No. Hold on. Let me -- let me deal with Mary Anne, and I'll get back to you on this.

MS. BARRERA: Okay.

CHAIRMAN GRAHAM: Walk me through -- or listen and help me through my thought process on this.

Because Scroggs is here, I guess I'm trying to look to see how much latitude I have. Would it be appropriate for me to allow staff to basically just ask this question 16 and then get the -- get an answer or the answer they're looking for for 16 and then just striking this interrogatory 16?

MS. HELTON: Yes, sir.

CHAIRMAN GRAHAM: Then that's what we'll do.

MS. BARRERA: Okay. Let me start by saying we

are not submitting this interrogatory for the responsiveness to the question. To us the question is irrelevant. We are trying to introduce the interrogatory response because it has information that we feel is relevant for the Commission's consideration of the matter.

EXAMINATION

BY MS. BARRERA:

Q Having said that, Mr. Scroggs, the initial assessments are necessary to support the feasibility analysis required for the approval to begin preconstruction work following receipt of the COL. Is that a true statement?

A Yes, ma'am.

Q Okay. You also stated that all initial assessment activities support FP&L's requirement to conduct preconstruction and construction work in conformance, compliance with the COL. Is that your statement?

A Yes, ma'am.

Q Under 10 CFR 52.97, the NRC may not issue a combined license until it makes a finding that there is reasonable assurance that the facility will construct and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the NRC

regulations; is that correct?

MS. CHRISTENSEN: Objection. Calls for a legal conclusion. He's not a lawyer, and he's -- it's beyond the scope of his testimony, direct and rebuttal.

BY MS. BARRERA:

Q Is that your statement?

A This is my statement and my understanding.

MS. CHRISTENSEN: Can we get a ruling on that before he responds to the question, please?

MS. BARRERA: Can I respond?

CHAIRMAN GRAHAM: The response to the question was was that -- the response to the question was was that his statement, which is true, that was his statement. But I think you need to re-ask the question in your laymen's opinion or in your professional opinion.

BY MS. BARRERA:

Q In your professional opinion, is it your opinion that under 10 CFR 52.97 the NRC may not issue a combined license until it makes a finding that there is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provision of the Atomic Energy Act, and the NRC regulations?

A Yes.

MS. CHRISTENSEN: I renew my objection. Calls for a legal conclusion. It's also friendly cross, and they're not supposed to be --

CHAIRMAN GRAHAM: Well, we've already said that it's in his -- in his professional opinion even though it's not a legal opinion, and so we can give it the weight that it's due.

Please continue.

BY MS. BARRERA:

Q Okay. Mr. Scroggs, is it your opinion that FPL must submit evidence of compliance in the form of inspections, tests, analysis, and acceptance criteria, and that the initial assessment activities allow FP&L to confirm that the planned work and, therefore, the project schedule reflect that construction will be in conformity with the license?

A Yes, it's my opinion.

Q And is it your statement that the nature of the initial assessments are to provide additional schedule certainty that required preconstruction and construction activities are done in a manner that they conform with the requirements of the COL?

A Yes.

Q And that this is the basis for FP&L's assertion that the initial assessment activities are

related to the COL?

A Yes.

MR. CAVROS: Chairman, I'd like to file an objection. This is almost like a redirect. He's already made these statements in his testimony, and the questions are simply allowing him to -- to bolster his testimony and supplement it, and I would object to this line of questioning on that basis.

CHAIRMAN GRAHAM: Okay. I'm going to overrule that objection.

BY MS. BARRERA:

Q Okay. Mr. Scroggs, is it your opinion that the initial assessment studies also serve to support the feasibility studies?

A Yes.

MS. BARRERA: I withdraw our motion to introduce the exhibit into evidence.

CHAIRMAN GRAHAM: Okay. So we are putting -- we're still putting interrogatory 18 into evidence because Ms. Christensen was okay with that. Correct?

MS. BARRERA: Yes, sir.

(Exhibit 38A admitted into the record.)

MS. CHRISTENSEN: That -- I have no objection to that. But if I could have one or two questions based on the questioning that staff just did on this

interrogatory with Mr. Scroggs.

CHAIRMAN GRAHAM: Yes, ma'am. I'll give you that flexibility.

MS. CHRISTENSEN: Thank you.

EXAMINATION

BY MS. CHRISTENSEN:

Q Mr. Scroggs, do you recall yesterday that I was questioning you regarding the Levy plant and its continued pursuit of the COLA?

A Yes.

Q And I believe yesterday you agreed that the -- Duke Energy is pursuing its COL license even though it's explicitly entered into a settlement agreement where it's no longer pursuing construction of the Levy plant; is that correct?

A Yes. My understanding is that the COL will continue to issuance and potentially be able to be used at a later date for settlement.

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

CHAIRMAN GRAHAM: Okay. All right. Commissioners, any questions?

Okay. Redirect.

MS. CANO: Just one question. Thank you.

EXAMINATION

BY MS. CANO:

Q Mr. Scroggs, yesterday Ms. Christensen was asking you some questions about what has been admitted as Exhibit 43, and specifically page 10, which provides the categories of initial assessments.

A Yes, I recall that.

Q Do you recall that line of questioning? Okay.

And at the time you were unable to complete your explanation about the relationship of the initial assessments to the licensing effort. Is the information you provided today and in response to interrogatory 16 from OPC essentially the information that you were trying to provide at that time?

A Yes.

MS. CANO: Thank you. No further questions.

CHAIRMAN GRAHAM: Okay. Exhibits.

MS. CANO: There were no prefiled rebuttal exhibits, so FPL has none.

CHAIRMAN GRAHAM: Are there any other exhibits for this witness?

MS. CHRISTENSEN: Yes, Commissioner. OPC had 90 and -- or not, sorry, not 90 -- 80 and 81. 80 was the final order in the Levy Revised and Restated Settlement and Stipulation. I think the Commission can take judicial notice, but if you want to move it into

the record, that would also, I think, be for ease and convenience. 81 is the Commission staff Levy audit June 2015. We would move that into the record.

CHAIRMAN GRAHAM: If there's no objections.

MS. CANO: FPL does object to Exhibit 81. We did object at the time that it was raised as well.

The approach to the Levy project is markedly different from FPL's approach, so it's entirely irrelevant. It's also hearsay. It's being used to attempt to prove things about the Levy project without the author of that document being here and available for cross-examination.

And I believe at one point City of Miami suggested the Commission could take judicial notice of this as well. I disagree that that would be inappropriate under Rule 90.201 or 90.202 of the Evidence Code.

And, finally, if the exhibit is admitted over objection, I would ask that it be limited to the two pages of that 20-page document that were actually the subject of questioning by Ms. Christensen. I think exclusion of those other pages is warranted and would be consistent with prior Commission practice.

MS. CHRISTENSEN: May I briefly respond?

CHAIRMAN GRAHAM: Yes. Yes.

MS. CHRISTENSEN: And just as a -- I'm in agreement, we can limit the admission to just the two pages that I actually conducted cross-examination on.

In response to the hearsay objection, this is a government public record that was created by the Commission, so I believe it's an exception to the hearsay rule that should be admissible in this proceeding. And I think it is directly relevant. As we just heard through questioning by staff, FPL's making the assertion that they need to do initial assessment studies and things beyond, things that are necessary to obtain the COLA in order to get the COLA or maintain the COLA. And I think that what's happening with the Levy plant and how the NRC is processing that is directly rebutting that argument, so it's directly relevant to arguments raised by FPL in this proceeding.

CHAIRMAN GRAHAM: Well --

MR. MOYLE: Mr. Chair, can I just be heard for one second?

CHAIRMAN GRAHAM: Sure.

MR. MOYLE: So -- so I didn't jump in yesterday on taking judicial notice of orders, because I think Mary Anne in the past has said as a matter of practice, Commission orders are like court cases. We can cite them, we can reference them in our briefs. We

don't need to take judicial notice of them. And I -- to me this seems like that. You know, no harm on judicial notice, but I want to make sure that -- that we're not changing the prior practice of the Commission that any order the Commission enters, we can reference it in our briefs without having to go through a judicial recognition process. So that was just the one point I wanted to make sure.

CHAIRMAN GRAHAM: Well, as far as I know, and, Mary Anne, I guess you can answer this question, but as far as I know, we don't have to have an official judicial order to reference back to any final order that this Commission has. I was doing that because somebody was asking for it, not because it added anything, if that gives somebody an extra level of comfort. But, Mary Anne, can you answer that question?

MS. HELTON: I took your statement, I guess it was last night, because the City of Miami is not used to practicing before the Commission. The Commission always will take official notice of any order that it has entered.

MS. CANO: And to clarify, I'm not objecting to Exhibit 80, which is the Commission order.

CHAIRMAN GRAHAM: Yeah.

MS. CANO: I'm objecting to 81, which is a

staff audit report exhibit to testimony.

CHAIRMAN GRAHAM: Yeah. So, I mean, I'm not -- I'm not worried about 80.

MR. MOYLE: Okay. Well, I think we're clear. That's --

CHAIRMAN GRAHAM: Yeah. I did -- the only reason why I took the judicial order yesterday is because if it gave that added comfort, I didn't have a problem with it. But as far as I'm concerned, this is all duplicative.

But as far as 81 goes, I'm going to move forward and allow those two pages that were referenced into the record.

MS. HELTON: And, Mr. Chairman, just for the record's sake, it's my understanding or recollection that those are pages 8 and 9 of the staff audit; is that correct?

CHAIRMAN GRAHAM: That's correct.

(Exhibits 80 and 81 admitted into the record.)

Are we good? Would you like to excuse your witness?

MS. CANO: Yes, please.

MS. HELTON: Mr. Chairman, I don't think -- I hate to bring this up, but I don't think we actually officially dealt with Exhibit No. 38A as far as we

were -- admit it into evidence.

CHAIRMAN GRAHAM: We admitted No. 18 interrogatory. No. 16 was struck.

MS. HELTON: Okay.

CHAIRMAN GRAHAM: And whatever Ms. Barrera got from her cross-examination is in the record.

MS. HELTON: Thank you.

CHAIRMAN GRAHAM: And the witness is excused. Thank you very much, sir.

THE WITNESS: Sure.

CHAIRMAN GRAHAM: Sorry I couldn't send you home yesterday.

FPL, your next rebuttal witness.

MR. DONALDSON: Yes. Good morning. At this time FPL calls John Reed.

Whereupon,

JOHN J. REED

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

EXAMINATION

BY MR. DONALDSON:

Q Good morning, Mr. Reed.

A Good morning.

Q You were previously sworn; is that correct?

A Yes.

Q Would you please state your name and business address?

A My name is John J. Reed. My business address is 293 Boston Post Road West, Marlborough, Massachusetts.

Q Have you prepared and caused to be filed ten pages of prefiled rebuttal testimony on July 7th of this year?

A Yes.

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

A No.

Q If I asked you the same questions that are contained within your prefiled rebuttal testimony, would your answers be the same?

A Yes.

MR. DONALDSON: Chairman Graham, I'd just ask that Mr. Reed's prefiled rebuttal testimony be entered into the record as though read.

CHAIRMAN GRAHAM: We will enter Mr. Reed's prefiled direct -- I'm sorry -- prefiled rebuttal testimony into the record as though read.

MR. DONALDSON: Thank you.

BY MR. DONALDSON:

Q Are you sponsoring any exhibits to your rebuttal testimony?

A No.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF JOHN J. REED

DOCKET NO. 150009-EI

July 7, 2015

Q. Please state your name and business address.

A. My name is John J. Reed. My business address is 293 Boston Post Road West, Marlborough, Massachusetts 01752.

Q. Have you previously filed direct testimony in this proceeding?

A. Yes, I have.

Q. Please state the purpose of your rebuttal testimony.

A. I have been asked by Florida Power & Light Company ("FPL" or the "Company") to respond to two arguments made in the direct testimony of OPC witness William Jacobs, Jr. and an argument made in the testimony of the City of Miami's witness, Eugene Meehan.

Witness Jacobs recommends that the Florida Public Service Commission (the "Commission") require FPL to incorporate higher costs into its non-binding cost estimate for two new nuclear generating units at FPL's existing Turkey Point ("PTN") site. (The project to develop two new nuclear units is referred to herein as "PTN 6 & 7" or the "Project.") Witness Jacobs also attempts to impose a cost cap on the Project.

Witness Meehan recommends that the Commission perform a "thorough, in-depth evaluation" (page 9) of PTN 6 & 7. Mr. Meehan appears to

believe that such a review should extend over and above the Commission's systematic annual review that takes place in the Nuclear Cost Recovery Clause ("NCRC") proceeding.

Q. Please briefly describe the testimony that was filed by Witness Jacobs.

A. In his direct testimony, Witness Jacobs asserts that FPL's feasibility analysis for the PTN 6 & 7 project is flawed because it does not incorporate actual costs incurred by Westinghouse and Chicago Bridge and Iron ("CB&I"), contractors on the Vogtle and Summer projects, that are higher than those costs reported by the owners of Vogtle and Summer. Witness Jacobs acknowledges that "the precise amount of these additional costs is not publicly available," (page 9) and "it is also very difficult to quantify these additional costs that are being incurred by the contractor" (page 10). Despite these difficulties, Witness Jacobs recommends that FPL obtain binding bids from construction contractors, which he assumes will reflect the increased costs at Vogtle and Summer. Absent obtaining bids, Witness Jacobs recommends that FPL incorporate an estimate of those additional costs into its cost estimate. In providing these recommendations, Witness Jacobs states unequivocally that, "the capital costs to build Turkey Point Units 6 and 7 will be far greater than the publicly reported Vogtle and Summer owners' only costs that are currently being used by FPL in its feasibility analysis" (pages 11-12). His argument relies on the assumption that FPL will retain the same contractors to perform PTN 6 & 7 construction as have been used at the Vogtle and Summer sites, and that FPL will pursue the same contracting strategy that has been used for the Vogtle and Summer projects. Finally, Witness Jacobs recommends that after FPL has performed an updated

analysis, the capital cost estimate become a "not-to-exceed cost or cap above which FPL would not seek cost recovery from ratepayers for the Turkey Point Units 6 and 7 project" (page 19).

Q. Please summarize your conclusions regarding the direct testimony of OPC Witness Jacobs.

A. The Commission should reject Witness Jacobs's recommendation that the Commission require FPL to update the capital cost estimate used in FPL's feasibility analysis to account for increased costs incurred by contractors at the first-of-a-kind ("FOAK") U.S. AP1000 construction projects in development at the Vogtle and Summer sites. Witness Jacobs ignores cost and schedule improvements that are generally considered in the construction industry to occur between FOAK and subsequent projects using similar technology (also known as "nth-of-a-kind" or "NOAK" projects). Witness Jacobs also assumes that FPL will use CB&I as its module construction contractor for PTN 6 & 7, an assertion for which he provides no support. Finally, Witness Jacobs appears to assume that FPL will use an Engineering, Procurement, and Construction ("EPC") contracting approach for the PTN 6 & 7 Project that is identical to what has been used for the Vogtle and Summer projects. In fact, FPL has not decided whether it will pursue this approach and may select an alternative contracting strategy.

I also believe the Commission should reject Witness Jacobs's recommendation that the Commission impose a cap on the costs of PTN 6 & 7 that FPL can recover from ratepayers. Acceptance of that proposal could put

the Commission in a position in which it would disallow prudently-incurred costs from recovery, which is an outcome that the NCRC is intended to prevent.

Q. Has Witness Jacobs presented similar proposals in Nuclear Cost Recovery proceedings in the past?

A. Yes, and each time they were rejected by the Commission. In fact, OPC representatives have recommended some version of cost-capping, cost-sharing, or a hindsight-based opinion on prudence for FPL's Extended Power Uprate Project in 2010, 2011, 2012, and 2013. The Commission determined each time that the proposals were improper applications of the prudence standard and/or inconsistent with the Nuclear Cost Recovery statute's direction that all prudently incurred costs shall be allowed for recovery.

Q. Should the Commission require FPL to obtain binding bids from construction contractors, as Witness Jacobs recommends?

A. No. As described in the testimony of FPL Witness Scroggs, the Company has not made any determinations with regard to the contracting approach it will take for PTN 6 & 7. It would not be appropriate to seek contracting terms from vendors for a contracting approach that FPL may not pursue. In addition, it is highly unlikely that contractors would be willing to make any commitments in a formal bidding process at this stage of the PTN 6 & 7 Project's development. For a project of this scale, vendors would require a defined contract structure, a project development schedule, and approval from the Commission for the Project to move forward before they would be willing to submit any form of competitive, binding bids for engineering, procurement, or construction services.

Even if FPL were to seek binding bids for a form of a contract, it is unclear whether Witness Jacobs would consider the significant expense FPL would incur to obtain these bids to be related to FPL's costs to obtain a Combined Operating License ("COL") for the Project and, thus, available for current recovery from ratepayers.

Q. Absent binding bids from construction contractors, Witness Jacobs recommends on page 16 of his direct testimony that, "[a]t a minimum, the feasibility analysis should be corrected by FPL to reflect the higher costs experienced in the Vogtle and Summer projects including the owners' costs and an estimate of the contractor's costs related to the Vogtle and Summer projects." Do you agree?

A. No. Witness Jacobs's recommendation ignores the fact that schedule and budget performance between FOAK and NOAK projects tend to improve. For instance, the National Energy Technology Laboratory, in collaboration with the U.S. Department of Energy has stated that "subsequent installations will normally cost less than the first plant. Along with lower capital costs, efficiency and reliability will also tend to improve."[1] Specific to nuclear generation, the World Nuclear Association ("WNA") performed a survey in 2013 concerning the relationship between nuclear licensing and commercial activities undertaken during the development of new nuclear projects. In its summary report, the WNA stated that "[a]lmost all respondents who have had experience with a series of nuclear plants confirm that the schedule of the following units ('nth' units) is shorter than that of the first one. A country with significant experience

in this respect is France. In the US, the concepts of 'lead plants' and 'one issue, one review' help to generally shorten time schedules for all subsequent plants."[2]

Other studies demonstrate this concept as well. A 2004 report by the University of Chicago analyzed prior studies of "learning rates"– the proportional cost reduction resulting from doubling the number of plants built– for FOAK nuclear construction in both the United States and other countries. The study found that "reductions in capital costs between a first new nuclear plant and some nth plant of the same design can be critically important to eventual commercial viability" and estimates a learning rate of roughly 3 to 10 percent in the U.S.[3] A 2011 follow-up study reiterated these findings. According to the study team, "the total FOAKE [first-of-a-kind engineering] cost for GW-scale reactors is on the order of $800 million per design." If amortized in the cost of an initial plant, FOAKE costs represent roughly 11 percent of the total overnight capital cost estimate.[4]

Q. Do you agree with Witness Jacobs that a cap should be applied to FPL's recovery of costs related PTN 6 & 7?

A. No, I do not. Witness Jacobs's recommendation is inconsistent with the principles of the NCRC, and if it were accepted it could lead to the disallowance of costs that were otherwise determined to be prudently incurred. This would put FPL at risk for factors that are completely out of its control, which is a situation that is inconsistent with the NCRC.

Q. Why do you believe Witness Jacobs's recommendation is inconsistent with the NCRC?

A. The NCRC states that alternative cost recovery mechanisms shall "promote electric utility investment in nuclear or integrated gasification combined cycle power plants and allow for the recovery in rates of all such prudently-incurred costs."[5] There is no mention in the rule of a cost cap, over which prudently-incurred costs would no longer be available for recovery. In essence, Witness Jacobs's recommendation regarding the incorporation of a cost cap in the Commission's review process calls for a reversion to the highly unsuccessful all-or-nothing "used and useful" regulatory paradigm that prevailed in the 1980s.

Q. Please explain.

A. The regulatory processes applied to the development of nuclear generation in the 1980s were characterized by significant cost disallowances, at times owing to results-oriented hindsight reviews that determined whether plants turned out to be economical a decade or more after construction was begun. The standards used by regulators at that time evolved from traditional prudence reviews to include an "economically used and useful" standard that, based on hindsight, determined what portion of a plant's prudently-incurred cost was "economically" useful in providing service to customers. The recovery of prudently-incurred costs was further narrowed by the adoption of more onerous standards such as an "economic benefits test" and eventually simple "risk sharing," whereby costs were simply declared unrecoverable on the basis that the total cost was too large for customers alone to bear. By recommending a cost cap above which costs would presumably be disallowed for rate recovery regardless of the Commission's views on the prudence or imprudence of the decisions made by the utility, Witness Jacobs is essentially calling for a return to the prior paradigm.

The Nuclear Cost Recovery statute, however, strongly suggests that the Florida Legislature wished to provide a framework within which the Commission has the opportunity to address and avoid many flawed aspects of those past regulatory processes.

Q. How would a proper application of the prudence standard work?

A. A proper application of the prudence standard with regard to the allowance or disallowance of costs involves: (a) establishing the prudence or imprudence of management decision-making or actions, allowing the recovery of all prudently-incurred costs, and (b) if imprudence is established, determining which costs were higher than they would have been had management acted prudently and then disallowing those costs. Under this construct, the decision to continue with the project is simply one of the decisions for which a prudence review is appropriate based on all of the usual rules for such a review, including a prohibition on the use of hindsight to judge prudence.

Q. Please briefly describe the testimony that was filed by City of Miami Witness Meehan.

A. In his direct testimony, Witness Meehan recommends that the Commission perform an in-depth analysis of FPL's feasibility analysis to avoid a situation where "an investment such as Turkey Point units 6 and 7 is initially approved, that gradual investments are made over time, that despite changing circumstances continued creeping investments are made without a fundamental re-examination, that sunk costs build up, and that ultimately the plant is justifiably completed based on going forward cost analysis but results in much higher costs for

customers than the alternative because sunk costs that are ignored in the economic analysis are reflected in the rate base" (pages 6-7).

Q. Do you share Witness Meehan's concern regarding the need for an in-depth analysis of FPL's feasibility analysis?

A. No, for two reasons. First, the review Mr. Meehan suggests is already taking place. The Commission is currently afforded and makes use of such an in-depth analysis in the annual NCRC process. The NCRC was established to provide ongoing reviews of the management of nuclear development projects such as PTN 6 & 7. The annual NCRC proceedings have provided an opportunity for exactly the kind of assessment Mr. Meehan describes for the past seven years, and will continue to do so throughout the entire period of PTN 6 & 7 development.

In addition, the issue that Witness Meehan describes (*i.e.*, the accumulation of sunk costs that are determined to be justifiable but that are ignored in periodic economic analyses) is more relevant to after-the-fact prudence reviews such as those I described above from the 1980s era. The risk that concerns Witness Meehan is greatly diminished through regulatory processes such as the NCRC, in which annual reviews allow the utility, intervenors, and this Commission to systematically evaluate the economics of a project.

Q. Does this conclude your testimony?

A. Yes, it does.

BY MR. DONALDSON:

Q Okay. Would you please provide a summary of your rebuttal testimony to the Commission?

A Certainly. Good morning.

CHAIRMAN GRAHAM: Good morning, Mr. Reed.

THE WITNESS: The purpose of my rebuttal testimony is to respond to portions of the direct testimony of OPC Witness Jacobs and City of Miami Witness Meehan.

I first address Witness Jacobs' recommendation that the Commission require FPL to account for increased costs incurred by contractors at a first-of-a-kind U.S. AP1000 construction project when FPL is developing its estimates of the cost of its proposed new nuclear units.

Witness Jacobs ignores cost and schedule improvements that are generally considered in the construction industry to occur between first-of-a-kind and subsequent projects using similar technology. Several studies indicate that capital costs and efficiency tend to improve with later construction projects of a given technology.

I then refute Witness Jacobs' recommendation that the Commission impose a cap on total cost for Turkey Point 6 and 7. Acceptance of that proposal could

put the Commission in a position in which it would disallow prudently incurred costs. The Commission has repeatedly determined that cost cap proposals are an improper application of the prudence standard and are inconsistent with the nuclear cost recovery statute.

My rebuttal then addresses Witness Meehan's recommendation that the Commission perform a thorough, in-depth evaluation of Turkey Point 6 and 7. The Nuclear Cost Recovery Clause proceedings continue to provide an opportunity for exactly this kind of review of the project and, in my opinion, sufficiently addresses Mr. Meehan's concerns.

Finally, I disagree with Mr. Meehan related to the accumulation of sunk project costs and what he views as undue pressure for utilities to complete projects even after they have become uneconomic. Mr. Meehan appears to agree with me that sunk costs should not be considered when a utility and its regulator make decisions about continuing with the project.

These decisions should be limited to analyzing the going-forward cost of the project and the incremental benefits it would produce. However, he continues to raise concerns that the entire cost of the project needs to be considered by the Commission, even though this could expose FPL to after-the-fact reviews,

which is inconsistent with the nuclear cost recovery statute. The risk Mr. Meehan cites is already addressed and diminished through the NCRC and does not need any revision in order to adequately address his concerns. That concludes my summary. Thank you.

MR. DONALDSON: I'd tender the witness for cross.

CHAIRMAN GRAHAM: Mr. Reed, welcome back.

THE WITNESS: Thank you.

CHAIRMAN GRAHAM: OPC.

MR. SAYLER: Good morning, Mr. Chairman. I asked staff to pass out a couple of exhibits, which they graciously did. The first exhibit I'd like to have identified as Exhibit No. 82 would be the composite exhibit of PTN 3 and 4 EPU Costs and Contingency.

And, similarly, the next exhibit, exhibit identified as 83, would be FPL's response to OPC interrogatory 23 to 30, or FOAK responses.

CHAIRMAN GRAHAM: Okay. So for identification purposes, Exhibit 2 [sic] is going to be the composite exhibit that you spoke of, and Exhibit 3 [sic] is going to be --

MR. SAYLER: 82 and 82.

CHAIRMAN GRAHAM: I'm sorry, 82, and then 83 will be the Florida Power & Light response to OPC's

interrogatory 22 through 30.

MR. SAYLER: Yes. The FOAK or first-of-a-kind responses.

CHAIRMAN GRAHAM: Okay.

MR. DONALDSON: Mr. Chairman, I would just like to lodge an objection to Exhibit No. 82. It's dealing with EPU projects that are outside the scope of his rebuttal testimony. They haven't been anything that he's testified to in this particular docket, and so I would just like to lodge that objection.

CHAIRMAN GRAHAM: Okay. And as he goes through it, if it's something that's outside the scope of his rebuttal as OPC is asking those questions, if you'd make those objections as well at the time.

MR. DONALDSON: Sure.

CHAIRMAN GRAHAM: OPC.

(Exhibits 82 and 83 marked for identification.)

MR. SAYLER: All right. Thank you.

EXAMINATION

BY MR. SAYLER:

Q Good morning, Mr. Reed. How are you today?

A Good morning. I'm fine. Thank you.

Q Good. Hopefully you got a good night's rest after that late night last night.

A I hope we all did.

Q All right. On page 4 of your testimony, your July rebuttal testimony, you discuss Dr. Jacobs' testimony in prior NCRC cost recovery proceedings; is that right?

A Correct.

Q And that was related to FPL's extended power uprate project; is that correct? I mean, you provided testimony as it relates to FPL's EPU project as well as the Turkey Point 6 and 7 project; correct?

A Yes. Just to be clear, the reference on page 4 at line 7 is to the EPU, but the testimony that's referring to covered both EPU and new nuclear.

Q Okay. Thank you for that clarification.

And you also testified on behalf of FPL in those proceedings as well; correct?

A Yes, I did.

Q So you are generally familiar with the enormous cost overruns that were associated with the Turkey Point EPU project.

A I am familiar with the costs, yes.

Q All right. In the first exhibit identified for the record as Exhibit 82, I'll just give you a quick overview for the record. The first page with the handwritten No. 1 is Order No. PSC-07-0973, and that is

a Prehearing Order that was used in the Turkey Point EPU -- Turkey Point/St. Lucie EPU need determination. Are you familiar with this order?

A Yes.

Q All right. On page 2 you would see under stipulated Issue No. 6, under the position, it states that the estimated nominal cost for PTN, which is the Turkey Point uprate, and PSL, which is the St. Lucie uprate, not including construction carrying costs, are approximately $750 million and $657 million respectively. Do you see that?

A I do.

Q So you would agree that when FPL originally proposed the Turkey Point uprate project, the estimate, not including construction carrying costs, was about $750 million; is that correct?

A You're asking me to accept that this docket is when it was first proposed. I think that's correct, but I would have to take that subject to check.

Q Subject to check is fine.

A And I do believe that the 750 million figure is correctly characterized as not including construction carrying costs.

Q All right. And based upon your recollection of providing testimony in those dockets, the cost for

the FPL EPU uprates for both plants increased significantly.

A They did.

Q Subject to check, it was about $3.3 billion for both projects?

A 3.3?

Q 3.3 billion.

A I can accept that, subject to check.

Q All right. If you'll turn to the next page, page 3, that is another Prehearing Order in the 2013 NCRC docket. Do you see that?

A I do.

Q It doesn't say Prehearing Order on the front page, but if you'll accept my representation that it is. It does say PHO in the order number title. If you'll turn to page 4, under OPC's position in that -- contested position in that docket, Witness Jacobs -- or actually OPC's position was that the estimated EPU costs for Turkey Point and St. Lucie were $2.2 billion and $1.2 billion respectively. Do you see that?

A I see that, yes.

Q Okay. Now I will represent to you that that was a calculation that OPC put forward in that case. However, you would agree that both the EPU project for Turkey Point -- would you accept, subject to check, that

the cost for the Turkey Point EPU was about 2.2 billion?

A No. I would need to see the -- the documentation on that.

Q Okay. If both costs for the EPU for Turkey Point and St. Lucie collectively were about 3.4 billion, if you divide that in half, that is still pretty significantly higher than $750 million; correct?

A Yes. The final cost was significantly higher than the estimate several years earlier.

Q Okay. Now isn't it true that FPL included some contingency in its original $750 million estimate for the uprate projects?

A I'd have to have a document to be able to confirm that.

Q Okay. If you'll turn to page 5 of this exhibit, it is a response from FP&L to OPC's Seventh Set of Interrogatories No. 77. The question states, "At the 50 percent design completion, what is the expected level of uncertainty with respect to the project scope?" And just so that you understand, this is coming from FP&L. I attached the affidavit, which is page 6 from Mr. Jones who presented testimony in that case. And then just for completeness, I also included an excerpt from his testimony, pages 7, 8, 9, and 10, that isolate the fact that we had asked him a question about the contingency

in that case.

Referring back to page 5, if you look at the last sentence in that where it says, "FPL's nonbinding cost estimate range," you would see that, isn't it true, that it reflects a range of zero -- minus zero to approximately 7 percent contingency?

A Give me just a few minutes to review this.

Q Sure.

A Okay. So let's try and answer this one step at a time. Your first part of your question was does this information on page 5 indicate the level of contingency that was included in the original $750 million cost estimate? That's incorrect. This document refers to the contingency that was estimated for a part of the project at a later date.

Q So that 50 percent design included a zero to 7 percent contingency range?

A It indicates that there is no universally acceptable percentage. It says that the 50 percent design completion state that FPL's nonbinding cost estimate range encompassed a level of uncertainty which reflected zero to approximately 7 percent. So that would be, as I read this answer, for the portion of the project that was at 50 percent design completion. It also says the level of project scope associated with the

remaining 50 percent for which design is not completed remains relatively high.

Q All right.

A And then if we continue with Mr. Jones' testimony, he refers, at page 32 of the testimony, what you have marked as page 9, as the -- an excerpt here from the PMI's Project Management Body of Knowledge, or PMBOK as it's called, where he talks about estimates that are minus 50 to plus 100 percent for projects that have a specified level of front-end engineering and design complete down to as little as minus 10 to plus 15 percent where you have essentially 90 percent of the project engineering and design complete.

Q With regard to the FPL EPU projects, do you believe that FPL -- excuse me. Strike that question.

You would agree that FPL included some amount of contingency in that case?

A In which year?

Q In the EPU case.

MR. DONALDSON: I'm going to object at this point in time. You know, I think I let it go a little bit farther than it needs to go. His testimony was focused on rebutting cost capping, cost sharing, and hindsight-based opinion on prudence, not talking about contingency in the EPU project, and so this is going

beyond his rebuttal testimony.

MR. SAYLER: I'll move on.

CHAIRMAN GRAHAM: I'm sorry?

MR. SAYLER: I'm going to move on to another line of questions.

CHAIRMAN GRAHAM: Okay. Thank you.

BY MR. SAYLER:

Q Isn't it true that for FPL's current nonbinding estimate for the Turkey Point 6 and 7 project, the range goes from 13.7 billion to 20 billion?

A Correct.

Q And you would agree that it's important to include the proper amount of contingencies in that --

A I agree.

Q -- for that project? All right.

Turning to the next exhibit. Before we get there, if there were significant cost overruns in the Turkey Point 6 and 7 project similar to the cost overruns in the EPU projects, you would agree that there would be a significant problem for FPL and its customers? Meaning if the EPU project is doubled and the FPL Turkey Point 6 and 7 project doubled, you would agree that that would be a significant concern for this Commission, the customers, and the utility?

A Yes. I certainly would agree that if the cost ended up being twice what is expected, that that would be an issue.

Q All right.

A I don't think that will be the case.

Q All right. All right. Turning to the Exhibit FOAK Responses, FOAK is an acronym for first-of-a-kind projects; is that correct?

A Yes.

Q Would it be fair to say first-of-a-kind and first-wave projects are somewhat interchangeable terms?

A Generally.

Q All right. And then for NOAK projects, or nth-of-a-kind projects, they could be considered second-wave projects?

A Yes.

Q All right. And in your opinion, isn't it true that FPL's Turkey Point 6 and 7 project is sort of in between the first and the second wave, or is it a second-wave project?

A I think of it as being the first unit in the second wave. I think these responses indicate that the literature indicates that nth of a kind typically begins at or about the fifth unit. And, in fact, FPL's units, if they go forward, will be the fifth and sixth units.

Q And when you mean fifth and sixth units, you're counting Vogtle's project as two units and Summer's projects as two units?

A That's correct.

Q All right. Thank you. Would you please refer to these interrogatory responses as well as the affidavit? And would you agree that you're responsible for these interrogatory responses?

A Yes.

Q When it comes to the cost of constructing nuclear power plants, isn't it true that you do not know of any nuclear power plants constructed in the United States that have not experienced significant cost increases over the original cost estimate to complete the plant?

A I haven't done a survey of every plant that's been built in the U.S., so I can't answer that.

Q All right. And you would agree that in your response to interrogatory No. 24, you indicated that you had not performed such a study; is that correct?

A Correct.

Q Let's turn to page 5 of your rebuttal, specifically lines 15 and 16.

A I have that.

Q When discussing the performance of

different -- excuse me. When discussing the performance difference between first-of-a-kind and nth-of-a-kind projects, you quote a study stating, "Subsequent installations will normally cost less than the first plant." Do you see that?

A I do.

Q And this was a U.S. Department of Energy study, is that correct, according to your -- according to your footnote?

A Yes. It was the National Energy Technology Lab in collaboration with the Department of Energy.

Q All right. And you previously testified that the Summer and Vogtle projects are the first of a kind; correct?

A Yes.

Q All right. On page 6 of your testimony you state that, "Engineering costs associated with first-of-its-kind engineering costs could be -- could represent approximately 11 percent of the total overnight capital cost in such a mega project."

A Yes.

Q Do you see that?

A I do.

Q In other words, you're testifying there may be up to an 11 percent savings on the total cost for units

that follow first-of-a-kind units; correct?

A I'm saying that the trade press or publications here indicate that that estimate is roughly 11 percent.

Q Okay. And isn't it true that you did not conduct any independent study to support this 11 percent savings?

A I did an independent review of the, again, Project Management Body of Knowledge and experience of other plants as measured by the studies I've quoted.

Q Okay. If you'll turn to interrogatory 26. Your response to OPC's subpart (c) states, "Witness Reed has not completed an analysis of the composition of overnight costs at the level of detail requested in this question." Do you see that?

A That's correct.

Q And we had asked if the FOAK, first-of-a-kind, engineering costs are 11 percent of the total overnight costs, what percentage would remain for the other engineering? So that's -- so you haven't studied it specifically, but you've reviewed some documents; is that right?

MR. DONALDSON: Sorry, Counselor. Do you want to read the rest of the question for completeness on what you were asking him to do? The part where it says,

"Translate these percentages into dollars per kilowatt-hour of total overnight cost."

BY MR. SAYLER:

Q Okay. Have you conducted a study of those?

A No.

Q Okay.

A To be clear, those are engineering, other engineering, equipment, materials and supplies, craft labor, owners' costs, transmission, nuclear steam supply system costs, and all other. And my answer is I have not conducted an analysis at that level of detail.

Q All right. Thank you. And isn't it true that you are testifying before this Commission that there will be savings with second-wave projects or nth-of-a-kind projects like Turkey Point?

A My belief is that there will be benefits from being an nth of a kind as opposed to first of a kind in terms of lessons learned, and I expect that will result in lower costs than would otherwise have been the case.

Q All right. But there's no guarantee.

A No, there are no guarantees.

Q All right. Isn't it true that you did not conduct any independent study or analysis to identify subsequent nth-of-a-kind nuclear units in the U.S. that might have come in at lower cost than first-of-a-kind

units?

A As I indicated, the only independent study I did was a review of the literature on this point. I don't think it would be possible to do a review of second generation nuclear plants, the ones built in the 1980s, to do that because there was no similarity of design as there is today.

Q And you would agree that that is consistent with your response to interrogatory No. 23, subsection (e)?

A Give me just a moment. Number 23, subsection (e)?

Q Yes.

A That's correct.

Q All right. Additionally, isn't it true that you did not conduct any specific study or analysis showing any quantified savings achieved in nth-of-a-kind nuclear construction projects over first-of-a-kind construction projects?

A Other than, again, the trade press information presented in my rebuttal and the roughly 11 percent figure.

Q And you would agree that that's what -- according to your response to interrogatory No. 27, you stated, "Mr. Reed has not performed a study of specific

quantified savings from NOAK nuclear construction projects over" FOKE -- excuse me -- "FOAK units"?

A No. In response to the question that's asked there, yes, that is the right response.

Q Okay. And you are not testifying that you believe that Turkey Point 6 and 7 will cost less than the Vogtle and Summer projects in this case, are you?

A No. And, again, let's be clear. The company's estimate currently is that the total cost will be larger, substantially larger than the Vogtle project, partly due to the difference in time. The upper end of the range is $20 million versus the current estimate for Vogtle of about 17 billion. So the current estimate is, round numbers, $3 billion at the upper end of the range higher than Vogtle.

Q All right. Isn't it true that one of the cost savings benefits gained from being a next-of-a-kind plant are lessons learned by the contractors who built the first-of-a-kind plant?

A You've introduced a new term, next of a kind.

Q Sorry. Sorry. Let me just rephrase it. Let me be clear. Strike the question.

Isn't it true that one of the cost savings benefits by being a second-generation or second-wave plant are the lessons learned by the contractors who

built the first-wave plants?

A Yes.

Q And that is also consistent with your response to interrogatory 27; correct?

A I believe so.

Q And you believe that FPL may be able to obtain significant schedule and cost savings by planning Turkey Point 6 and 7 to reflect the lessons learned throughout the construction of the first wave of AP1000 projects like Vogtle and Summer; correct?

A Yes. That's what the initial assessment activities are largely about, working with CBI to understand lessons learned and how they can be applied to Turkey Point.

Q Okay. And lessons learned could relate to improvements on project schedule, dealing with subcontractors, achieving quality assurance in onsite fabrication, and other lessons learned from those -- from the contractors who are actually building those projects?

A It includes all of those elements, yes.

Q And there are probably other elements that they learned too?

A Certainly there are, including fabrication.

Q Okay. On page 2 of your testimony, of your

rebuttal testimony, you testify that Dr. Jacobs' argument that FPL failed to include additional project -- first-of-a-kind project Vogtle costs incurred by the contractor, your testimony states that his argument relies upon the assumption that FPL will retain the same contractors to perform the Turkey Point 6 and 7 construction that have been used by Vogtle and Summer; is that correct?

A Can you give me reference to where I described this as Dr. Jacobs' argument?

Q Sure. Page 2, line 20, you state, "His argument relies on the assumption that FPL will retain the same contractors to perform PTN 6 and 7 construction as have been used at the Vogtle and Summer sites, and that FPL will pursue the same contracting strategy," and it goes on. Do you see that?

A I do see that, yes.

Q Okay. Isn't it true that if FPL uses different contractors, somebody other than CBI, to engineer, procure, and construct Turkey Point 6 and 7 from the contractors used for the Vogtle and Summer projects, wouldn't those lessons learned by the first-of-a-kind contractors be lost and unavailable to the new contractor having to construct an AP1000 for the very first time?

A No. And that's a pretty good question to delve into a bit.

CBI, of course, is the general contractor on Vogtle. It uses a very large number of subcontractors.

Q Well, but the assumption is there are some lessons learned that are translatable regardless of the contractor, but there are other lessons learned that are really skills that are inherent by the people who actually constructed the plant that aren't translated. For instance, if you've never worked on a car, you wouldn't necessarily have the lessons learned from somebody else who's worked on a car; is that correct?

A We're now moving to a different question obviously since you interrupted my prior answer.

MR. DONALDSON: Yeah. Mr. Chairman, can he actually answer the previous question before being cut off by counsel?

CHAIRMAN GRAHAM: I thought he was going a bit deep into detail, and I will allow for the person that asked the question to, you know, decide how deep, how far he's going to let him editorialize that. So I didn't have a problem with him cutting it off. I'll let you finish the detailed thought on redirect, if you like.

MR. DONALDSON: Okay. Thank you.

CHAIRMAN GRAHAM: Mr. Sayler.

MR. SAYLER: Thank you.

BY MR. SAYLER:

Q Your testimony that says his assumption that FPL will retain the same contractors, whether the general contractor, subcontractors, contractors in general, to perform the Turkey Point construction, by implication are you testifying that FPL may consider using different contractors who don't have those same lessons learned experiences that were gained from Summer and Vogtle?

A The answer to the first part of your question is yes. The answer to the second part of your question is no.

Q All right.

A It is considering other contractors, but those other contractors would not lose or have the inability to use the lessons learned.

Q And can you tell us who those contractors are?

A I expect it will look at several. It has used Bechtel for the recent uprate projects, which, as we said, were roughly $3.5 billion.

Q And isn't it true that Bechtel has not constructed an AP1000?

A It has not constructed an AP1000.

Q All right. Thank you. Similarly on lessons learned, if there is a, say, two- to five-year gap between the end of the construction of the Vogtle and Summer projects and the start of the construction of the Turkey Point 6 and 7 project, wouldn't a number of the lessons learned by the Vogtle and Summer contractors be lost through retirement, through people moving on to other things, the loss of the craft trade that is necessary to make those projects because they've moved on to other careers or retired or died?

A No. One of the things the nuclear industry does best is document lessons learned and create a body of knowledge that can be passed on to other people. There will be people retiring during the construction of the Vogtle units and the Summer units. But those lessons learned do get documented and incorporated into the body of knowledge.

Q But you would agree that actually having performed a construction project is different from reading instructions that somebody else wrote up; correct?

A Having performed it yourself is helpful but certainly not necessary to gain from the lessons learned in the past.

Q All right.

A Again, this construction operates from --

Q Excuse me, sir.

A -- very carefully crafted procedures.

Q You're going a little bit further afar.

I don't like using analogies, but let me use one analogy. If you were going to have major surgery, would you rather have a doctor who has performed open-heart surgery 100 times or a doctor who's reading from a book performing your open-heart surgery?

A That's not analogous to the nuclear situation, but I would prefer to have a doctor who's done it before.

Q Thank you. Okay. You would agree that the cost to construct a project -- getting back to our line of questioning yesterday about the cost to construct a project, there was a question that I had my in mind and maybe you can help me clarify it. The cost to construct a construction project, you would agree that it equals the cost paid by the owner plus the cost the contractor -- excuse me -- plus the contractor's cost above that which was paid by the owner?

A No. I think I disagreed with that yesterday.

Q Okay. Thank you.

Isn't it true that you do not agree that obtaining bids from qualified contractors with an

appropriate amount of contingency -- excuse me. Strike that.

Wouldn't you agree that obtaining bids from qualified contractors with an appropriate amount of contingency, that that would provide the best estimate of the cost and schedule for Turkey Point 6 and 7?

A Only if it is prepared at the time when sufficient design has been completed.

Q All right. Would you refer to your interrogatory 29(b)?

A I didn't hear the end of that. 29 --

Q 29(b).

A I have that.

Q All right. Isn't it true that you do not believe that any vendor is likely to offer an economic binding fixed EPC contract for the Turkey Point project?

A That's correct.

Q And you would agree it's because there's too much risk for the contractor?

A Too much risk to do so on a fixed price basis, yes.

Q All right. And it would require a very large contingency or margin for the contractor to -- to offer that type of contract; correct?

A Correct.

Q And this interrogatory response represents the type of contracting arrangement you would envision for Turkey Point 6 and 7?

A Can you -- can you give me a specific reference there?

Q Let me rephrase my question. Wouldn't you agree that the contract would be some type of engineering, procurement, or construction project that would probably have cost targets but not firm price in your opinion?

A I think it's too soon to say. Your answer -- your question assumed it was an EPC contract.

Q Or an EP and/or C contract.

A That's a different matter. Your question was an EPC contract, which is engineering, procurement, and construction all in one. I think it's quite possible, perhaps even likely that engineering and procurement would be separated from construction.

Your second question was would it involve a target price, that is, one pricing structure target price, as opposed to firm, fixed, or floating? Certainly there is a lot of favorable experience using target price structures in the nuclear industry.

Q All right. And in the type of nonbinding contract situation, isn't it true that FPL's ratepayers

would pay for any significant cost overruns that occurred in that contracting situation?

A That depends on the facts at that time. Ratepayers would be expected to pay for prudently incurred costs.

Q Okay. And if those prudently incurred costs were significantly above the contracted price, then the ratepayers would be paying for that; correct?

A Yes, if they were prudently incurred.

Q And it's your testimony that you don't believe that FPL should agree to a price cap based upon real world cost estimates developed from the Vogtle and Summer projects; is that correct?

A No. Can you give me a reference to this response or where you have that from?

Q In your professional or expert opinion.

A Okay. The answer is I don't believe a contractor would offer a fixed price that had a reasonable level of contingency built into it. I don't think FPL should seek or assign a fixed price contract based on what we know today.

Q My question was you don't believe that FPL should agree to a price cap based upon the cost experiences for the project, the Summer and Vogtle projects; is that correct?

A I need clarity. Are you talking about price cap in the nuclear cost recovery proceedings or a price cap in a contract with a --

Q As -- as described in Witness Jacobs' testimony.

A A price cap in the nuclear cost recovery proceedings. No. I think a price cap would be inconsistent with the terms of the Nuclear Cost Recovery Clause.

Q And you would agree that it would be too risky for FP&L to enter into a price cap, is that correct, FPL shareholders?

A That would depend on the terms of the price cap. I don't think it's appropriate under the terms of the clause.

Q Okay.

A I don't think I ever opined that it would be too risky for FPL.

Q All right. Now when it comes to a price cap, should FPL or the Commission order such a thing, you would agree that a price cap would protect the customers from significant cost overruns?

A No. I think it would be more likely to lock it in. A price cap, if it was something that reflected a fixed price contract that FPL had secured with the

contractor, would build in an enormous premium. If we locked that into a price cap in the NCRC, it would essentially lock in cost overruns ahead of them occurring.

Q But whatever that price cap would be, any costs over that cap would be borne by the shareholders and not by the customers; correct?

A Well, that depends --

Q Yes or no?

A -- on how that is made to work. That isn't part of the NCRC, so I'm not sure I can speculate as to how that would be changed.

Q Okay. So wrapping all this up, isn't it true that you believe that FPL's ratepayers and not its shareholders should bear the risk of significant cost overruns associated with the total project cost of constructing this nuclear power plant?

A If they occur as the consequence of prudently incurred costs, I think the costs should be borne by ratepayers.

Q And to your knowledge, isn't it true that no nuclear power plant in the United States has ever been constructed on time or at or under budget?

A Again, as I said in my answer, I haven't done a survey of every one of the 102 plants built to be able

to answer that question.

Q So the answer is, no, you don't know.

A I don't have the information necessary to answer the question.

MR. SAYLER: All right. Well, thank you, Mr. Reed. No further questions from Public Counsel.

CHAIRMAN GRAHAM: Thank you, Mr. Sayler. Retail Federation.

MR. LAVIA: Just a few questions.

CHAIRMAN GRAHAM: Sure.

EXAMINATION

BY MR. LAVIA:

Q Good morning, Mr. Reed.

A Good morning.

Q Have you independently investigated the cost overruns at Vogtle?

A No. I have read the reports submitted by the owners, I've read the reports submitted by the construction monitors, but I've not conducted an independent investigation of that.

Q What is your understanding as you sit here today of the magnitude of the Plant Vogtle overruns?

A About 1.5 billion to date.

Q Okay. Is there a level of cost overrun at Plant Vogtle that would impact FPL's feasibility study?

A That would depend on whether the root cause of that overrun was something that would be likely to be replicated for Turkey Point. So you can't answer it with just the question of a size of an overrun. It depends on the cause of the overrun.

Q So there could be, depending on the cause?

A If there was a cause that was believed to also be in existence at Turkey Point, then the answer is yes.

MR. LAVIA: No further questions.

CHAIRMAN GRAHAM: Thank you, sir.

MR. LAVIA: Thank you.

CHAIRMAN GRAHAM: FIPUG.

MR. MOYLE: We have some questions.

EXAMINATION

BY MR. MOYLE:

Q Good morning, Mr. Reed.

A Good morning.

Q So OPC asked you twice about any plants in the country that -- plants, nuclear plants that were constructed on time and on budget, and you said, well, I haven't done a study, so I can't really answer that question. You've -- you've represented a lot of nuclear plants over the years -- I looked at your CV and all the things you've testified in -- isn't that right?

A Yes.

Q So -- so same -- same question but phrased slightly differently is in your travels, in your experience, can you name one nuclear plant that has been constructed on time and on budget?

A I'll answer it the same way with one additional piece of information. I haven't done a survey of all of them, so I don't have all of the information needed to answer that with regard to is there one.

I will agree that in my experience, which began in 1976 --

Q Mr. Chair, I just -- you can just tell me if you can name one, yes or no. It's not -- I don't need experience. I've read your testimony. Can you name one?

A I was just about to tell you that.

Q Please.

A Since 1976 when I entered the field, there has not been one constructed under budget.

Q Okay. Or on time?

A That's my belief.

Q Okay. Thanks. I'm sorry. I want to get you back to Massachusetts, so I appreciate the conversation.

I do want to switch gears a little bit and ask you a question about the nuclear cost recovery

statute. On page 8, I believe you are -- this is at the top of page 8, you say the nuclear cost recovery statute strongly suggests the legislature wished to provide a framework within which the Commission has the opportunity to address and avoid many flawed aspects of the past regulatory process; right?

A Yes.

Q And then flipping the page before that, you spend a paragraph or so talking about what you believed as an erroneous approach to, I guess, prudence; is that right?

A An erroneous approach to cost recovery more precisely.

Q Okay. And then the question on 6, I think you're talking about the cap. This is all prompted by -- by the suggestion that there be a cap; is that right?

A Yes.

Q Okay. There's -- there's nothing in the -- in the nuclear cost recovery statute, 366.93, that addresses a cap or says the Commission is not able to put in a cap if it saw fit; correct?

A There's nothing in there that mentions a cap. That statement is made at page 7 of my testimony. There is explicit statements in there that provides for the

recovery of prudently incurred costs, which would suggest to me that capping that would not be consistent with the rule.

Q Okay. You're aware this Commission has approved caps in other contexts; correct?

A Generally, yes.

Q Yeah. And do you know the authority by which the Commission in the previous context have approved caps?

A No, I can't speak to that.

Q Let me just spend a little bit of time talking about your view of a prior regulatory process. Are you -- are you suggesting that, with respect to the prudence review standard, that this Commission has changed how they determine prudence?

A No.

Q So when you state that -- on line 18, this is on page 7, line 18, you suggest the adoption of more onerous standards such as an economics benefits test and simply a risk sharing test, that those weren't devices used by this Commission to determine prudence?

A That's correct. I don't believe they were devices used by this Commission.

Q Okay. And this Commission has never done hindsight prudence reviews, Monday morning

quarterbacking reviews, have they?

A Not that I know of.

Q So what -- I'm having a hard time understanding and reconciling your answers to that with, say, your first sentence on page 7, line 10, where you said, "The regulatory processes applied to the development of nuclear generation in the 1980s were characterized by significant cost disallowances, at times owing to results-oriented hindsight reviews that determined whether plants turned out to be economical a decade or more after construction was begun." Are you suggesting -- you're not suggesting that this Florida Commission did this. This is a broader statement than that, or help me understand.

A Yes, it is a broader statement. No, I'm not suggesting the Florida Commission did that.

Q Okay. And then the same with respect to the risk sharing and the economic benefits test, those are broader statements that may not be applicable to this Commission?

A Yes, they are broader statements.

Q Okay. All right. Well, that helps.

So other Commissions looked at it and I guess at some point said, you know, I'm not sure that ratepayers can stomach or manage this high level of

cost; therefore, we're not going to pass on every dollar to the ratepayers. Is that fair?

A That was true in some cases, yes.

Q Okay. And you don't disagree that the ability of ratepayers to pay rates is a legitimate factor for this Commission to consider; correct?

A I think affordability of rates is an important consideration. I don't think it trumps the right of a utility to recover prudently incurred costs.

Q All right. But there's no hierarchy or formula with respect to prudence. The Commission looks at facts and circumstances and makes a judgment; correct?

A I'm not sure what you mean by "hierarchy," but I agree with the second part of your statement, that it looks at the facts and circumstances on prudence and makes a determination.

Q Right. Well, you talked about a trump, you know, that one trumps the other. That's why I used hierarchy. I mean, there's no -- there's no order of criteria to be considered; correct?

A There are no order of criteria. But I do stand by what I said before; I do not think it is appropriate as a matter of regulatory policy to have affordability trump the right to the recovery of

prudently incurred costs.

Q A cap potentially has some element of risk sharing; correct?

A Yes.

Q Okay. And in a general context, don't you favor a situation in which the relative interests of parties are aligned?

A Yes.

Q Okay. And a cap potentially, if it could be put in place, would more appropriately -- appropriately align the interests of the ratepayers, which are to pay as few dollars as they can for nuclear, with the interest of FPL, which is to get nuclear online in an economical way; correct?

A No. I don't agree that a cap is a constructive alignment of interest. I have seen situations in which a target price, where there was symmetrical treatment above and below that target price, helped to align interest. That's not what I think is meant by a cap. A cap would suggest if you come in below it, the customer receives all the benefit. If you go above it, the shareholder absorbs all of the detriment.

Q Okay. I just want to be clear. When we're talking about -- about cap as you just answered that

question, are you talking about such a cap being in a contract or being something that this Commission would put in place when you answered that question?

A The way it's used in my testimony is a cap that the Commission would put in place in the context of nuclear cost recovery.

Q Okay. So -- so are these -- is it a target? Why don't you tell me what a target contract is. I think you just described it, but it's essentially you agree to a number, $1,000, and any -- anything over $1,000 is the responsibility not of the ratepayers but probably of the contractor. If you go in at anything under $1,000, the additional monies would flow to the utility or the contractor; is that right?

A There's two different concepts there. Let me separate them and then I'll answer.

Q Let me do this. Explain what a -- what a target contract is or a target price as it relates to the regulatory field.

A Okay. Regulatory, not contract, that's your question?

Q I'm going to ask you both. I'm going to ask you regulatory field, then I'm going to ask you contract.

A Okay. Target price within a regulatory

context is typically where there is an understanding as to what the price expectation is, and then there is some form of incentive mechanism for costs that come in above or below that. It's symmetrical, it provides potential upside to the company as well as potential downside to the company, but it's balanced and it's symmetrical in terms of cost recovery and the incentives built in.

Q Okay. Same question, target price with respect to it being used in a contractual setting.

A In an EPC contract or EP or C, target pricing usually is a benchmark above and below which different things occur. For example, the contractor's profit margin or the contractor's overhead costs could be expended or contracted, depending upon bandwidths, above and below the target price. So, for example, if you're 10 percent above the target price, the EPC contractor's profit margin might be reduced from 8 percent to 6 percent, or its overhead factor of 15 percent might be reduced to 10 percent. And, again, there's a symmetrical structure above and below that.

Q Okay. Is there a dichotomy between a firm business relationship between a regulatory -- in a regulatory context and a contractual context?

A I'm sorry. I didn't follow that question.

Q So I'm going to ask you the same question, to

explain, please, a firm contract and then the nature of firmness in a regulatory context. So why don't we start with the regulatory context. I was trying to understand whether there was a difference between firm in a contractual context and a regulatory context, whether there was a difference or not. Is there?

A Yeah, there can be.

Q What does a firm relationship in a regulatory context suggest?

A Could we actually start the other way, on contract basis first and then move to regulatory?

Q Sure.

A Firm contract pricing in an EPC contract is almost a misnomer. It means this is my price for the quantities and the materials and the performance that we've specified in the contract. It does not apply to anything that constitutes excused performance under the contract or to any change in the scope. So even for what are thought to be relatively simple projects like gas-fired combined cycle projects or sometimes even coal projects, a firm contract ends up not having the price that is the final price because there are either elements of excused performance, such as a colder than normal winter or a tropical storm blows through or there's a shortage of labor in the area, or there's

changes in scope as you find latent conditions at the site or as you find defects in materials at the site. All of that leads to a change in the scope. So even a firm contract on the EPC side almost never ends up with a price that exactly equals the firm contract price.

In a regulatory context, that phrase is much less well defined. I have seen -- there was a good case in Wisconsin of the Commission granting a certificate of need to a project with a firm price attached to it. But even there it said firm assuming there are no changed circumstances, and then it left to future cases to define what constituted changed circumstances. When the utility in that case came back and said there have been changed circumstances, here's the cost, additional cost we seek to recover, the Commission agreed to the recovery of those costs. So it's a much less well-defined term in regulatory circles than in EPC contracting.

Q In your mind, you would distinguish a firm contract as you described in Wisconsin from a cap because of some flexibility in the Wisconsin firm contract; correct?

A Correct.

Q Whereas a cap, you're assuming no flexibility, force majeure, no nothing, it's a cap, it's a cap,

there's a ceiling that can't be broken; correct?

A That would be what I would presume someone meant by cap, is that it is an absolute cap.

Q Okay. A fixed contract in the contractual context and also the regulatory context, if you would.

A Firm and fixed are terms that are used interchangeably in some contracting circles. They're used differently in nuclear space typically. Firm is one where this is the price.

Q I think you meant to say fixed; right?

A Well, I meant to distinguish the two, so I'll start with fixed.

Q Okay.

A Fixed is fixed. It is I guarantee this is the price for the unit or the performance under the contract as specified under the contract, but for, again, force majeure and excused performance.

Firm, again, typically is for, as Mr. Scroggs talked about, firm for the materials, the quantities, the supplies, the hours. There may be elements of it that are not firm, such as productivity can be something that changes and is picked up in the contract.

So those terms again, firm and fixed, are very ill defined, and they are differently defined

typically in civil construction versus nuclear construction.

Q I thought Mr. Scroggs said that there was a contract where certain things you paid for, but then materials were pass-throughs.

A Uh-huh.

Q What is that?

A Typically firm pricing can contain a form of indexed pricing. So if you read the materials in the Vogtle case, you'll see that there's firm pricing for part of the contract. But firm means it's still subject to escalation according to, for example, the consumer -- I'm sorry -- the Producer Price Index for industrial commodities.

Q And then you also used the term a floating contract. If you would answer the question with respect to what is it in a regulatory context and what is it in a contractual context?

A In a contractual context, it is essentially time and materials. In a regulatory context, I don't think I've heard the floating term used. It's more often time and materials.

Q Okay. And out of these various contracting methods, do you have an opinion as to which one best protects the interests of the ratepayers?

A No. I think that is a very fact-specific determination and very different for nuclear versus, for example, a combined cycle plant.

Q Do you know approximately when the Wisconsin Commission approved the firm arrangement that -- that you've described and for what project it was?

A It was for the Elm Road pair of coal-fired generating plants that Wisconsin Energy was building. I believe that the decision was about 2005. That's my recollection.

Q You have served on a number of boards and operated in businesses beyond your consulting business; is that right?

A Some, yes.

Q Have you ever had a business decision that you were confronted with where you were in a project, you'd spent considerable sums of money on a project, and you were confronting an issue, and you had to talk about it and figure out how you handle a particular issue? A very general question.

A That's very general. But, yes, I think the answer is yes.

Q Okay. And when -- do you ever recall, when you were having that conversation with your business partners, the question coming up, well, how much money

have we spent to date on this project?

A Yes.

Q And that helps inform people, because they're making a business judgment about -- about moving forward; correct?

A Sometimes, yes.

Q Okay. And it's your testimony, if I understand it, that that -- the answer to that question should not be something this Commission should consider in the context of making a decision about these nuclear units; correct?

A No, that's not correct. What I've said is --

Q Let me -- let me just -- I was trying to describe what I understand to be sunk costs, monies spent to date. Did I not do that in my -- in my questions sufficiently?

A No. I think you distinguished what would be sunk costs. You didn't characterize my position with regard to what the Commission should do correctly.

Q Okay. I think my question was we talked about the sunk costs, but I thought you were telling the Commission don't consider sunk costs. You're not -- you're not telling them that?

A For the purposes of evaluating whether you should proceed with a project, it should be a comparison

of to-go costs and to-go benefits or incremental benefits. The existence of sunk costs don't enter into the economic equation of whether it's cost-effective to still move forward. There's nothing wrong with looking at sunk costs and saying are they higher than expected, lower than expected, and what are the root causes of that? But the decision to move forward needs to be based upon a consideration of to-go costs versus incremental benefits.

Q Are you aware of any law or rule in Florida that says the Commission cannot consider sunk costs?

A No. I don't think it's a matter of rule or law. I think it's a matter of good economics.

Q So I take it based on our discussion that you would not be advising this Commission that when they're making a decision about protecting ratepayers, that they should not consider money spent to date on this project; correct?

A That was at least a double negative. That they should not consider costs --

Q I'll make it positive. Shouldn't the -- shouldn't the Commission be considering the monies spent to date on nuclear projects when making decisions about moving forward?

A That depends on what they're considering. As

I said, the economics of moving forward should be based upon to-go costs versus a comparison of incremental benefits. I do believe that looking at what it has cost to date and saying is it more or less than we thought it was going to be and, if so, why is it more or why is it less, that's an appropriate question.

Q Right now the Commission has before it a sunk cost figure of approximately 1 percent of the total projected high-end cost; correct?

A I believe that's the amount that would be in existence at the end of this year.

Q 250 I guess; right?

A I think that's correct.

Q Yeah. There's an opportunity here, given that only 1 percent of the money has been spent, for the Commission, if they're uncomfortable with the projected 20 billion cost, to stop the bleeding; correct?

A There's an opportunity to stop the project. I don't consider that to be bleeding. So far the project has actually been remarkably on track and on budget. But if the Commission determines that it does not want to move forward with the project, it has the opportunity to say so. I agree.

Q Okay. One final point I want to discuss with you is -- you talked with Mr. Sayler about it some.

With respect to the notion that -- I don't know if you want to call them second tier projects, but if I read your testimony, if you're not in the first move or you're in the second move, you might see some time and cost benefit associated with that. Is that fair?

A Yes.

Q Okay. And you're not suggesting that that will happen in this case. You're just saying this is a study that is done and there's some lessons learned, and, you know, maybe -- maybe it'll save some time, maybe it won't. Is that fair?

A I'll go further than that. I think it will happen. I think it's already happened on Vogtle and Summer. So I think there will be benefits associated with lessons learned.

Q And you would agree that the Turkey Point project is -- has a lot of differences associated with it compared to Vogtle and Summer; correct?

A Yes. It's a similar technology, but it's a different site.

Q All right. Are you aware of the extensive foundation work that's going to need to be done at the Turkey Point project?

A In general terms.

Q So you wouldn't disagree -- I mean, there's a

chart in evidence that shows there's a five-year period of time to bring in fill to -- to build up the site to 26 or 28 feet.

A I agree that there's a period of time needed to bring in fill. I can't verify that it's five years.

Q Okay. Did those other projects have -- have such extensive foundation work?

A They had extensive foundation work that was different. In fact, the foundation work at Vogtle is one of the areas where they have experienced lessons learned and a benefit for the second unit.

Q Yeah. That was probably not a good question.

Did projects have to raise the elevation 20 feet for the other nuclear units?

A I don't know the answer to that.

MR. MOYLE: Okay. Thank you.

THE WITNESS: My pleasure.

CHAIRMAN GRAHAM: SACE.

MR. CAVROS: Thank you, Chairman. Just a couple of questions.

EXAMINATION

BY MR. CAVROS:

Q Mr. Reed, you were asked a question earlier about generally the cost overruns at -- at Vogtle currently, and you estimated it was about 1.4,

1.5 billion; is that correct?

A Correct.

Q Now were those -- were you referring to the cost overruns for Vogtle as a whole or the cost overruns for Georgia Power?

A For the entire project.

Q Okay. Isn't it true that Georgia Power, just their share, that they've announced that they have -- or at least that their cost overruns are about 1.4 billion?

A If you'll give me just a moment.

Q Sure.

A Yeah. I'll stand corrected on that. The 1.4 is the total for Georgia Power. The overall project is closer to 3.

Q Okay. And --

A And that's spread across multiple updates, not -- that's not the most recent update, but that's spread across multiple changes in price.

Q Okay. And -- and that 3 billion does not include another billion dollars that is in litigation currently; correct?

A Roughly. It's -- my understanding is the amount in dispute is roughly $900 million.

MR. CAVROS: Okay. That's all I have.

CHAIRMAN GRAHAM: Thank you.

City of Miami.

MR. HABER: Thank you, Mr. Chairman.

EXAMINATION

BY MR. HABER:

Q Good -- I think it's still good morning, Mr. Reed.

A Good morning.

Q There is an element of consumer protection to what we're doing today, isn't there?

A Yes.

Q So I would like you to turn to your rebuttal testimony on page 8, and look at lines 18 to 23, and then also on page 9, lines 1 through 2. You describe the testimony of Miami's witness, Mr. Meehan, as recommending that the Commission avoid a situation where an investment such as Turkey Point Units 6 and 7 is initially approved; that gradual investments are made over time; that despite changing circumstances, continued creeping investments are made without a fundamental re-examination; that sunk costs build up; and that ultimately the plant is justifiably completed based on a going-forward cost analysis, but results in much highers costs for consumers than the alternative because sunk costs that are ignored in the economic analysis are reflected in the rate base; is that

correct?

A I think you read that correctly.

Q So continuing on page 9, moving to lines 16 through 19, you responded by stating that the risk that concerns Witness Meehan is greatly diminished through regulatory processes such as the NCRC in which annual reviews allow the utility, Intervenors, and this Commission to systematically evaluate the economics of a project; correct?

A Correct.

Q And NCRC in that sentence refers to this proceeding.

A Correct.

Q Do you remember yesterday when we agreed that NCRC could be described as an approved, assured recovery regulatory process?

A In general terms, yes.

Q Okay. Great. And --

A I think I added the word prudently to that.

Q Sure. Now under the periodic NCRC dockets, the Commission is -- well, essentially they're preapproving and essentially a partner in the investment decisions made by utilities; correct?

A No, I disagree completely with that. I don't think it's partnering in any way, shape, or form.

Q How about we break up the question then. Periodically, so in this instance it's on an annual basis, the Commission preapproves the investment decisions of the utility.

A No, that's not correct. It approves cost recovery for past costs, and it approves a decision to go forward based upon the budgets for future costs. It's not approving future decisions. It's approving past cost recovery and the decision to go -- the overall decision to continue moving forward.

Q And in the overall decision to move forward, when that's made for the forthcoming year, are they then able to line veto individual parts of the decisions made by the utilities on a prudent basis, or is it just they've approved it and now we're doing a true-up after the fact?

A They can eliminate cost on a line item basis for cost recovery when that retroactive -- retrospective review is performed. There isn't a line-by-line approval of a future budget or a line-by-line approval of cost recovery for the future.

Q So how would you compare then what's going on now versus an after-the-fact prudence review?

A They are occurring -- the first -- the phrase after-the-fact prudence review that was used earlier was

describing a review that occurred when the plant went into commercial operation some 13 years from now.

Q In your testimony you referred to after-the-fact prudence reviews as a thing of the past, something that occurred in the 1980s.

A Correct.

Q So it's -- that's not what's -- so that is not what is going on right now.

A Right. What we're doing now is an annual review.

Q So please, please explain for me the difference between what's going on now, which you just described, and an after-the-fact prudence review.

A Yeah. That's a very important difference. You're not waiting 10 or 15 years until a plant is built and then going back and trying to examine decisions that were made 10 or 15 years earlier. You are reviewing each year the prudence of the costs that were incurred in the prior year. You're --

Q So I think I get it now. Let me ask you, you were here for the entire hearing yesterday?

A Yes.

Q Do you remember Mr. Moyle's very colorful metaphor about a frog being slowly boiled?

A I do.

Q With that picture in mind, would you agree that it is important for this Commission to control creeping costs even in an approved, assured recovery process like the nuclear cost recovery?

A I'll make it even broader. It's important for the Commission to control costs and to ensure that only prudently incurred costs are passed through to customers.

Q So you and Mr. Meehan agree that it's important to avoid an unchecked growth in sunk costs.

A Yes. But the problem I had was with his phrase "without a fundamental re-examination that sunk costs have built up."

Q So -- but still you think it's important to make sure that we're not having this unchecked growth in sunk costs.

A I think it's important to not have it be unchecked.

Q Great. So with recovery assured and after-the-fact prudence reviews being a thing of the past, the utility does have less concern with the prudence standard under this process.

A Absolutely not. It has more concern. It goes through a prudence review every year as opposed to one 15 years later.

Q Because there are less opportunities for this Commission or for any Commission that would be going forward under an after-the-fact prudence review to basically nix or go back on item recovery dollars, because you said at that point it had been sort of a -- it could be done a decade later, right, a decade into the project the Commission could change its mind. Today a utility has less incentive to metaphorically put the brakes on a project.

A I'm sorry. I didn't follow that question. Can you --

Q Sure. I'll break it up. So you had previously said that in an after-the-fact prudence review, a utility Commission could disallow recovery potentially a decade after the fact.

A That's correct.

Q So if the utility is no longer looking over its shoulder -- and I'm sorry for the use of colorful language -- but if it's no longer looking over its shoulder thinking, gosh, ten years down the line this recovery might not be allowed, it has less of an incentive to take an off-ramp. Sorry for mixing metaphors.

A No. I think the conventional view is the opposite, that -- and that was what was presented by

Mr. Meehan, that in the case of reviews not occurring until the end of the project, people feel compelled to complete the project at all cost because abandoning the project halfway through would likely lead to no cost recovery. The mechanism in place in Florida and in Georgia and in South Carolina --

Q Hold on second.

A -- is different.

Q I apologize for interrupting you, but it just doesn't sit well. So you're saying that there's less desire for a utility to control costs if there is the threat, you know, somewhere out there in ten years where they might recover nothing or they might not recover a substantial portion of their investment?

A No, I'm not saying that.

Q I'm going to leave this line of questioning because I think we're having a difference of opinion on that part of it.

So let's go into a hypothetical situation where FPL has completed Turkey Point Unit 6 and 7. In that instance, it would be entitled to recover all prudent costs expended to complete both units?

A Yes. Presumably it had already started the recovery of that.

Q And that recovery will come from this cost

recovery process provided -- I'm sorry. Strike that.

That recovery will come through the nuclear cost recovery process for costs prior to construction.

A That's correct.

Q And it also comes from costs during and including construction.

A During and including construction the cost recovery shifts, but there is still some cost recovery during construction.

Q And all of those would include investments from the rate base.

A All of those would include investments from the rate base?

Q The recovery, in essence, would come from ratepayers.

A Would come from ratepayers. That's not the same as including it in rate base.

Q Sorry. So full recovery of all prudent costs is not conditioned on whether or not the benefits claimed in FPL's feasibility analysis is ever achieved?

A I think that's generally correct. There's a recovery of prudently incurred costs. Whether the benefits at the end of the day end up being less or more than projected doesn't enter into the recovery of prudently incurred costs.

Q So just a moment ago you referred to these annual reviews to continually evaluate the economics of this project.

A Yes.

Q But for Units 6 and 7 certain inputs into the feasibility analysis such as carbon forecasts are three year olds; correct?

MR. DONALDSON: That's outside his rebuttal testimony.

MR. HABER: Has this witness reviewed the feasibility analysis?

CHAIRMAN GRAHAM: Can you show us in the rebuttal -- in the rebuttal territory -- excuse me -- testimony where this is?

MR. DONALDSON: You can ask Dr. Sim that, if you want.

MR. HABER: I appreciate that. I'm just reviewing his testimony.

CHAIRMAN GRAHAM: Okay.

BY MR. HABER:

Q Mr. Reed, are you broadly familiar with the inputs into FPL's 2015 feasibility analysis?

A Broadly.

Q Are you aware of the sorts of inputs that are put into there such as environmental compliance costs?

A I looked at them.

MR. DONALDSON: Again, this is outside of his rebuttal. He hasn't talked about any of this in his rebuttal testimony.

CHAIRMAN GRAHAM: Sir, if you can show us where this is in his rebuttal.

MR. HABER: No. I'll conclude this line of testimony -- this questioning. No further questions. Thank you.

CHAIRMAN GRAHAM: Thank you very much.

Staff.

MS. MAPP: We have no questions for this witness.

CHAIRMAN GRAHAM: Commissioners?

Commissioner Brown.

COMMISSIONER BROWN: Thanks. I just have a follow-up question to the line of questioning that Mr. Moyle was asking you regarding target contracts or target price.

You said that it's a symmetrical alignment above and below, and then you offered that there would be incentive mechanisms in place to achieve that target. What type of incentive mechanisms have you seen?

THE WITNESS: I have seen mechanisms -- again, this is speaking to the use of target price in a

regulatory context as opposed to a contractual context.

I have seen mechanisms that have forms of cost sharing or different levels of return associated with bandwidths above and below the cost target. That's the most common approach is to have differential levels of cost recovery or return.

COMMISSIONER BROWN: Cost sharing, can you elaborate a little bit more on that?

THE WITNESS: Just as you would expect, that for an amount above or below the target -- let's take the example that perhaps is less common for people to see at least, which is where the cost is below the target, the utility would be able to earn a return on it of capital for its actual cost plus a portion above its actual cost. So that differential between the actual cost and the target price would still be basically provided to stockholders of the company as incentive for having come in below the target level.

COMMISSIONER BROWN: Okay. Thank you.

CHAIRMAN GRAHAM: I have a question for you. I -- the City of Miami was going down this path and we switched gears, but I guess I'm curious to see what the answer is.

You were talking about the prudence review and the way it was back in the 1980s. And let me put it --

I guess, let me tee up an example. If we're looking at a project that takes ten years to complete and you have completed year six and you've got four years left, what you're saying, at least what I thought you were saying was the utility is more -- the chances are the utility is going to move forward to complete that project so they can get some reimbursement to the money spent, compared to the way things are done now, if they're getting the reimbursement as they go through, they're already getting reimbursed for year six, and there's -- it's easier for them to stop because they already have that money reimbursed compared to back the way it was. It was an all-or-nothing sort of thing.

THE WITNESS: That's correct. The prior mechanism provided for typically little or no recovery for canceled project costs, so it was more of an all-or-nothing proposition. You either got it into commercial operation or your recovery was virtually nothing. So that, in many cases, provided a very strong impetus to complete the project and at least get some recovery, even though you may face a disallowance at year ten in your example.

CHAIRMAN GRAHAM: Okay. That's where -- that's where I thought you were going. But I guess the question was never asked, and I was just kind of

curious.

Redirect.

MR. DONALDSON: Yes, just a few questions.

EXAMINATION

BY MR. DONALDSON:

Q Mr. Reed, FPL is not proposing to actually begin construction of Turkey Point 6 and 7 tomorrow; is that correct?

A That's correct.

Q And they're proposing at this time to continue to obtain the combined operating license; is that also correct?

A Yes.

Q And the prudence that is being done for the costs that are incurred in this particular docket is seeking to obtain that license; is that right?

A It's the costs incurred in 2014 for all of the activities that are associated with securing the license.

Q Okay. Will FPL continue to learn from the experiences that could be gained from the industry in monitoring those similar situated projects?

A Yes. I think there will be substantial additional information gained and benefits from it between now and when construction actually would begin.

Q Now I believe that OPC's counsel was asking you questions about lessons learned on contractors that may not necessarily be the contractor on Turkey Point 6 and 7, and I think that I heard you say that there still would be lessons learned from those other types of contractors. Can you elaborate a little bit on that?

A Yes. First of all, the entire industry is watching the first four units and what's happening with construction techniques, with fabrication, with regulatory issues that arise. And, again, it's a mistake to think of those lessons as somehow being proprietary to one company or one contractor. They are the product of thousands of workers on the site and many, many contractors and subcontractors that are involved.

There would be a high degree of carryover of those lessons learned even if you were to use a prime contractor other than CBI. And, again, the company is gaining those lessons learned right now by using the assessments that it's undertaken with CBI to transfer that knowledge from Vogtle to the Turkey Point site.

Q And some of those lessons learned, that is not only in the construction of the plant, but is also in the design of the plant; is that correct?

A It's in the design; it's in working with the

NRC as part of that design and construction process; and, of course, it's also with regard to putting it in place at a site.

Q And the design of Turkey Point 6 and 7, are you aware if that is actually completed?

A The detailed design is not completed, no.

Q Okay. All right. So there will be some additional work that would be done in order to make sure that you have an adequate design in order to proceed with the project?

A Yes. There is a lot of additional design work to be done.

Q One of the other questions I wanted to ask you was the cost overruns at Vogtle. Were you aware of that line of questioning, sir?

A Yes.

Q Okay. Were you aware that yesterday the Georgia regulators actually approved some of those cost overruns?

A They approved, yes, as I recall, about 140 million of additional cost recovery yesterday.

MR. DONALDSON: Okay. Give me one second. No further.

CHAIRMAN GRAHAM: Okay. Exhibits.

MR. DONALDSON: This witness did not have any

exhibits to his rebuttal testimony.

CHAIRMAN GRAHAM: OPC?

MR. SAYLER: We had Exhibits 82 and 83.

CHAIRMAN GRAHAM: Any objections?

MR. DONALDSON: No objections.

CHAIRMAN GRAHAM: Okay. We'll enter Exhibits 82 and 83 into the record.

(Exhibits 82 and 83 admitted into the record.)

Would you like to excuse this witness?

MS. CANO: Yes.

CHAIRMAN GRAHAM: Okay.

MR. DONALDSON: Yes. I'm sorry.

CHAIRMAN GRAHAM: We will excuse this witness. Mr. Reed, thank you very much. Please travel safe.

Okay. It looks like, by the clock in the back of the room, it's 20 after 11:00. Let's take a ten-minute break. So by that clock, at 11:30 we will take Witness Sim.

(Recess taken.)

CHAIRMAN GRAHAM: Okay. Let's grab seats. From the best of my vision, you can see that clock back there says 11:30, and I have a quorum. So, Florida Power & Light.

MS. CANO: FPL calls its final witness, Dr. Steven Sim.

Whereupon,

STEVEN R. SIM

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

BY MS. CANO:

Q Were you sworn yesterday, Dr. Sim?

A Yes.

Q Would you please state your name and business address for the record?

A Steven Sim, 9250 West Flagler Street, Miami, Florida.

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

A By Florida Power & Light Company as the Senior Manager in the Resource Assessment and Planning Department.

Q Did you adopt the 29 pages of prefiled direct testimony of Richard Brown filed in this proceeding on May 1st, 2015?

A Yes.

Q And that testimony included Exhibits ROB-1 through ROB-6?

A Yes.

Q Did you also prepare and cause to be filed 29

pages of prefiled rebuttal testimony in this proceeding on July 7th, 2015?

A Yes.

Q And you also provided errata to your testimony dated July 31st, 2015?

A Yes.

Q Do you have any changes or revisions to your prefiled direct or rebuttal testimony?

A Yes. We have substituted a new page for ROB-6 in direct testimony. These are relatively small changes and do not affect the number of scenarios that were cost-effective in that particular analysis, which was the 60-year analysis.

MS. CANO: And I'd just point out to the Commissioners that this revised exhibit was distributed to parties yesterday, and it was just distributed to the Commissioners before Dr. Sim took the stand. And at this time I'd like to pre-mark that revised exhibit, and I believe we're up to No. 84.

CHAIRMAN GRAHAM: 84 is correct.

(Exhibit 84 marked for identification.)

BY MS. CANO:

Q Okay. Dr. Sim, if I were to ask you the same questions contained in your prefiled testimony along with the errata, would your answers be the same?

A Yes.

MS. CANO: Chairman Graham, I ask that the prefiled direct testimony, rebuttal testimony, and errata sheet of Steven Sim be inserted into the record as though read.

CHAIRMAN GRAHAM: We will enter Dr. Sim's prefiled direct and re -- let me back up -- the direct is Brown's direct, and Sim's rebuttal into the record as though read.

MS. CANO: Correct. Thank you.

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In re: Nuclear Cost Recovery Clause	DOCKET NO. 150009-EI FILED: July 31, 2015

REVISED ERRATA SHEET OF STEVEN SIM

May 1, 2015 Exhibits

EXHIBIT #	PAGE #	LINE #	
ROB-2	Page 4 of 4	Line 8	Change "$254" to "$255" and "$26" to "$27"

July 3, 2015 Rebuttal Testimony

PAGE #	LINE #	
Page 3	Line 4	Change: "...do…" to "…does…"
Page 6	Line 21	Insert: "total" in front of "nominal"
Page 8	Line 3	Change: "…is essentially unchanged…" to "…is still based on ICF's projections, but contains two modifications."
Page 8	Line 4	Change: "only exception…" to "the first modification…"
Page 8	Line 9	Add: "The second modification is to multiply the ENV II values by 0.80 to create the ENV I forecast, then multiply the ENV II values by 1.20 to create the ENV III forecast."
Page 10	Line 14	Insert after "2020" the following: "and made the other previously described modification to develop the ENV I and ENV III forecasts."
Page 15	Line 13	Insert: "6 & 7" after "Turkey Point"
Page 19	Line 15	Insert: "feasibility" after "economic"
Page 27	Line 7	Change: "many" to "any"

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF RICHARD O. BROWN

DOCKET NO. 150009-EI

May 1, 2015

Q. Please state your name and business addresses.

A. My name is Richard O. Brown, and my business address is 9250 West Flagler Street, Miami, Florida 33174.

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

A. I am employed by Florida Power & Light Company (FPL) as a Principal Engineer in the Resource Assessment & Planning Department.

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

A. My duties and responsibilities include performing a variety of analyses associated with determining the timing and magnitude of resources needed for FPL to maintain reliable electric service to its customers, then conducting economic and non-economic analyses to determine what the integrated resource plan is that will best meet those resource needs.

Q. Please describe your education and professional experience.

A. I graduated from the University of Miami (Florida) with a Bachelor of Science degree in Mechanical Engineering in 1999. I have worked on various projects such as demand side management (DSM) programs, new gas-fired generation alternatives, upgrades to FPL's existing nuclear power plants (FPL's Extended

Power Uprate), and various analyses involving system reliability issues. Most relevant to this docket, I have performed the economic analysis portion of the annual Turkey Point 6 & 7 feasibility analyses since 2011.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the results of FPL's 2015 economic analyses for the new FPL nuclear units, Turkey Point 6 & 7, which analyzed 14 different future fuel cost and environmental compliance cost scenarios. Non-economic analyses of Turkey Point 6 & 7 were also performed. The results of these analyses support the continued development of Turkey Point 6 & 7.

I briefly discuss FPL's portfolio approach in resource planning and the role of additional nuclear energy in that portfolio approach. I discuss the assumptions used in the 2015 feasibility analyses. I also present the results of additional analyses that further quantify the projected benefits of the Turkey Point 6 & 7 project.

The 2015 feasibility analyses of the Turkey Point 6 & 7 project are presented to satisfy the requirement of Subsection 6(c)5 of the Florida Administrative Code Rule 25-6.0423, Nuclear Power Plant Cost Recovery, which states *"Along with the filings required by this paragraph, each year a utility shall submit for Commission review and approval a detailed analysis of the long-term feasibility of completing the power plant."* Other feasibility-related

topics for the Turkey Point 6 & 7 project are discussed by FPL Witness Scroggs.

Q. Please summarize your testimony.

A. In 2015, FPL performed new feasibility analyses using updated assumptions and forecasts. Each year's analysis is a snapshot of various assumptions such as load forecast, fuel cost forecast, environmental compliance cost forecast, operating life of Turkey Point 6 & 7, etc. The feasibility analyses utilized 3 fuel cost forecasts, 3 environmental compliance cost forecasts, and two different operating lives for the proposed units. In total, 14 scenarios were analyzed. The results of FPL's 2015 feasibility analyses indicate that completing the project is projected to be clearly economic for FPL's customers in 8 of these 14 scenarios because the projected breakeven capital costs for the two new nuclear units were above the high end of FPL's non-binding capital cost estimate range. In each of the remaining 6 scenarios, the breakeven capital costs fell within the range of the non-binding capital cost estimate.

The results of the 2015 feasibility analyses are summarized in Exhibit ROB-1. This exhibit presents a number of results from FPL's 2015 analyses of the Turkey Point 6 & 7 project including, but not limited to: (i) the number of future fuel cost and environmental compliance cost scenarios in which the project is projected to be clearly economic; (ii) projected fuel cost savings for FPL's customers; (iii) reduced reliance upon fossil fuels (i.e., fuel diversity);

and (iv) projected carbon dioxide (CO_2) reductions. These results, and results of other analyses and calculations, are discussed later in my testimony.

These results, whether examined individually or as a whole, present a strong case for continuing the Turkey Point 6 & 7 project. In all scenarios, the proposed new units greatly reduce fuel costs and reduce emissions. For example, based on the Medium Fuel Cost forecast, customers are projected to save at least $47 billion (nominal) in fuel costs over the life of Turkey Point 6 & 7. Additionally, the project will produce energy that otherwise would have required the consumption of substantial amounts of natural gas or millions of barrels of oil annually, and will reduce system CO_2 emissions by millions of tons. In short, completing the Turkey Point 6 & 7 project continues to be projected as a valuable resource addition for FPL's customers as part of FPL's portfolio approach to resource planning.

Q. Would you please briefly explain what you mean by FPL's portfolio approach to resource planning and what part additional nuclear capacity such as Turkey Point 6 & 7 plays in that portfolio approach?

A. Yes. As with all economic analyses, FPL's 2015 economic analyses of the Turkey Point 6 & 7 project provides a "snapshot" of the projected customer benefits associated with Turkey Point 6 & 7 based on current project assumptions, forecasts of numerous costs, and resource planning assumptions. The 2015 feasibility analyses examine potential future scenarios that result from combining various fossil fuel price forecasts, environmental compliance

cost forecasts, and operating lives. The actual economic performance of FPL's system, including the impacts of future fuel prices, etc., cannot be known until after the fact. That is why FPL examines the projected impacts of certain resource additions, such as new nuclear capacity, over a wide range of potential future scenarios.

The inability to be able to predict with confidence future fuel and environmental compliance costs is a key reason why FPL not only performs these analyses based on multiple forecasts and scenarios, but also why FPL strives for diversity in regard to system resources and fuels in its portfolio approach to resource planning. Because the price of nuclear fuel is unrelated to fossil fuel prices, and because nuclear power plants produce no emissions such as sulfur dioxide (SO_2), nitrogen oxides (NO_x), or carbon dioxide (CO_2) in the process of generating electricity, additional nuclear capacity is a great hedge against fossil fuel price volatility and increases in environmental compliance costs. Diversification also improves system reliability.

The current low cost of natural gas is a great thing for FPL's customers because it allows FPL to produce electricity with relatively low fuel costs. The current forecasted low cost of natural gas is also a primary reason that highly efficient gas-fired combined cycle (CC) units have been determined to be the most economic type of fossil fueled generation resource for FPL's system when FPL has needed to add new generation resources. As a result of

these factors, FPL has been increasing its use of natural gas to benefit its customers and now supplies approximately 2/3 of the total electricity it provides to customers by burning natural gas.

However, this increased use of natural gas also represents a growing reliance on natural gas. In turn, this growing reliance on natural gas results in increased risk in regard to potential future changes in natural gas cost and availability.

Consequently, FPL's resource planning takes a balanced portfolio approach to maximize the benefits to customers of using currently low cost natural gas while also taking steps to minimize the risks inherent in having a high reliance on natural gas. Among the steps being taken to minimize this risk are: (i) utilizing high-efficiency CC generating units, which burn natural gas as efficiently as possible, when FPL's resource needs dictate that new generating units should be added and a CC unit is projected to be the cost effective option; (ii) enhancing the availability of natural gas by the construction of a third natural gas pipeline into Florida (which may also put downward pressure on delivered natural gas prices); (iii) maintaining the ability to continue to burn fuel oil in existing steam generating units by installing electrostatic precipitators at these units; (iv) diversifying FPL's fuel mix by adding renewable energy in specific cases in which renewables are cost-competitive

and (v) significantly diversifying FPL's fuel mix by adding additional nuclear capacity through the Turkey Point 6 & 7 project.

Additional nuclear capacity is an important aspect of this balanced portfolio approach because it is the only resource option available that can provide baseload, firm capacity at even lower fuel costs than natural gas and which does so using no fossil fuels and producing zero air emissions. Because of these attributes, nuclear capacity serves as an excellent hedge against increasing natural gas costs and increasing environmental compliance costs as previously mentioned. These hedge aspects of nuclear capacity are especially valuable in a balanced portfolio approach to serving FPL's customers both today and in the future.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following 6 exhibits:

- Exhibit ROB-1: Summary of Results from FPL's 2015 Feasibility Analyses of the Turkey Point 6 & 7 Project (Plus Results from Additional Analyses);
- Exhibit ROB-2: Comparison of Key Assumptions Utilized in the 2014 and 2015 Feasibility Analyses of the Turkey Point 6 & 7 Project;
- Exhibit ROB-3: Projection of FPL's Resource Needs Through 2030;
- Exhibit ROB-4: The Two Resource Plans Utilized in FPL's 2015 Feasibility Analyses of the Turkey Point 6 & 7 Project;

- Exhibit ROB-5: 2015 Feasibility Analyses Results for the Turkey Point 6 & 7 Project: Case #1 Analysis – 40-Year Operating Life; Total Costs, Total Cost Differentials, and Breakeven Costs for All Fuel and Environmental Compliance Cost Scenarios in 2015$ (millions, CPVRR, 2015-2068); and,
- Exhibit ROB-6: 2015 Feasibility Analyses Results for the Turkey Point 6 & 7 Project: Case #2 Analysis – 60-Year Operating Life; Total Costs, Total Cost Differentials, and Breakeven Costs for All Fuel and Environmental Compliance Cost Scenarios in 2015$ (millions, CPVRR, 2015-2088).

I. 2015 Feasibility Analyses – Analytical Approach

Q. Please provide an overview of the basic analytical approach used for evaluating the Turkey Point 6 & 7 project.

A. The basic analytical approach in the feasibility analyses of Turkey Point 6 & 7 is to compare competing resource plans. FPL utilizes resource plans in its analyses in order to ensure that all relevant impacts to the FPL system are accounted for.

The analysis of each resource plan is a complex undertaking. For each resource plan, annual projections of system fuel costs and emission profiles are developed for various scenarios of fuel cost/environmental compliance

costs using a sophisticated production costing model. This model, the UPLAN model, simulates the FPL system and dispatches all of the generating units on an annual, monthly, and hour-by-hour basis. The resulting fuel cost and emission profile information is then combined with projected annual capital costs, plus other fixed and variable costs for each resource plan. In this way, a comprehensive set of projected annual costs, for each year of the analysis, is developed for each resource plan.

One resource plan includes the Turkey Point 6 & 7 units. The other resource plan includes an alternate resource option that competes with these two nuclear units. The competing alternate resource option is a new highly fuel-efficient CC generating capacity similar to the CC capacity that has recently been installed at FPL's Cape Canaveral and Riviera Beach sites, and which is currently being installed at FPL's Port Everglades site, through FPL's modernization projects at these sites.

The competing resource plans are then analyzed over a multi-year period. This approach allows FPL's analyses to account for long-term economic impacts of the resource options being evaluated. FPL's 2015 feasibility analyses address these economic impacts. In addition, my testimony provides a discussion of three non-economic impacts to the FPL system: reduction of fossil fuel usage, increased system fuel diversity, and system emission reductions, which will result from the Turkey Point 6 & 7 project.

Q. Has the Florida Public Service Commission (FPSC) provided guidance regarding what is required in the feasibility analyses?

A. Yes. The FPSC first provided guidance in its affirmative determination of need order for Turkey Point 6 & 7 (Order No. PSC-08-0237-FOF-EI, page 29), when it stated:

> *"FPL shall provide a long-term feasibility analysis as part of its annual cost recovery process which, in this case, shall also include updated fuel costs, environmental forecasts, break-even costs, and capital cost estimates. In addition, FPL should account for sunk costs. Providing this information on an annual basis will allow us to monitor the feasibility regarding the continued construction of Turkey Point 6 and 7."*

In the FPSC's 2009 Nuclear Cost Recovery (NCR) order (Order No. PSC-09-0783-FOF-EI, page 14), the FPSC quoted its need determination order and reiterated that these elements are necessary to satisfy the NCR Rule.

This guidance from the FPSC distinguishes "sunk costs" from "updated capital cost estimates" in regard to feasibility analyses of nuclear projects. Consequently, FPL has removed sunk costs in its calculation of breakeven costs for the feasibility analyses of Turkey Point 6 & 7. FPL's approach to sunk costs complies with the above mentioned Rule, which directs FPL to evaluate "completing" the project. FPL's approach to sunk costs also follows

the guidance provided by the FPSC, and was expressly approved for the Turkey Point 6 & 7 analyses by the FPSC in its 2011 NCR order (Order No. PSC-11-0547-FOF-EI, pages 17-18 and 38).

Q. Was the analytical approach used in FPL's 2015 feasibility analyses of Turkey Point 6 & 7 similar to the approach used in the Determination of Need filing for this project, and in the feasibility analyses of this project that were presented in previous NCR filings?

A. Yes. The analytical approach that was used in the 2015 feasibility analyses for the Turkey Point 6 & 7 project is very similar to the approach used in the 2007 Determination of Need filing and in the annual feasibility analyses presented in the 2008 through 2014 NCR filings.

Q. Please describe the economic perspective used in the analytical approach for the Turkey Point 6 & 7 project.

A. This perspective is the calculation of breakeven capital costs, in terms of both cumulative present value of revenue requirements (CPVRR) and overnight construction costs in $/kW, for the new nuclear units. This same perspective was utilized in the 2007 Determination of Need filing, and in the 2008 through 2014 NCR filings, for the Turkey Point 6 & 7 project. In later years, as more information becomes available regarding the cost and other aspects of the new nuclear units, another perspective may emerge as more appropriate.

II. 2015 Feasibility Analyses – Updated Assumptions

Q. Do FPL's 2015 feasibility analyses utilize updated assumptions for the specific information referred to in the previously mentioned FPSC Order?

A. Yes. FPL typically seeks to utilize a set of updated assumptions in its resource planning work. FPL updated these assumptions in late 2014/early 2015 and is using them in its 2015 resource planning work including the nuclear analyses presented in this docket.

Five informational items were listed in Order No. PSC-08-0237 that should be updated and included in FPL's annual long-term feasibility analyses of Turkey Point 6 & 7. These five items are:

1) fuel forecasts;
2) environmental compliance cost forecasts;
3) breakeven costs;
4) capital cost estimates; and,
5) sunk costs.

FPL's 2015 feasibility analyses for the Turkey Point 6 & 7 project included current assumptions for items 1), 2), 4), and 5). The remaining item, item 3) breakeven costs, is a result of the analyses (as opposed to an assumption). The results of FPL's 2015 feasibility analyses present updated breakeven costs

for the Turkey Point 6 & 7 project in terms of CPVRR costs and in terms of overnight construction costs in $/kW.

Q. Do FPL's feasibility analyses include FPL's updated assumptions for information other than these 5 items?

A. Yes. FPL also updated a number of other assumptions in late 2014/early 2015 in preparation for all of its 2015 resource planning work. Consequently, these other updated assumptions are also included in FPL's 2015 feasibility analyses of the Turkey Point 6 & 7 project. A partial listing of these other assumptions include: FPL's load forecast and cost and performance assumptions for new CC capacity.

Q. Please discuss any changes in the forecasted values for fuel costs and environmental compliance costs between the forecasts utilized in the 2015 feasibility analyses and those that were used in the 2014 feasibility analyses.

A. Exhibit ROB-2 provides these comparisons. Exhibit ROB-2, Page 1 of 4, provides 2014 and 2015 forecasted Medium Fuel Cost values for selected years for natural gas, oil, and nuclear fuel costs. As shown on this page, the 2015 Medium Fuel Cost forecast for natural gas is lower than the respective 2014 forecast throughout all years. The 2015 forecast for 1% sulfur oil is higher than the respective 2014 forecast throughout all years. In regard to forecasted nuclear fuel costs, the 2015 forecasted prices are slightly lower in most years than the 2014 forecasted prices.

Exhibit ROB-2, Page 2 of 4, presents similar 2014 and 2015 comparative information for forecasted Env II (i.e., mid-band) environmental compliance costs for three types of air emissions: SO_2, NO_x, and CO_2. As shown on this page, the SO_2 and NO_x air emissions have been updated from what was assumed in FPL's 2014 feasibility analyses, based on the most current market and price projections. The cost of CO_2 air emissions has also been updated. The Env II CO_2 forecast is essentially the same as the previously used forecast in the 2014 feasibility analysis, with the exception that CO_2 prices are now assumed to start in 2020 instead of 2023, consistent with EPA's proposed Clean Power Plan (CPP). The low and high band forecasts (Env I and Env III, respectively) of CO_2 prices have also been updated accordingly.

Q. Are any of the fuel cost forecasts or environmental compliance cost forecasts considered the "most likely" forecast?

A. FPL does not consider any fuel cost forecast or environmental compliance cost forecast as the "most likely" cost forecast. FPL's scenario approach is designed to provide a range of possible future fuel and environmental compliance costs.

Q. Did FPL consider the EPA's proposed CPP regulations in its 2015 feasibility analyses?

A. Yes. However, at the time the feasibility analyses were performed only proposed rules existed. Final rules are due later this year and Florida's state implementation plan is not scheduled to be complete until 2016. Due to this uncertainty, FPL decided to continue using its previous CO_2 cost forecast with

costs advanced to begin in 2020, which coincides with the year of the first CO_2 emission rate target in the proposed CPP regulation.

Q. Please discuss FPL's 2015 load forecast and how it compares to FPL's 2014 load forecast.

A. Exhibit ROB-2, Page 3 of 4, presents the 2014 and 2015 summer peak load forecasts. As shown in Column (3) on this page, the 2015 forecast of summer peak load is generally lower than the 2014 forecast. In addition, this page also provides a projection of the annual and cumulative growth in summer peak loads associated with the 2015 peak load forecast. As shown in column (5) of this exhibit, FPL projects a cumulative growth in summer peak load of approximately 5,166 MW by 2027 which increases to 7,041 MW by the year 2030.

Q. Based on this projected growth in summer peak load, what is FPL's projected need for new resources?

A. FPL's projected need for new resources, assuming that the resource need is met by new generating capacity, is presented in Exhibit ROB-3. This exhibit shows that, without the incremental capacity from Turkey Point 6 & 7 and with no other generating additions from 2027- on, FPL has a need for new resources starting in 2027 and this need increases every year thereafter. As shown in Column 12, the projected resource need in 2027 is 536 MW of new generating capacity and this projected resource need increases to 2,598 MW by 2030.

Q. What other assumptions changed from the 2014 analyses to the 2015 analyses?

A. Exhibit ROB-2, Page 4 of 4, presents the 2014 and 2015 projections for 9 other assumptions that were utilized in the feasibility analyses of the Turkey Point 6 & 7 project.

Q. Please discuss the first four assumptions.

A. These four assumptions are:

1) financial/economic assumptions;
2) the projected capital cost of competing CC capacity;
3) the projected heat rate of competing CC capacity; and,
4) the projected cost of firm gas transportation.

FPL's financial/economic assumptions used in the 2015 feasibility analyses have changed only in regard to the cost of debt and the discount rate from those used in the 2014 feasibility analyses. The financial/economic assumptions include the following: return on equity (ROE) is 10.5%, the cost of debt is 5.05%, the debt-to-equity ratio is 40.38%/59.62%, and the associated discount rate is 7.51%.

The remaining three assumptions involve the costs and performance of the competing new CC capacity used in the feasibility analyses. FPL's current projected (generator only) capital cost of the un-sited CC capacity is $842/kW in 2027$. The current projected heat rate of this CC capacity is 6,307

BTU/kWh. The projected firm gas transportation cost is $1.37/mmBTU for the year 2027.

Q. Please discuss the remaining five assumptions.

A. These five assumptions are:

5) assumed in-service dates for Turkey Point 6 & 7;

6) assumed operating lives of Turkey Point 6 & 7;

7) non-binding capital cost estimate for the new nuclear units;

8) previously spent capital costs that are excluded from the 2015 feasibility analyses; and,

9) the cumulative annual capital expenditure percentages for Turkey Point 6 & 7.

The first of these five assumptions, the in-service dates of Turkey Point 6 & 7 utilized in the 2015 feasibility analyses are changed from 2022 and 2023 to 2027 and 2028. These dates represent the earliest practical deployment date for Turkey Point 6 & 7. FPL Witness Scroggs' direct testimony filed on March 1, 2015 addressed these new dates for Turkey Point 6 & 7.

The second of these assumptions is the assumed operating lives of the two new nuclear units. In its 2015 feasibility analyses, FPL again is using two operating life assumptions: a 40-year operating life and a 60-year operating life.

Two of FPL's four existing nuclear units, Turkey Point 3 & 4, have been operating for more than 40 years. Furthermore, all four of FPL's nuclear units have received a license extension from the Nuclear Regulatory Commission (NRC) enabling each unit to operate for a total of 60 years. In addition, FPL's parent company, NextEra Energy (NEE), owns and operates two other nuclear units, Point Beach 1 & 2, that have operated for more than 40 years. These two nuclear units, plus a third nuclear unit owned and operated by NEE (Duane Arnold), have also been granted a license extension from the NRC enabling each unit to operate for a total of 60 years. Therefore, FPL believes that a 40-year operating life assumption for Turkey Point 6 & 7 is increasingly conservative and therefore also uses an assumption of a 60-year operating life in the feasibility analyses. This is the same approach FPL utilized in last year's feasibility analyses.

The third of these assumptions is the non-binding cost estimate for constructing Turkey Point 6 & 7. The range of costs used in the 2015 feasibility analyses is $3,844/kW to $5,589/kW in 2015$. This reflects an updating of the projected cost estimate range. FPL Witness Scroggs' direct testimony discusses the updating of this assumption.

The fourth of these assumptions is the previously spent capital costs that are excluded in the 2015 feasibility analysis. In order to account for "sunk" capital costs for the Turkey Point 6 & 7 project, FPL is excluding

approximately $254 million of sunk costs that have already been spent through December 31, 2014. FPL Witness Grant-Keene provides the sunk cost value of the Turkey Point 6 & 7 project in her direct testimony.

The fifth assumption is the cumulative annual capital expenditure percentages for the construction of Turkey Point 6 & 7. These annual percentages represent the cumulative of the total nominal cost of the two units. The annual cumulative expenditure percentage values used in the 2015 feasibility analyses are different from the values used in the 2014 feasibility analyses due to the change of the in-service dates of the units.

Q. It is clear that a number of changes in assumptions were made between those used in the 2014 feasibility analyses and those used in the 2015 feasibility analyses. Were all of these assumption changes favorable to the projected economics of the Turkey Point 6 & 7 project?

A. No. Assumption changes are made on a regular basis by FPL in order to utilize the best and most current information available in its resource planning analyses. Typically, updates to some assumptions are favorable, and changes to other assumptions are unfavorable, for any specific resource option or project.

This was indeed the case for the Turkey Point 6 & 7 project in regard to the changes in assumptions from those used in the 2014 feasibility analyses to those used in the 2015 feasibility analyses. For the Turkey Point 6 & 7

project, some updated assumptions, such as the lower natural gas cost forecasts, are unfavorable for the project (although favorable overall for FPL's customers).

All of FPL's updated assumptions, whether favorable or unfavorable for the Turkey Point 6 & 7 project, were included in FPL's 2015 feasibility analyses of the project.

III. Analysis of the Turkey Point 6 & 7 Project

Q. What resource plans were used to perform the 2015 feasibility analyses of Turkey Point 6 & 7?

A. The resource plans that were utilized in the 2015 feasibility analyses of Turkey Point 6 & 7 are presented in Exhibit ROB-4. One resource plan with Turkey Point 6 & 7, and another resource plan without Turkey Point 6 & 7, are presented in this exhibit. As shown in this exhibit, the two resource plans are identical through the year 2026. The resource plans differ starting in 2027. The Resource Plan with Turkey Point 6 & 7 adds the two 1,100 MW nuclear units, one in 2027 and one in 2028. The Resource Plan without Turkey Point 6 & 7 adds two 1,317 MW CC units, one in 2027 and one in 2029. Both resource plans then add the necessary amount of capacity through the rest of the analysis periods to meet FPL's reliability criteria. The timing of these later capacity additions varies between the two resource plans.

Q. What were the results of the 2015 feasibility analyses for Turkey Point 6 & 7?

A. The results of the 2015 feasibility analyses for Turkey Point 6 & 7 are presented in Exhibits ROB-5 and ROB-6. Exhibit ROB-5 presents the results for Case #1 that assumes a 40-year operating life. Exhibit ROB-6 presents the results for Case #2 that assumes a 60-year operating life.

The calculated breakeven nuclear capital costs in overnight construction costs in terms of $/kW in 2015$ are presented in Column (6) of these exhibits. The results in Column (6), when compared to FPL's non-binding estimated range of capital costs in 2015$ of $3,844/kW to $5,589/kW, show that the projected breakeven capital costs for Turkey Point 6 & 7 are above this range in 2 of 7 scenarios in Exhibit ROB-5 (Case #1) and in 6 of 7 scenarios in Exhibit ROB-6 (Case # 2). Thus Turkey Point 6 & 7 is projected to clearly be the economic choice in 8, or more than half, of the 14 scenarios. In the remaining 6 scenarios, the breakeven cost is within the non-binding cost estimate range, which indicates that this project may be economic in each of these scenarios.

Q. In addition to the results of these economic analyses, did FPL's 2015 feasibility analyses identify any additional advantages for FPL's customers that are projected to be derived from the Turkey Point 6 & 7 project?

A. Yes. There are three other advantages to FPL's customers that are projected to result from the Turkey Point 6 & 7 project:

1) system fuel savings;
2) system fuel diversity; and,
3) system CO_2 emission reductions.

I use the results from the 2015 feasibility analyses for the Case #1 Medium Fuel Cost, Env II scenario to discuss these three advantages. Comparable results also occur using the same fuel cost and environmental compliance cost forecast scenario in the Case #2 analyses.

The CPVRR values for the system fuel savings for each scenario of fuel cost and environmental compliance cost is accounted for in the respective total CPVRR savings value for that scenario. As shown in Exhibit ROB-5, these CPVRR savings values represent CPVRR breakeven capital costs. In addition, these CPVRR breakeven costs are translated into overnight construction $/kW breakeven costs in 2015$. Consequently, the system fuel savings have already been accounted for in the breakeven cost values. However, it is informative to also look at the annual nominal fuel savings projections for Turkey Point 6 & 7.

In 2029, the first year in which both of the new nuclear units are in service for a full year, Turkey Point 6 & 7 are projected to save FPL's customers approximately $570 million (nominal) in fuel costs for that year.

Q. What are the projected fuel savings over the operating life of the Turkey Point 6 & 7 units and how do those projections compare with FPL's current total system annual fuel cost?

A. The total fuel savings for FPL's customers is projected to be approximately $47 billion (nominal) assuming a 40 year life of the Turkey Point 6 & 7 units. FPL's 2014 annual total system fuel cost was approximately $3.5 billion. Therefore, the projected fuel savings over the life of the Turkey Point 6 & 7 units is equivalent to serving FPL's more than 4.7 million customer accounts (representing approximately 9 million people) for approximately 13 years at zero fuel costs, based on last year's annual fuel costs.

Q. Please discuss the projected fuel diversity benefits for Turkey Point 6 & 7.

A. Regarding system fuel diversity, in 2029 the relative percentages of the total energy supplied by FPL that is projected to be generated by natural gas and nuclear, without Turkey Point 6 & 7, are approximately 75% and 20%, respectively. With Turkey Point 6 & 7, these projected percentages change to approximately 62% for natural gas and 33% for nuclear. Thus FPL is projected to be far less reliant on natural gas, and more reliant upon nuclear energy, by approximately 13% each.

These percentage changes in system fuel use for a system the size of FPL's are significant. This can be demonstrated by looking at the projected amount of energy that will be supplied by the two new nuclear units in 2029. That

amount of energy is projected to be approximately 18.4 million MWh. The current forecasted average annual energy use per residential customer in 2029 is 14,706 kWh. Therefore, the projected output from Turkey Point 6 & 7 in 2029 will serve the equivalent of the total annual electrical usage of approximately 1,251,000 residential customers in that year.

The improvement in system fuel diversity from Turkey Point 6 & 7 can also be demonstrated, for illustrative purposes, by looking at the amount of natural gas or oil that would have been needed to produce this same number of approximately 18.4 million MWh in 2029 if that energy had been produced by a conventional steam generating unit with a heat rate of 10,000 BTU/kWh. In such a case, Turkey Point 6 & 7 can be thought of as saving approximately 184,000,000 mmBTU of natural gas (if all of this energy had been produced by natural gas), or approximately 28,800,000 barrels of oil (if all of this energy had been produced by oil), in 2029.

Q. In regard to fuel diversity, is there another aspect of FPL's projected fuel mix that should be kept in mind when considering the addition of Turkey Point 6 & 7?

A. Yes. FPL's fuel mix currently consists of coal-based energy contributions from several sources including FPL's partial ownership of coal units at the Scherer and St. John's sites, plus coal-based power purchase agreements (PPAs) with Cedar Bay, Indiantown, and St. John's. A substantial amount of

this coal-based capacity and energy is projected to end between 2016 and 2025.

FPL anticipates terminating its existing power purchase agreement for 250 MW of coal-fired capacity from the Cedar Bay generating facility at the end of August 2015 as a result of a Purchase and Sale Agreement between FPL and Cedar Bay Generating Company, L.P. FPL would then own the unit starting on September 1, 2015. FPL currently anticipates that it will not need the unit for economic purposes after 2016 and, if that proves to be the case, would retire the unit at that time. FPL filed for FPSC approval of the Purchase and Sale Agreement in the first quarter of 2015.

The St. John's 382 MW PPA is currently projected to effectively end well before the nuclear units come online, due to the cumulative amount of energy that FPL can receive under this agreement. In addition, the current agreement with Indiantown (330 MW) is scheduled to terminate in 2025. It is unknown if future agreements with this facility could be reached, particularly given the current economics of coal versus natural gas and the possibility of new environmental regulations that presumably will be unfavorable to coal energy production. For the same reasons, it is unlikely that any new coal-fired generation will be added in Florida for the foreseeable future.

The projected loss of this coal-based capacity is accounted for in the previously mentioned gas versus nuclear fuel mix percentage values. The important point regarding gas and coal usage is that the contribution of coal generation will decline; not that projected gas usage is increasing while coal usage remains constant. Instead, gas usage is projected to increase, in part, because the usage of one non-gas fuel (coal) is expected to substantially decline in the near future. The role of additional nuclear energy in regard to fuel diversity thus becomes even more important than in the gas vs. nuclear percentage values previously discussed when one recognizes that coal usage will actually be significantly declining in absolute terms.

Q. What is the projected impact of Turkey Point 6 & 7 on FPL's system CO_2 emissions?

A. Turkey Point 6 & 7 is projected to result in a cumulative reduction over the expected life of the two units of approximately 290 million tons of CO_2. This will be a significant reduction in CO_2 emissions, representing approximately 714% of the total CO_2 emissions from all FPL-owned generating units in 2014 (which was approximately 41 million tons). Stated another way, this projected cumulative CO_2 emission reduction from Turkey Point 6 & 7 is the equivalent of operating FPL's very large system of more than 25,000 MW of generation for approximately 86 months, or approximately 7.2 years, with zero CO_2 emissions.

Q. In regard to the projected fuel cost savings and emission reductions discussed above, does Turkey Point 6 & 7 provide other benefits for FPL's customers?

A. Yes. Nuclear power provides an important hedge for customers against the potential for future natural gas prices to be higher than forecasted and the potential for costly future environmental (including CO_2) regulations. Because the price of nuclear fuel is unrelated to fossil fuel prices, and because it produces no SO_2, NO_x, CO_2, etc., emissions in producing electricity, it is a superb hedge against higher fossil fuel costs and environmental compliance costs.

Q. Are there any other benefits from the addition of Turkey Point 6 & 7 that you would like to discuss?

A. Yes. The addition of 2,200 MW of capacity from Turkey Point 6 & 7 in Miami-Dade County is projected to achieve significant transmission cost savings by avoiding the construction of transmission facilities that would otherwise need to be built to import power from outside the Southeastern Florida region (Miami-Dade and Broward Counties) into that region. These savings are currently projected to be approximately $1.7 billion CPVRR. This savings value is accounted for in FPL's 2015 feasibility analyses of the Turkey Point 6 & 7 project as an additional cost incurred in the Without Turkey Point 6 & 7 resource plan.

Q. Please briefly explain how the Nuclear Cost Recovery process saves money for FPL's customers.

A. The Nuclear Cost Recovery process allows for annual recovery of interest costs incurred during construction, rather than through long-term recovery under the normal Allowance for Funds Used During Construction (AFUDC) approach. This enables FPL's customers to avoid paying significant compounded interest charges they would otherwise incur.

Q. Was an analysis performed regarding the projected capital cost savings for FPL's customers from Florida's Nuclear Cost Recovery process?

A. Yes. Analyses of the projected Turkey Point 6 & 7 capital cost savings for FPL's customers that results from Florida's Nuclear Cost Recovery process were performed. The results of one of these analyses, assuming the high-end of the non-binding capital cost range and a conservative 40-year operating life, are presented in FPL witness Scroggs' Exhibit SDS-11. The result of this analysis is that Florida's Nuclear Cost Recovery process is projected to save FPL's customers approximately $12.3 billion (nominal), or $584 million (CPVRR), in capital cost savings. Another analysis that was performed, assuming the low-end of the non-binding capital cost estimate range, and a 40-year operating life for the units, resulted in a projection that Florida's Nuclear Cost Recovery process will save FPL's customers approximately $8.6 billion (nominal), or $435 million (CPVRR), in capital cost savings.

Q. What conclusions do you draw from the results of the 2015 feasibility analyses of Turkey Point 6 & 7?

A. The Turkey Point 6 & 7 project is projected to be the economic choice in 8 of the 14 scenarios analyzed and the projected breakeven costs were within the

non-binding cost estimate range for Turkey Point 6 & 7 in each of the remaining 6 scenarios. Turkey Point 6 & 7 is also projected to be beneficial for FPL's customers in terms of increased system fuel diversity, reduced system emissions, and as a significant hedge against higher fuel and environmental compliance costs.

Thus, the results of the 2015 feasibility analyses strongly support the feasibility of continuing the Turkey Point 6 & 7 project.

Q. Does this conclude your testimony?

A. Yes.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF STEVEN R. SIM

DOCKET NO. 150009-EI

July 7, 2015

Q. Please state your name and business addresses.

A. My name is Steven R. Sim, and my business address is 9250 West Flagler Street, Miami, Florida 33174.

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

A. I am employed by Florida Power & Light Company (FPL) as Senior Manager of Integrated Resource Planning in the Resource Assessment & Planning Department.

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

A. I supervise and coordinate analyses that are designed to determine the magnitude and timing of FPL's resource needs and then develop the integrated resource plan with which FPL will meet those resource needs.

Q. Please describe your education and professional experience.

A. I graduated from the University of Miami (Florida) with a Bachelor's degree in Mathematics in 1973. I subsequently earned a Master's degree in Mathematics from the University of Miami (Florida) in 1975 and a Doctorate in Environmental Science and Engineering from the University of California at Los Angeles (UCLA) in 1979.

While completing my degree program at UCLA, I was also employed full-time as a Research Associate at the Florida Solar Energy Center during 1977 - 1979. My responsibilities at the Florida Solar Energy Center included an evaluation of Florida consumers' experiences with solar water heaters and an analysis of potential renewable energy resources including photovoltaics, biomass, wind power, etc., applicable in the Southeastern United States.

In 1979 I joined FPL. From 1979 until 1991 I worked in various departments including Marketing, Energy Management Research, and Load Management, where my responsibilities included the development, monitoring, and cost-effectiveness analyses of demand side management (DSM) programs. In 1991 I joined my current department, then named the System Planning Department, where I held different supervisory positions dealing with integrated resource planning. In late 2007 I assumed my present position.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is primarily to rebut statements made about forecasts and assumptions used in FPL's 2015 feasibility analyses made by City of Miami (COM) witness Meehan and Office of Public Counsel (OPC) witness Jacobs in their testimonies. I explain why these statements are incorrect and/or misleading. I conclude that neither Mr. Meehan's nor Dr. Jacobs' testimonies provide meaningful or reliable information for use by the Florida Public Service Commission (FPSC).

Q. Please summarize your rebuttal testimony.

A. The testimonies of Mr. Meehan and Dr. Jacobs contain a number of problems. Mr. Meehan calls for the FPSC to conduct a thorough review of the feasibility analyses, apparently unaware that is what the FPSC do each year in accordance with the Nuclear Cost Recovery (NCR) Rule. Although he calls particular attention to the fact that the CO_2 and transmission-related projected benefits are significant, he offers no alternate forecasts or analysis methodologies that he believes are superior to FPL's forecasts and methodologies. Instead, Mr. Meehan simply makes unsupported assumptions that these benefits should be reduced by 100% or 50%. He presents exhibits that are designed to show that the Turkey Point 6 & 7 project is not economical but only after he makes these arbitrary adjustments to FPL's projected CO_2-related and transmission-related benefits. However, even ignoring his lack of methodology and his application of arbitrary assumptions, if we factor in his own statements that new nuclear units likely would operate for 60 years and there would likely be carbon costs, the opposite result emerges: the overwhelming majority of his cases project that Turkey Point 6 & 7 are projected to be either economically feasible or potentially feasible.

In regard to Dr. Jacobs, most of his testimony is addressed by FPL witnesses Scroggs and Reed. I did review one calculation he presents in an attempt to show that, with increases in the capital costs of Turkey Point 6 & 7, the new nuclear units cannot be economic. As I explain later in my testimony, Dr.

Jacobs' approach is fundamentally flawed, as it arbitrarily adjusts only one lever in a multi-levered, annually changing evaluation of the project's economics.

REBUTTAL TO MR. MEEHAN

Q. Please summarize what you understood to be the main message of Mr. Meehan's testimony.

A. Mr. Meehan's testimony seemed to have a simple message that can be summarized as follows: the FPSC should conduct a thorough review of the 2015 feasibility analysis, including the transmission-related and CO_2-related benefits included in the feasibility analysis.

Q. Please summarize your response to his main message.

A. FPL's approach in its 2015 feasibility analyses, including transmission benefits and CO_2 benefits, is essentially unchanged from the prior feasibility analyses that have been filed by FPL. These analyses, including the analysis methodologies and assumptions, are reasonable and have been consistently reviewed and accepted by the FPSC.

Q. What is your response to Mr. Meehan's contention that there is a "*...need for a thorough, in-depth evaluation of the Turkey Point units 6 and 7 investment at this time, when it is clear that the circumstances under which the investment was approved have changed radically*"? (Page 9, lines 13-15)

A. From his testimony, it appears that Mr. Meehan is unaware that Florida has conducted a Nuclear Cost Recovery (NCR) hearing every year since a need

determination was granted for Turkey Point 6 & 7 in 2008. In each of these prior dockets, and again in this docket, FPL presents a detailed feasibility analysis that is required by the NCR Rule. FPL's annual feasibility analysis utilizes the most current values for a variety of assumptions including: forecasted fuel costs, forecasted environmental compliance costs, capital costs, sunk costs, etc. In other words, FPL's 2015 feasibility analysis is updated to account for many changes in assumptions – some of which are significant – since the Determination of Need in 2008. Furthermore, all of the assumptions will be reviewed and updated annually in future NCR dockets.

Thus Mr. Meehan's statement to the effect that assumptions have changed is well known to both the FPSC and FPL. Both parties recognize that major assumptions and forecasts change from year-to-year. Because of this fact, the assumptions such as those listed above are reviewed and, as appropriate, updated in each annual feasibility analysis. Thus Mr. Meehan's call for *"...a thorough, in-depth evaluation of ...Turkey Point 6 & 7..."* is exactly what FPL's 2015 feasibility analysis represents, and is what FPL's feasibility analyses have reflected in each prior year of the NCR filings.

Q. What is your response to Mr. Meehan's contention that feasibility of the new nuclear units *"...is increasingly dependent upon a 60 year life assumption..."*? (Page 9, lines 7-9)

A. I find this odd considering that on page 19, lines 11 and 12 of his testimony, Mr. Meehan makes the following statement: *"I do not question the likelihood*

that Turkey Point, if built would operate for 60 years." It appears that Mr. Meehan states on the one hand that 60 years is the correct assumption for the operating life of the new nuclear units, but on the other hand is somehow troubled that the new nuclear units are projected to be cost-effective when using what he agrees is the correct operating life assumption.

FPL agrees with Mr. Meehan that a 60-year life assumption is the more meaningful assumption for reasons discussed in FPL witness Brown's direct testimony beginning on page 17, line 19. As each year takes FPL's and NextEra Energy's existing nuclear units further beyond the point in time when they have operated for 40 years, and towards their licensed 60-year operating terms, the 60-year life assumption becomes more meaningful.

Q. Please respond to Mr. Meehan's contention that feasibility of the new nuclear units "*...only appear economic because of these two assumptions (transmission benefits and CO_2 costs).*" (Page 11, line 13)

A. This year, the transmission and CO_2-related benefits play a relatively more significant role in the economic feasibility of the project than in past years, in part because other cost forecasts are lower. However, these assumptions have not always provided the predominant benefits. For example, in the years 2008-2014, the natural gas cost savings of the project have outweighed the CO_2 cost savings on both a nominal and Cumulative Present Value of Revenue Requirements basis. It should be obvious that as natural gas prices have declined, other forecasts and assumptions play an increasing role in the

analysis. I also believe that because natural gas prices are so low, any significant changes in natural gas prices that occur in the future are likely to be in the direction of higher costs. One cannot assume that in future analyses the transmission- and CO_2–related benefits will play as meaningful a role relative to other factors. Assumptions changes are made on a regular basis by FPL in order to utilize the best and most current information available in its resource planning analyses.

Q. Are the projected CO_2-related benefits in FPL's 2015 feasibility analyses significant?

A. Yes. However, that does not mean that the assumptions themselves are unreasonable.

Q. Are the projected CO_2-related benefits in FPL's 2015 feasibility analyses commensurate with CO_2-related benefits projected in prior feasibility analysis filings?

A. Yes. However, the current projection of CO_2-related benefits is smaller than projections from several years ago. Such a change in projections can always occur, in either direction, when updating assumptions and forecasts each year. Again, that is not the measure of the reasonableness of the assumption. Indeed, the point should be taken that assumptions do vary over time. The purpose of this year's feasibility analysis, as in prior years, is to reset from the subsequent year's work toward procuring the Combined License.

Q. Are the projected CO_2-related benefits in FPL's 2015 feasibility analyses based on a methodology similar to that used in FPL's prior annual

feasibility analyses that have been reviewed each year and accepted by the FPSC?

A. Yes. The methodology behind the cost values is essentially unchanged. The only exception is that, for the 2015 feasibility analysis, FPL advanced the start date of the previously (in 2014) forecasted CO_2 $/ton cost values by three years so that the start date for the CO_2 cost values is 2020 instead of 2023. This was done because the EPA's draft Clean Power Plan (CPP) rules that were released in mid-2014 called for CO_2 emission rate targets that begin in 2020.

Q. Please describe FPL's use of forecasted CO_2 costs and the source of this forecast.

A. FPL began using projected CO_2 compliance costs in 2006/2007 in its need determination for new coal-fired capacity. It has used a CO_2 cost forecast ever since in its resource planning work regarding all types of resource options. Thus forecasted CO_2 costs have been used in analyses of a variety of resource options, including: combined cycle (CC) units, combustion turbine units, demand side management (DSM), solar, and nuclear. CO_2 cost forecasts were also used in the determination of need filing for Turkey Point 6 & 7 in 2007 and have been updated and used ever since in the feasibility analyses that have accompanied FPL's annual NCR filings.

All of FPL's CO_2 cost forecasts have been based on projections made by the respected consulting firm, ICF International (ICF). ICF serves both private

and governmental clients, including the U.S. EPA. In its work for the EPA, ICF is providing analyses of various potential CO_2-related regulatory initiatives including the CPP.

ICF's CO_2 cost forecasts have been based on a probability-weighted projection of likely CO_2 compliance costs. Through 2012 ICF assigned probabilities for each year in the projection to a wide range of potential CO_2 costs. The range included no CO_2 costs (which was based on a scenario in which it was assumed no CO_2 legislation was passed by the U.S. House and Senate, then signed into law by the President) to various projections of CO_2 legislation (with associated costs) then being discussed by the House and/or Senate. Each of the probability-weighted outcomes for a given year were summed to derive a CO_2 cost value for that year. The resulting probability-weighted projection of CO_2 costs resulted in a value of $0/ton for some number of early years, then a range of non-zero $/ton values after that. As legislative initiatives ended or changed over time, ICF's projections also changed. Based on ICF's changes in projected CO_2 costs, FPL's forecasts of CO_2 costs that have been used in its resource planning work have also periodically changed.

ICF's cost projections were typically released in terms of real dollars through the year 2030. Based on guidance from ICF, FPL converted these values to nominal dollars for use in FPL's resource planning work. And with the

knowledge that if CO_2 legislation/regulation was passed/issued in the near-term, it was likely that additional legislation/regulation would further restrict CO_2 emissions in future years, FPL also received guidance from ICF regarding escalation of the $/ton cost projections into the future.

Around 2013, discussion of CO_2-related legislation at the federal level basically stalled. As a consequence, ICF advised FPL that ICF's most recent (2012) CO_2 cost forecast was the best projection it had regarding future CO_2 costs. Consequently, FPL used that projection in its 2013 and 2014 resource planning work including the nuclear feasibility analyses in those years. In 2015, after further discussions with ICF that highlighted the uncertainty surrounding the mid-2014 CPP draft rules, FPL utilized these values again, but adjusted the start year for these costs so that CO_2 costs were projected to begin in 2020.

FPL agrees with Mr. Meehan that there is considerable uncertainty regarding CO_2 compliance costs. Much of that uncertainty will not be cleared up until: (i) the CPP final rules are issued this Summer or soon thereafter; (ii) litigation addressing the final rules and the EPA's authority to issue such rules is resolved; and (iii) each state, including Florida, develops its state implementation plan for meeting the final rules.

In sum, FPL's CO_2 cost forecast is based on the best information and guidance available at this point in time. FPL's CO_2 cost forecast utilized in the 2015 feasibility analysis is a reasonable forecast.

Q. Did Mr. Meehan provide an alternate CO_2 cost forecast from an independent outside source to compare to FPL's?

A. No.

Q. Did Mr. Meehan provide an alternate CO_2 cost forecast that he developed to compare to FPL's?

A. No.

Q. Did Mr. Meehan offer any meaningful CO_2 cost forecast comparisons in an attempt to argue against the CO_2 forecast that FPL utilized?

A. No. Instead, Mr. Meehan's testimony simply points out that the projected CO_2 benefits from Turkey Point 6 & 7 are significant, and concludes that if one assumes these benefits completely vanish, or assumed they were cut in half, then the Turkey Point 6 & 7 project might not be cost-effective. Then, in his exhibits, he uses these completely arbitrary assumptions and removes either 100% of CO_2 benefits or 50% of these benefits (along with similarly arbitrary assumptions regarding a reduction in transmission-related benefits). It is no surprise that if one arbitrarily removes large blocks of projected benefits, the projected economics of projects such as Turkey Point 6 & 7 will decrease.

Q. Did Mr. Meehan recognize that, when forecasting a cost far into the future, there is a chance the forecast could be overstated *or* understated?

A. No. It is possible that FPL's actual CO_2 compliance costs, 40 or 60 years into the future, will actually be higher than FPL has forecasted. Virtually any forecast has that type of symmetrical risk, but does not detract from the reasonableness of FPL's forecast.

Q. What is your take on Mr. Meehan's approach to CO_2 costs?

A. As previously stated, Mr. Meehan simply grabs two arbitrarily chosen percentages (0% and 50%) out of the air and applies them to the projected CO_2-related benefits. Regarding the complete elimination of all CO_2-related benefits, it appears from Mr. Meehan's testimony that even he doesn't believe in that assumption: *"I do not think it is unreasonable to attach a monetary value to carbon as over the 2027 to 2088 period during which Turkey Point units 6 & 7 would operate, some type of carbon limit and associated costs would appear more likely than not."* (Page 13, lines 8-11) Yet he offers calculations in his exhibits that assume no CO_2-related cost benefits to Turkey Point 6 & 7 over either a 40-year or the same 60-year time period. These calculations should be ignored as they are inconsistent with Mr. Meehan's own testimony, even putting aside the fact that the assumptions themselves are no more than arithmetic applications without foundation or theory.

He also offers no explanation or support for his assumption that FPL's projected CO_2-related benefits should be reduced by 50%. Mr. Meehan's assumptions and calculations are neither rigorous nor reasonable.

Q. Is there anything else regarding Mr. Meehan's discussion of CO_2-related benefits that needs to be addressed?

A. Yes. In his testimony, Mr. Meehan discussed the fact that projected nominal CO_2-related benefits (and thus projected CO_2 $/ton projected costs) had reached a significant level by the year 2067. However, what Mr. Meehan chose not to discuss is the minimal impact of any 2067 cost value on the present value of costs reflected in FPL's analysis. The year 2067 is 52 years into the future. Using FPL's 7.51% discount rate to determine present values in terms of 2015$, a $100 nominal cost in 2067 equates to only slightly over $2 in 2015$. Furthermore, when considering the 60-year life assumption, that same $100 nominal cost in 2087 equates to about 54 cents in 2015$. Thus cost projections that far into the future have relatively little impact in long-term NPV cost projections. Therefore, Mr. Meehan's testimony on this point is misleading.

Q. Are the projected transmission-related benefits in FPL's 2015 feasibility analyses also significant?

A. Yes. However, that does not mean that the assumptions themselves are unreasonable.

Q. Are the projected transmission-related benefits in FPL's 2015 feasibility analyses proportionate with transmission-related benefits projected in prior feasibility analysis filings?

A. Yes. However, the current projection of transmission-related benefits is smaller than the projection from last year. Such a change in projections can

always occur, in either direction, when updating assumptions and forecasts each year.

Q. With regard to FPL's projection of transmission-related benefits in FPL's 2015 feasibility analyses, are these projected transmission-related benefits based on a methodology similar to that used in prior FPL annual feasibility analyses that have been reviewed and accepted by the FPSC?

A. Yes. FPL has used this same methodology in the feasibility analyses presented in 2013 and 2014.

Q. Has FPL assumed similar types of transmission benefits in other analyses?

A. Yes. FPL has included projected transmission benefits in other resource planning analyses, such as the DSM Goals analyses (Docket No. 130199-EI).

Q. Please discuss what the projected transmission-related benefits for Turkey Point 6 & 7 represent and how the benefit values are derived.

A. From a transmission standpoint, FPL needs to maintain a balance between electrical load and generation in Southeastern Florida, i.e., in Miami-Dade and Broward Counties. The electrical load in Southeastern Florida has continued to increase and is projected to increase further in the future. In order to maintain a balance between this increasing load and generation in this area, one of two things must occur: FPL can either build generation in the two county area or FPL can build regional transmission lines from north of Broward County into the area that will allow additional power to be imported into Southeastern Florida.

The methodology that FPL utilizes to project the cost of these regional transmission lines is straightforward. First, assuming no generation will be built in the two county area (new generation needed to meet FPL's reliability criteria is assumed to be built north of Broward County) and accounting for already planned transmission upgrades and additions, a projection is made regarding when (i.e., in what years) new transmission facilities need to be built. Second, based on current cost projections for new transmission facilities, transmission capital and O&M costs are assigned to this schedule for the new transmission facilities.

Third, one returns to the starting point and a new assumption is made that Turkey Point will be built in 2027 and 2028. This addition of significant generation capacity in Miami-Dade County results in deferred need for new transmission facilities to import power into the area. This is reflected in a new projection for these facilities. Fourth, transmission costs are assigned to this changed schedule of transmission additions. Lastly, the difference in the transmission costs between these two schedules is calculated. This difference represents the avoided transmission cost benefit for Turkey Point 6 & 7 and this cost difference is assigned to the Resource Plan without Turkey Point 6 & 7.

Q. Did Mr. Meehan provide any transmission analysis with which he attempts to argue against FPL's projected transmission-related benefits for Turkey Point 6 & 7?

A. No.

Q. Did Mr. Meehan offer anything of substance with which he attempts to argue against the projected transmission-related benefits?

A. No. Just as he approached CO_2-related benefits, Mr. Meehan's testimony regarding transmission-related benefits simply points out that the projected transmission-related benefits from Turkey Point 6 & 7 are significant, and concludes that if one assumes these benefits completely vanish, or assumes they were cut in half, then Turkey Point 6 & 7 might not be cost-effective. Then, in his exhibits, he again uses these completely arbitrary assumptions and removes either 100% of transmission-related benefits or 50% of these benefits. As mentioned earlier, it is no surprise that when arbitrarily removing large blocks of projected benefits, the projected economics of projects such as Turkey Point 6 & 7 will decrease.

Q. What is your take on Mr. Meehan's approach to transmission-related benefits?

A. Regarding transmission-related benefits, he unfortunately uses the same approach he used regarding CO_2-related benefits in calculating the values he uses in his exhibits. He again makes unsupported, arbitrary assumptions that either remove 100% of the transmission-related benefits or cuts them in half.

Mr. Meehan's assumptions and calculations again fall far short of being either rigorous or reasonable.

Q. Please discuss Mr. Meehan's two exhibits in more detail.

A. Mr. Meehan presented two exhibits that appear to be designed to show that the Turkey Point 6 & 7 project is economically infeasible with a completely arbitrary reduction of CO_2- and transmission-related benefits. However, if one considers his testimony, then studies the exhibits, a different picture emerges.

One of his exhibits, ETM-2, is based on a 40-year operating life. Because his testimony is that he believes a new nuclear unit will operate for 60 years, this exhibit can be completely ignored which leaves the focus solely on his Exhibit ETM-3 which is based on a 60-year operating life. Taking into account another statement in his testimony that he believes it likely that there will be costs assigned to CO_2 during the operating lives of the new nuclear units, the second of the unnumbered columns in this exhibit can be ignored because it assumes 100% removal of the projected CO_2-related benefits.

One is then left with three remaining columns of his breakeven results in Exhibit ETM-3 to consider. Generally speaking, if the breakeven cost is above the high end of the non-binding cost estimate range, that scenario is projected to be economically feasible. If the breakeven cost falls within the range of non-binding cost estimates, that scenario is projected to be potentially

economically feasible. And if the breakeven cost falls below the low end of the non-binding cost estimate range, that scenario is projected to be economically infeasible.

Now let's look at what Mr. Meehan's results show for these three columns. In the first unnumbered column in which 100% of the transmission-related benefits are assumed to be removed, the "score" is: 3 feasible, 4 potentially feasible, and no infeasible. In the third unnumbered column in which 100% of the transmission-related benefits, and 50% of the CO_2-related benefits, are removed, the "score" is: 0 feasible, 6 potentially feasible, and 1 infeasible. Finally, in the last unnumbered column in which 50% of both the CO_2- and transmission-related benefits are removed, the "score" is: 1 feasible, 5 potentially feasible, and 1 infeasible.

Q. When these "scores" are summed, what is the outcome of Mr. Meehan's projections?

A. The total "score" is: 4 feasible, 15 potentially feasible and 2 infeasible. Stated another way, of the 21 possible outcomes, 19 were feasible or potentially feasible and only 2 were infeasible. Thus even with the arbitrary and unsupported massive reductions in projected benefits, Mr. Meehan's testimony and the outcome of his attempt at showing how infeasible Turkey Point 6 & 7 combine to show the opposite.

Q. Are there any other statements in Mr. Meehan testimony that contain errors or which are misleading?

A. Yes. There are at least two such statements.

Q. Please discuss the first statement.

A. Mr. Meehan states that *"The need for the first of those units* (i.e., Turkey Point 6 & 7) *has been delayed until 2027."* (Page 4, line 19 to Page 5, line 1) (Note that this same basic statement is made at several other places in his testimony.)

The year 2027 is not the first year that FPL has a need for new capacity. FPL's new capacity needs begin in the year 2019 as shown in FPL witness Brown's Exhibits ROB-3 and ROB-4, by the projected addition of a combined cycle unit in the year 2019. Instead, as discussed in the March 1, 2015 testimony of FPL witness Scroggs, 2027 represents the earliest practical deployment date for Turkey Point 6 & 7.

Q. Please discuss the second erroneous or misleading statement:

A. Mr. Meehan states - *"FP&L's economic analyses make it appear that the project is robust to the final cost."* (Page 20, lines 16 & 17)

I take this statement to mean that FPL is indicating that it has a definite view of both project costs and project benefits. FPL is clearly not indicating this. As FPL has stated from its Determination of Need filing through today, the feasibility analyses are based on projections, not established costs and benefits. This is seen by the structure of the feasibility analyses in which: (i) two resource plans, one plan with Turkey Point 6 & 7 (assuming no capital

cost for the two nuclear units), and one plan without, are constructed and compared; (ii) a set of breakeven capital costs are determined for all 14 scenarios, and (iii) these breakeven capital costs are then compared to FPL's range of projected construction costs. FPL's feasibility analysis approach is specifically designed to account for cost uncertainties at this stage of the project.

Q. Are there other statements or discussions in Mr. Meehan's testimony that you find problematic?

A. Yes. There are three statements that warrant responses.

Q. What is the first statement that you find problematic?

A. In the portion of his testimony in which he discusses his view of the reasonableness of future CO_2 costs, Mr. Meehan attempts to compare the CO_2 cost projection used in FPL's feasibility analyses to what he presents as increases in tuition costs at a particular university: *"In comparison, over a 43 year period from 1972 to the present, the cost of tuition at Harvard rose by three times that which would result from inflation alone."* (Page 13, line 19 through Page 14, line 2)

This attempted comparison is problematic in several ways. First, Mr. Meehan is attempting to compare historical known costs to projections of future unknown costs. Second, the two items being compared, college tuition costs versus air emission compliance costs represent a case of trying to compare apples and bricks. There is simply no connection between the two things

being compared. Third, 43 years ago it is unlikely that anyone could imagine the federal government imposing a cost on a gas that humans naturally exhale, and to do so in a way that seeks to fundamentally change entire industries. It is just as unlikely that Mr. Meehan today can state with any certainty that he knows what environmental compliance costs will be for CO_2, or for any other type of air emission that may be regulated in the future.

Q. What is the next statement that you take issue with?

A. Mr. Meehan also attempts an argument against the Turkey Point 6 & 7 project in the following statement: *"In this case, we have an investment that ... will only begin to break even on a present value basis 40 years after it enters service, in the late 2060s, or 50 years from today."* (Page 19, line 17 through Page 20, line 1)

By Mr. Meehan choosing to only take a present value perspective, he is ignoring other equally valid ways by which the benefits and costs of projects can be examined.

One of these ways is to look at annual nominal net costs or benefits that FPL's customers will incur. In response to interrogatory number 22 from the FPSC Staff in this docket, FPL provided a projection of the annual bill impact from the Turkey Point 6 & 7 project. This request, unlike the perspective chosen by Mr. Meehan, is based on how customers actually fare in their electric bills

each year if a project is selected. The results of this bill projection analysis were:

- FPL's customers are projected to have increased bills through 2035 (a total of 20 years from 2015), and
- FPL's customers will then have lower bills from that point through 2087 (a total of 52 years).

Thus FPL's customers are projected to begin to see lower bills each year beginning 9 years after the first of the two new nuclear units goes into service. Assuming a 60-year life for the new nuclear units means that customers are projected to receive lower electric bills for the vast majority of years the unit is operating.

This pattern of a project not resulting in net annual benefits to customers until a number of years have passed is common when utility resource options are added to a utility system. For example, let's take one of FPL's DSM programs: the Residential Air Conditioning program. In this DSM program, the average life of the air conditioner is projected to be 15 years. Using Mr. Meehan's perspective of looking only at cumulative present value of net benefits, this DSM program is projected to begin to show NPV benefits only in year 13. On the basis of his testimony, he would likely recommend against this cost-effective DSM program. However, when viewed from a nominal

annual net benefit perspective, customers are shown to begin realizing net annual benefits starting in year 5.

Another example is that of FPL's existing nuclear units. The bulk of their capital costs were paid for in prior years and customers today are benefiting each year from the net annual savings, primarily from lower fuel and environmental costs. The point is that each "generation" of electric customers, to varying degrees that are impossible to accurately predict, benefits from resource options and decisions made years, even decades, earlier and also pay the cost of current resource additions from which they may not fully realize commensurate benefits. The issue of what some refer to as "intergenerational equity" is not unique to nuclear power plant investments.

Q. What is the last of Mr. Meehan's statements that is problematic?

A. Mr. Meehan states: *"FPL has not looked at other non-carbon emitting technologies that are, in the long run, potentially more economic than new nuclear plants."* (Page 16, lines 12-14)

Mr. Meehan's rather vague statement neither identifies which non-carbon emitting technologies he is referring to, nor explains why he believes that these unnamed technologies may be "...potentially more economic..." than Turkey Point 6 & 7.

However, let's look at one non-carbon emitting technology that is applicable in Florida: photovoltaics (PV). Mr. Meehan appears to be unaware that FPL is actively pursuing PV applications. FPL announced in its 2015 Site Plan the planned installation of three PV facilities by the end of 2016. Each of these PV facilities is approximately 74 MW (nameplate) and they are being sited at locations which offer specific advantages. Thus FPL is already pursuing the most promising non-carbon zero-emission technology that is applicable in Florida.

However, FPL views PV as being complementary to new nuclear, not as an alternative to new nuclear. The reasons for this view include, but are not necessarily limited to, the following characteristics of Turkey Point 6 & 7: (i) 100% of Turkey Point 6 & 7's 2,200 MW are firm capacity that is available both Summer and Winter, (ii) Turkey Point 6 & 7 is projected to operate both day and night for approximately 90% of the hours in a year, and (iii) Turkey Point 6 & 7 will be built on a relatively small parcel of land that FPL already owns. PV does not share these characteristics.

FPL views new nuclear and PV as resource options which have different roles in FPL's resource plans, not as direct competitors. FPL is actively pursuing both of these resource options.

REBUTTAL TO DR. JACOBS

Q. Switching to Dr. Jacobs testimony, is there anything in Dr. Jacobs' testimony that you care to comment on?

A. Yes. The majority of Dr. Jacobs' testimony discusses his contention that FPL's projected non-binding cost estimate range is incorrect. FPL witnesses Scroggs and Reed address this in their rebuttal testimonies. However, there is one calculation that Dr. Jacobs presents that I will address from a resource planning perspective.

Q. Please identify and discuss this calculation.

A. Dr. Jacobs' calculation is found in his testimony starting on Page 12, line 7, and continuing on to Page 14, line 2. Dr. Jacobs' analysis approach can be summarized as follows:

- He starts with the projected breakeven cost for a particular scenario of fuel cost and environmental compliance costs.
- Then, not allowing any other cost to change, he increases the high end of the non-binding cost estimate range by a particular percentage value until the adjusted high end of the non-binding cost estimate range is now higher than the projected breakeven cost.
- He then concludes from that arithmetic that the new nuclear unit cannot be feasible with this particular capital cost increase.

Dr. Jacobs offers the following description of how his approach might work in practice in the following passage in his testimony: *"For example, considering*

the 40-year operating life case shown in FPL witness Brown's testimony, an increase of 7.91% in Turkey Point Units 6 and 7 capital costs results in no cases of feasibility. For the 60-year operating life case, an increase in capital costs of 36.7% results in no cases with feasibility." (Page 12, lines 11-14)

Arithmetically, such an analysis is very simple to produce. And, on first glance, may seem useful. However, such an approach is fundamentally flawed and cannot give meaningful results. Dr. Jacobs errs when he concludes in his testimony passage above that these calculations *"...results in no cases of feasibility."*

Q. Why is this calculation approach fundamentally flawed?

A. It is fundamentally flawed because the approach assumes that nothing – fuel costs, environmental compliance costs, future environmental regulation, load forecasts, costs of CC units, and all other assumptions and forecasts - changes from what has been currently assumed. The only assumption regarding future costs that is allowed to change is Dr. Jacobs' selection of nuclear capital costs. In other words, this approach assumes that every assumption and forecasted value through the year 2087 is perfectly known today and cannot change over the next 72 years, except for nuclear unit capital costs. For only that assumption is Dr. Jacobs free to alter future costs until he gets his desired result. Upon attaining this result, he puts down his pencil and declares that this analysis *"...results in no cases of feasibility."*

No one, including Dr. Jacobs, can know the future over the next 72 years with such certainty that they can categorically assume or conclude that none of the other assumptions and forecasts will change over that time period. For example, what if the cost of the Turkey Point 6 & 7 project increases, but so does the cost of natural gas due to new regulations on the commodity extraction processes, affecting the cost of all natural gas purchased in the market? There are many number of "what if" scenarios, and no one can accurately predict them all and reflect them all in an economic analysis. Therefore, Dr. Jacobs' statements that cost increases in nuclear capital costs of a certain percentage will result in Turkey Point 6 and 7 being not feasible are not reliable.

Q. Are there any statements made by Dr. Jacobs that you are in agreement with?

A. Yes. On page 18, lines 1 and 2, Dr. Jacobs states: *"...it would be unreasonable at this point for FPL not to continue the pursuit of obtaining its COL."* On that point, I will agree with Dr. Jacobs.

CONCLUSIONS

Q. In regard to the testimonies of Mr. Meehan and Dr. Jacobs, what conclusions do you draw?

A. My conclusions can be summarized as follows:

- Mr. Meehan's testimony essentially states that projected CO_2-related and transmission-related benefits for Turkey Point 6 & 7 are

significant and the FPSC should perform *"a thorough, in-depth evaluation"*. This statement simply ignores the fact that this is what the FPSC does each year in the annual NCR docket.

- Mr. Meehan provides no independent forecasts or analyses regarding CO_2 costs or transmission analyses that he believes are superior to those used in FPL's 2015 feasibility analyses.
- Instead, Mr. Meehan simply performs a couple of calculations in which he arbitrarily removes 50% or 100% of the CO_2-related benefits and/or the transmission-related benefits which, unsurprisingly, lowers the economic picture for Turkey Point 6 & 7. He offers no support or back up information regarding why these arbitrarily chosen percentage reductions in projected benefits are reasonable. When these calculations are reviewed critically in light of this testimony, the outcome actually supports the Turkey Point 6 & 7 project with the overwhelming majority of cases projected to be either feasible or potentially feasible.
- Dr. Jacobs' testimony contains a fundamentally flawed analysis approach which is based on the presumption of perfect knowledge of all assumptions and forecasts for the next 72 years. Then by his changing only the capital costs for Turkey Point 6 & 7 to a point where he gets a desired result, Dr. Jacobs tries to state with certainty that the new nuclear units cannot be feasible in the future.

For these, and other reasons discussed in my testimony, Mr. Meehan's and Dr. Jacobs' testimonies should not be relied upon by the FPSC.

Q. Does this conclude your testimony?

A. Yes.

BY MS. CANO:

Q Would you please provide a summary of both your direct and your rebuttal testimony to the Commission?

A I will.

Good morning, Chairman Graham and Commissioners. In regard to the direct testimony, the testimony presents the results of FPL's 2015 economic feasibility analyses for Turkey Point 6 and 7, which show that the new nuclear units continue to be projected as a cost-effective and beneficial resource addition for FPL's customers.

FPL's 2015 analyses use a broad range of potential future fuel costs and environmental compliance costs plus two operating life assumptions. Because two of FPL's four existing nuclear units have been in operation for more than 40 years and all four units are licensed for 60-year operation, FPL's 2015 analyses again present results using both a 40-year operating life assumption and a more realistic 60-year operating life assumption.

Major assumptions such as forecasts of fuel costs and load have been updated for the analyses. The analyses compared the cost to FPL's customers of a resource plan that includes Turkey Point 6 and 7 with a

resource plan that removes the nuclear units and replaces them with gas-fired combined cycles.

In regard to the economic results, Turkey Point 6 and 7 is projected to be clearly cost-effective in 8 of a total of 14 scenarios of fuel cost, environmental compliance cost, and operating life, and the units are projected to be within the nonbinding cost estimate range in all remaining six scenarios. In other words, in those six scenarios, the units are projected to be potentially cost-effective.

Furthermore, even in these potentially cost-effective scenarios, Turkey Point 6 and 7 also serve as a valuable hedge against significantly higher fuel and environmental compliance costs.

In regard to the noneconomic results, Turkey Point 6 and 7 continues to be projected to greatly enhance system fuel diversity, reducing natural gas percentage of fuel mix from 75 percent to 62 percent in the first full year of operation. Turkey Point 6 and 7 is also projected to significantly reduce CO2 emissions for FPL and for the state of Florida.

In conclusion, the results of FPL's 2015 feasibility analyses strongly support the continuation of the Turkey Point 6 and 7 project.

In regard to rebuttal testimony, the rebuttal

testimony addresses the direct testimonies of City of Miami witness Meehan and Office of Public Counsel witness Jacobs.

In regard to Mr. Meehan, his testimony basically states that projected CO2 and transmission-related benefits for Turkey Point 6 and 7 are significant, and the PSC should perform a thorough, in-depth evaluation. The statement ignores the fact that this is what the PSC does each year in the annual NCR docket.

Mr. Meehan provides no independent forecasts or analyses regarding CO2 costs or transmission analyses that he believes are superior to those used by FPL. Instead, he suggests that 50 percent or 100 percent of these projected benefits simply be discarded, and he offers no justification for these arbitrary percentages.

Furthermore, he attempts to use these arbitrary percentages to show that Turkey Point 6 and 7 are not feasible. However, when his calculations are reviewed critically in light of his testimony, the outcome actually supports the project.

In regard to Dr. Jacobs, he attempts to show that Turkey Point 6 and 7 cannot be economically feasible by selectively changing one projected cost

value while leaving all other projected costs and benefit values unchanged. Because all of the costs and benefit values included in the feasibility analyses are projections that are subject to change, it is illogical for Dr. Jacobs to pretend that only one of those values which he selects can change. Therefore, his example calculations and the conclusions he attempts to draw from them are essentially meaningless.

In conclusion, neither of these two witnesses' testimonies provide a meaningful critique of FPL's 2015 feasibility analyses. Thank you.

MS. CANO: The witness is available for cross-exam.

CHAIRMAN GRAHAM: Thank you.

Dr. Sim, welcome back to Tallahassee.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: This is what we're going to do moving forward. We're taking both the direct and rebuttal testimony at this time. Feel free to jump back and forth. You don't have to finish direct before you do the rebuttal. But when you're done, you're done. I just want to let you know we're not going to do the direct, then circle back around and do the rebuttal.

That all being said, OPC.

MS. CHRISTENSEN: Okay. Thank you.

EXAMINATION

BY MS. CHRISTENSEN:

Q Dr. Sim, you were here yesterday; correct?

A For portions of yesterday.

Q Okay. Were you here yesterday when Witness Scroggs had said that he -- that FPL would have to go back to the NRC for a 20-year extension on the license for nuclear units 6 and 7, that they only granted a 40-year life?

A Yes.

Q Okay. My question to you is did -- in your cost analysis when you did the 60-year life analysis, did you include any additional costs for obtaining the extension, the 20-year extension from the NRC in that analysis?

A We did not because I was involved in the 20-year life extension for all four of FPL's nuclear units. And while I do not know the exact cost, I recall that it is negligible.

Q Well, can you tell us what the, even if you don't know the exact cost, what a rough ball park of those extension costs were?

A I do not have that number with me.

Q Okay. Let me refer you to your rebuttal testimony on pages 25 through 27. And in that part you

discuss Dr. Jacobs' analysis of the Turkey Point Units 6 and 7 feasibility analysis; correct?

A That's correct.

Q In your summary of Dr. Jacobs' analysis, you say he increased the high end of the range of the nonbinding cost estimates by a certain percentage until the adjusted high end of the nonbinding cost estimate is higher than the project breakeven cost; is that correct?

A Yes.

Q And you also state that based on this analysis, he concludes that if the capital cost increased by that percentage, and it would be 7.91 percent for the 40-year life and 36.7 percent for the 60-year life, that the project is no longer feasible under any of your scenarios; is that correct?

A I believe that's correct.

Q And you agreed that mathematically if the capital costs were to increase by these percentages, that is, if the high end of the nonbinding cost estimate range is higher than the projected breakeven cost, the projects would no longer be feasible; correct?

A Arithmetically that's correct, but logically it is relatively meaningless.

Q Okay. So your disagreement is -- in your testimony is that all the other assumptions and

forecasts would change from what they are currently assumed to be; correct?

A They're certainly subject to change, which was not the assumption in Dr. Jacobs' calculation.

Q But in your different case scenario sensitivity analysis that you did, didn't you also manipulate only one of the assumptions at a time while leaving the other assumptions and forecasts unchanged?

A I think I would disagree with the term manipulate, but I would say the answer is partly correct.

Q If I changed that word to change one of the assumptions while leaving the other assumptions and forecasts unchanged, would that --

A Again, the statement is partly -- and I'll rephrase that to largely correct.

MS. CHRISTENSEN: Okay. And with that, I have no further questions. Thank you.

CHAIRMAN GRAHAM: Retail Federation?

MR. LAVIA: Just a couple of questions, Mr. Chairman.

EXAMINATION

BY MR. LAVIA:

Q I am referring to your Exhibit 84, which is your revised ROB-6. The -- did you discover those --

those errors, or did someone else discover those errors?

A Give me just a moment to turn to that page, please.

I discovered them.

Q When did you discover them?

A Either late Sunday night or Monday morning --

Q Okay. Are they --

A -- of this week.

Q Okay. Thank you.

Are they computational errors or input errors?

A Computational.

MR. LAVIA: Okay. Thank you.

CHAIRMAN GRAHAM: FIPUG.

MR. MOYLE: Thank you.

EXAMINATION

BY MR. MOYLE:

Q Where's Mr. Brown today?

A Mr. Brown is in the room today.

Q Oh, he is. Okay. Does he work under your direction?

A This year he is not a direct report of mine. He has been in years past.

Q Okay. And I'm tempted to call Mr. Brown, but I won't.

The -- you're adopting his testimony that was filed on May 1, 2015.

A Yes, sir.

Q Okay. And you're -- because I'm going to ask you questions about it, I just want to make sure you're good with it and you're not going to say, well, that was Mr. Brown, I don't really agree with that. I mean, you take this testimony as your -- as your own and are comfortable with it other than with respect to the exhibit that needed some corrections; is that correct?

A That's correct.

Q So Mr. Brown said on page 2, line 1, he said, "Most relevant to this docket, I have performed the economic analysis portion of the annual Turkey Point 6 and 7 analysis since 2011."

I -- I assumed, based on that, that that was unique to Mr. Brown in that he's saying I performed the economic analysis for Turkey Point since 2011. Is that not correct?

A He did perform the economic analysis in those years and also this year.

Q Okay. And you did not.

A I did not. Mr. Brown worked under my supervision for all of those years except this year.

Q So you would agree that, given the fact that

he performed the economic analysis since 2011, he's probably a better person to talk to about such analysis; correct?

MS. CANO: I'm going to object. The notice of adoption was filed July 7th. It was prior to the Prehearing Conference. No party has raised any issues with the adoption of this testimony, which is where I hear him going. So I just think it's inappropriate to raise it at this time.

MR. MOYLE: Well, I disagree. There's nothing that says you've got to raise it right after they file a notice of adoption. As part of a trial strategy, you can ask the witness questions about it while he's here.

CHAIRMAN GRAHAM: I'll allow the questions. I know the witness has said that he stands behind this entire testimony, but I'll, I'll give you some latitude.

THE WITNESS: Would you repeat the question, please?

MR. MOYLE: Would you remind reading it back?

(Foregoing question read by the court reporter.)

BY MR. MOYLE:

Q That was the question. Mr. Brown has performed the analysis since 2011. You would agree he's probably the better person to talk to with respect to

the economic analysis of Turkey Point; correct?

A I think that would depend -- I think that would depend on what your questions are.

Q Well, just generally. I'm asking you that as a general proposition. One guy did the study; somebody else didn't do the study. Wouldn't it, in your view, be better to ask the person who did the study?

A Again, it would depend upon the nature of your questions. If your questions are in regard to the meaning of the analysis, I believe I can certainly answer those.

Q How about if respect -- if the questions are how the -- how the analysis was done? You'd agree the person who did the analysis is probably better able to answer that than you?

A If your questions are down to a specific as on what day did I perform this particular analysis, then he would be the better one to answer those questions. But if it's in regard to the interpretation of the results of the analysis, I believe I can accommodate you.

Q You would agree that you're inable to predict with confidence future fuel prices; correct?

A I believe the answer --

Q If you can answer yes or no, and then explain.

A Yes.

Q Thank you.

CHAIRMAN GRAHAM: You can elaborate after you answer yes or no.

THE WITNESS: I don't believe anyone can accurately with confidence predict future fuel and other costs.

BY MR. MOYLE:

Q Same question with respect to environmental compliance costs, you don't have supreme confidence in the ability to predict or even what the projections are with respect to future environmental compliance costs; correct?

A That's correct. That's why we rely upon who we believe are the most knowledgeable party in regard to future CO2 costs.

Q Right. But that -- that party also doesn't have the ability to predict what future fuel or future environmental compliance costs are going to be many years in the future with absolute confidence; correct?

A Not with absolute confidence. But the party that we rely upon is closer to the EPA and to future regulations being considered in regard to CO2 than anyone else we know of.

Q Okay. So just with respect to forecasts, I mean, I don't know that we need to debate it. I think I

hopefully can get you to agree that forecasts are inherently -- inherently change as time goes on for the most part; correct?

A They're inherently uncertain, yes.

Q Okay. And would you agree that it's harder to predict an event or pricing of carbon or fuel further out in time as compared to closer -- to a closer point in time?

A Generally I would agree. I would also point out that the further out in time, the more those values are discounted back to the present and the less meaning they have.

Q Okay. And for your adopted economic analysis, if I understand it correctly, some of the fuel forecasts go out 60 years; is that right?

A Yes.

Q Okay. And it's 60 years from what date?

A From 2015.

Q Wouldn't it be more appropriate to have the forecast go from the expected in-service date?

A If we wish to wait until 2027 and create a forecast then, that might be possible. But we're in 2015, and we have to use forecasts that are available to us in this year.

Q So when you -- when you did -- if I understand

your analysis, you did a look at a, what, 40-year life and a 60-year life; is that right?

A That's correct.

Q Okay. And did you measure that from today for all these analyses, or did you measure it based on the in-service date?

A Can you describe what you mean by measure, please?

Q Run the calculations. 60 -- 60 years, what was the start date for your analysis for the -- for the 60 years? Was it 2015 or 2029?

A The overall analysis started in 2015, but the 60 years encompasses the time period from 2027 out 60 years from that point.

Q Okay. So -- so, in effect, that would suggest that the forecast is more than 70 years in real time.

A Yes.

Q Do you regularly participate in any other dockets before this Commission?

A Over the years, yes, I have. A number, including a variety of determination of need filings, every one of the DSM goals dockets that's been held, et cetera, and at this point every one of the nuclear cost recovery dockets, as well as the need determination for Turkey 6 and 7.

Q I was trying to ask Mr. Scroggs some questions about natural gas forecasts, and he kind of punted it to you last night. Are you -- are you comfortable if I ask you some questions about natural gas forecasts?

A I'll do my best.

Q Okay. Well, do you have expertise in that or --

A I have expertise in using them as inputs, not in creating the forecast.

Q Okay. Do you know the degree of error that occurred in -- in FPL's fuel forecast in the fuel docket last year as to what was projected and then what actually came to be?

A No. I have no knowledge of that docket and the information that was contained therein.

Q So if I asked you the same question about the Woodford docket, you wouldn't have any knowledge about the fuel forecast used in that docket and what has come to be?

A That's correct. I was not -- not used in that docket.

Q Okay. Based on your -- your analysis, am I correct in that in 6 of 14 scenarios the Turkey Point 6 and 7 were not economic?

A That's not my interpretation. And in 6 of

the 14 they fell within the nonbinding cost range, and we view that as potentially cost-effective.

Q And so what -- tell me about the other eight. How do you view those, as definitely cost-effective?

A They are currently projected to be clearly cost-effective. They are above the high end of the nonbinding cost estimate range.

Q Right. But you would agree we don't know about any of this given all the time and the moving parts associated with this; right?

A That's correct. In both this docket and in every other docket that is resource planning related, we rely upon forecasts, projections, and assumptions.

Q So how do you make the distinction between what you just told me that eight of them are, I think you said, more likely or probable and six of them are maybe? Is that -- you know, how do you -- how do you make that dividing point?

MS. CANO: Object to the mischaracterization of the witness's testimony.

BY MR. MOYLE:

Q Whatever words you used to describe those two. I'm sorry. I didn't write them down. We can have it read back, if you want. But are you comfortable answering?

A No, I'll answer. Eight of them are projected to be clearly cost-effective. Six of them are projected to be potentially cost-effective.

Q Okay. And I want to just spend a minute -- clearly cost-effective and potentially. And given, I think, the prior discussion we've had about the nature of forecasts and they can go up and down and there's variability in them, tell me what you do or why you describe eight of them as clearly cost-effective and six of them as potentially. I mean, aren't -- those are just two adjectives, right, clearly and potentially?

A Yes.

Q And one clearly means a little more likely than potentially; is that right?

A I would say definitely more likely.

Q But it's not for sure.

A No.

Q So how do you -- how do you go about -- you know, just tell me your reasoning, your analysis, your thinking as to say, oh, well, these are clearly and these are potentially. Do you have any guidelines for -- for making those judgments?

A If you'll give me a little leeway on this, I'll try to explain.

Every year when we come before the Commission

in the, in the NCR hearing, we present based on the most current assumptions, forecasts, et cetera; essentially a snapshot in time where all that's frozen, we do our analysis. And what we attempt to do is say based on those assumptions, what is the current projection this year as to the cost-effectiveness of Turkey Point 6 and 7?

So what we are saying this year is based on those assumptions, including the current high end estimate of what it would cost to build those units, 8 of the 14 scenarios show that the benefits exceed the cost. The remaining six show that the benefits would match up with various levels of cost if those costs were somewhere within the nonbinding cost estimate range.

Next year we'll update all the assumptions and forecasts, create another snapshot in time, redo the analysis, and we'll see what the picture shows then.

Q Let me -- let me direct you to the -- before I do, tell me your current role with -- with Florida Power & Light.

A I'm a Senior Manager in the Resource Assessment and Planning Department.

Q And what are your duties and responsibilities?

A Essentially to direct analyses that are designed to do a couple of things: to determine when we have a resource need, how big the resource need is, and what's the most economic way to meet that resource need.

Q So with respect to the generation fleet of FP&L, are you one of the key people in doing analysis and looking and saying here's -- here's what we have, here's what we think we need as we move into the future with respect to generating units?

A That's largely what our department and I do, yes.

Q Okay. So you would be comfortable if I asked you a couple of questions about that?

A We'll see.

Q How about -- how about going to Exhibit ROB-1, page 1 of 1.

A I'm there.

Q Are you familiar with this exhibit?

A Yes, sir.

Q Okay. So if I'm reading this exhibit correctly under paragraph 5, right, when are -- when is Turkey Point 6 and 7 projected to come in?

A 2027 and 2028 respectively.

Q Okay. And so does this chart show what FPL's generation looks like with and without Turkey Point?

A It shows what it would look like in the first full year in which both nuclear units would be operating, which, as the footnote indicates, is 2029. It shows the difference between the percentage of our total energy that would be provided by natural gas versus nuclear.

Q Okay. And -- and I'm unclear whether this is showing your total energy produced or whether this is just a comparison between gas and nuclear. Do you know?

A Yes.

Q What is it?

A If you look at the first line on, as you call it, paragraph 5 without Turkey Point 6 and 7, you see it says 75 percent gas and 20 percent nuclear. Of the 100 percent of energy that FPL is projected to serve that year, fully three-quarters of it will be by gas, 20 percent will be by nuclear, and the other 5 percent will be through other means.

Q Okay. So just so I'm clear, if you have a system with 1,000 megawatts, 750 megawatts they're served with gas and 20 with nuclear and the 5 with other under the first box?

A If you change the term megawatts to megawatt-hours, yes.

Q Okay. So you currently have coal in your

system; right?

A Yes.

Q Are you anticipating that there's any coal at this point for the 5 -- now we're just talking about the 5 percent. Okay?

A Yes.

Q Okay. Is there any coal in that 5 percent?

A A very small piece.

Q Do you know how much?

A Less than 5 percent.

Q That's safe.

Any oil?

A Very, very little.

Q Less than 5 percent and less than coal?

A Yes.

Q Okay. What else would be in this 5 percent bucket?

A Currently projections will be some solar, some purchased power from both qualifying facilities and other entities.

Q How much does the purchased power represent approximately? I'm not going to hold you to these numbers, but just order of magnitude.

A Again, they're between zero and 5 percent, all of them. I can't break it down for 2027 at this time.

Q Okay. And you mentioned solar. My impression was renewable energy might be -- might be more than -- I guess it would be under 5 percent because these other pieces account for some of that. So I guess renewable is projected to be, what, 3 or 4 percent in 2027 and 2028?

A I can't give you an exact percentage, but renewables will make up a couple of percent of that.

Q And have you -- have you planned on that? Have you done studies to support that analysis?

A I'm sorry. I don't understand the question.

Q The analysis with respect to your generating mix in 2027, 2028. I mean, is this based on some reasoned analysis, or is it kind of shooting -- shooting maybe with --

A These numbers come directly out of our production costing models as to what the percentages are.

Q Okay. And what is -- what are those models?

A The primary model we use for production costing is UPLAN, U-P-L-A-N.

Q And is that a model that you developed, or is that a third-party model?

A It's a third-party commercially available model.

Q Who -- who supports it?

A I'm drawing a blank on who the vendor is on this at the moment.

Q Okay. Do you know if that model is peer reviewed? I mean, how do you kind of make sure it's a good -- good model?

A We test models before we adopt them.

Q This is a new name to me. Is this a new -- a new model that you've been using the last couple of years?

A It's a relatively new model. The former production costing model was PMAREA, P-M-A-R-E-A.

Q And what was PROMOD?

A PROMOD goes way back. Also a production costing model which we have not used for many, many years.

Q Okay. Let me flip you to page 6. This is of the direct.

A I'm there.

Q Actually, I'm sorry, page 5.

A Okay.

Q On page 5, line 10, there's a phrase about striving, strives for diversity in regard to system resources and fuels in its portfolio approach to resource planning. What is your -- what is your current

mix of generating assets?

A In regard to energy mix?

Q Yes, sir.

A If you'll give me a moment, I'll turn to our current Ten-Year Site Plan and tell you what's projected for 2015.

Q Is there a difference between what -- when you say projected, I mean, just currently what's in the ground is kind of what I'm looking for.

A There's a difference between the megawatts of the units that are in the ground and how much energy they put out. So the better -- I think the better metric is our energy mix, what percentage is supplied by gas, what percentage is supplied by nuclear, et cetera.

Q Okay. Yeah. But what -- I'm not -- I don't want projected numbers. I'm trying to get real time numbers as we sit here today.

A I can give you actuals for 2014.

Q Okay.

A Give me a moment. From our 2015 Ten-Year Site Plan, in no particular order, nuclear is providing -- I'll round off to the nearest whole number -- 23 percent, coal is 4 percent, natural gas is 68 percent, interchange is about 4 percent, and a variety of items -- oil is two-tenths of 1 percent. And

there are some other that add up to roughly, say, three-tenths of a percent.

Q Okay. Is interchange the Scherer coal unit? What is interchange, 4 percent?

A One moment, please.

That is a combination of -- typically from other utilities such as JEA's SJRPP unit, the Southern Companies, the UPS contract, and various other utilities in smaller contracts.

Q And that's Scherer, that UPS contract? Do you know?

A No, it's not Scherer.

Q Okay. So you say -- when you strive for diversity, do you have a goal about how -- how your generation mix ought to be diversified?

A In terms of a hard number goal, the answer would be no. It's more of a directional view.

Q Okay.

A We see that we are becoming increasingly dependent upon natural gas. It's a great thing for our customers because the costs are currently low and we're taking advantage of it. But through a variety of means we're trying to achieve fuel diversity to withstand price volatility as well as potential problems with availability.

Q Do you have a goal with respect to the renewable energy component of your generation mix?

A As much of it as projected to be cost-effective. And I think we can project in the coming years we're going to a see some substantial increases in regard to renewables, particularly photovoltaics, on our system.

Q So -- so your goal is to get as much renewable as you can, but you don't have a numeric goal?

A Let me try to rephrase your statement to make it one I can agree with. We are trying to get as much renewable on our system as is projected to be cost-effective. We don't have a numeric goal because cost-effectiveness is something that is examined project by project, year by year.

Q Okay. And actually on page 6, line 22, you use the phrase -- and you talk about diversifying FPL's fuel mix by adding renewable energy in specific cases in which renewables are cost competitive; is that right?

A That's correct.

Q Okay. And how do you make a cost-competitive decision?

A I'm sorry. Could you repeat the question?

Q How do you make a cost-competitive decision with respect to, you know, whether you're going to add

renewables or not?

A Basically the same way that we evaluate any resource option, be it nuclear, combined cycle, demand-side management. We look to see, using, again, projections and assumptions, whether our system is more economic, meaning lower electric rates, or if we're looking only at supply options, the equivalent of lower CPVRR costs with that resource option as compared to without it.

Q Have you done that with the three FPL utility-owned solar projects that you've announced?

A Yes.

Q Okay. Did you test the market with respect to other possible renewable resources that might offer cost-competitive renewable energy?

MS. CANO: I think at this point we're going far beyond the scope of this witness's testimony into specific solar project-related decision-making.

MR. MOYLE: I mean, he's talking about their resource planning and says that they get competitive renewable energy. I think it's fair to ask him if they ever go and say is there competitive renewable energy out there.

CHAIRMAN GRAHAM: I'll allow the question.

THE WITNESS: Are you speaking strictly

regarding the 2016, the three projects, PV projects?

BY MR. MOYLE:

Q Well, yes, for now. I mean, did you -- did you look at potential lower cost-competitive alternatives for renewable energy that might be out there when -- when -- and compare them to the 2016 FPL solar projects?

A For those three projects, the answer would be no for the following reasons. Number one, time was of the essence. The 30 percent tax credit is set to sunset at the end of 2016; therefore, time was a crucial element. We also had unique circumstances for those three projects where we already owned the land. The sites were quite near existing generating units, so the staff at those existing generating units could also work at the solar facility. They were located very close to existing transmission lines. And our projection was that those projects were cost-effective but barely so; therefore, we needed to move quickly so we could get those in without losing the 30 percent tax credit which would sunset and go down to 10 percent.

Q Okay. I mean, y'all are good at planning things way in advance. I mean, we're talking about a nuclear plant here that's not going to come online for more than 15 years; right?

A More like 12 years.

Q Okay. But with respect to the tax credit going away, that wasn't something that you saw and you could plan and test the market? I mean, you do have a policy of competitive bids; correct?

A When appropriate, yes.

Q And -- but you weren't able to do that and plan that on this project?

MS. CANO: I'm going to object again. We're going into the details of decision-making supporting a completely different project that is not within the scope of his testimony.

CHAIRMAN GRAHAM: I agree. I think you're digging a little too deep for the purposes.

BY MR. MOYLE:

Q Do you know the sunk costs that have been incurred to date in this project?

A We're referring to the Turkey Point 6 and 7 project?

Q Right.

A I believe at the end of the year it'll be approximately $250 million.

Q And do you know what it's anticipated to be at the end of 2015?

A At the end of the year it'll be approximately

--

Q I'm sorry, '16.

A No. I have not seen the projected cost number.

Q Page 11, line 18.

A Direct testimony?

Q Yes, sir.

A I'm there.

Q Okay. So just so it's clear, you say in later years as more information becomes available regarding the cost and other aspects of the new nuclear units, another perspective may emerge as more appropriate. What -- what do you mean when you say another perspective may emerge as more appropriate?

A I believe we answered that as one of staff's interrogatories, but I'll try to summarize. Once we know in future years what the cost of Turkey Point 6 and 7 will be with reasonable certainty, in other words, once we have a schedule, once we have a contract, et cetera, it may be more appropriate to simply move away from the breakeven cost and more towards a head-to-head cost in which we have a cost value for Turkey Point 6 and 7. We're certainly not there yet, but it's a possibility that we'd move to that type of analysis in later years.

Q When are you going to get there? When do you project to get there?

A I do not have a date for that. Again, we would have to have a COL, we'd have to have a schedule worked out, we'd have to have a contract, all of that.

Q So describing those things, that sounds like it's not something we'll see next year. It's probably multiple years before you're at the point where you will know -- know the costs?

A I would agree.

Q You had mentioned schedule and contract. You're not intending to sign a contract before informing this Commission of the cost, are you?

A I'll speak for FPL on this because I'm certainly not going to sign a contract for this. Mr. Scroggs would have certainly been the more appropriate witness to ask this. But at some point, moving ahead with the project, a contract will be signed. When that is, I'm not the right witness to answer that question.

Q You have some testimony on page 27, line 15, regarding transmission construction costs saved. Are you familiar with that?

A Yes, sir.

Q Did you run any analysis, if you back out this

1.7 value, how that would change your economic feasibility analysis?

A Can you restate your question, please?

Q Sure. If I -- if I understand your testimony here about the benefits of Turkey Point 6 and 7, you say, well, one of the benefits is -- is that we're going to save 1.7 billion in -- by avoiding construction of transmission facilities. Is that generally right?

A Yes.

Q Okay. And just assume that the transmission facility issue was not a live issue and you pulled this out of the assumptions, does that change your economic analysis and your economic feasibility study? And if so, how?

A If we were to remove -- look at the changes, the differential in transmission costs, which would be an incorrect thing to do, it would lower the projected benefits for Turkey 6 and 7 and it would appear less cost-effective.

Q Would it change those bands, the, you know, the clearly cost-effective and the potential cost-effective, where they would fall?

A It would.

Q Do you know how?

A I do not know the exact numbers in regard to

how many would remain cost-effective, but it would move the project to appear less economic than it is currently projected to be. But, again, that would be an incorrect assumption to make because there will be cost savings in what I'll call these regional transmission benefits.

Q Okay. Is there anything that would prohibit you from putting in 2,000 megawatts, give or take, of -- of gas at Turkey Point?

A We think it's highly unlikely for three reasons, if I may. Okay. In -- I would say of the -- in no particular order. First of all, our Environmental Affairs Department has told us it is unlikely without a real struggle, with no guarantee of success to put combined cycle units at Turkey Point. The reason for that is the site is in between two national parks. Unlike nuclear, this is not -- combined cycle would not be a zero emission generating unit.

Particularly -- and the task is made even more difficult if we would have onsite fuel oil storage at the site because that would greatly increase concerns over particulate matter over the national parks. And we would not want to have a unit at the tail end of a long chain of natural gas pipeline at that site that did not have onsite fuel storage. So that's item number one.

Item number two is one would have to go through what I'll refer to as an external hazard review by the Nuclear Regulatory Commission if one were to site additional units down there. Part of that concern would be we would be bringing gas, additional gas into that site, which would be roughly tripling the amount of gas that is being pumped into that site. There are concerns with that.

Third on the list would be there is no way to get that amount of gas down for two new combined cycle units through the existing pipelines. The existing pipeline going down through there moves through a heavily urbanized and developed area. One would almost certainly have to go west with a new pipeline. Part of that route would be through wetlands. We do not have a detailed cost for that, but rough estimates that were created several years ago put the cost for a 2018 pipeline at over a billion dollars. So extending that out another ten years to 2027, you would see a price, I would say, significantly north of a billion dollars.

So for all of those reasons, but particularly the first one, the difficulty and the uncertainty of being able to site combined cycle units in that, on that site, have led us to believe it's unlikely we would build there.

Q Thank you. Thank you for that detailed answer. So the cost, the billion dollars, that's 5 percent of the top end projected Turkey Point 6 and 7 cost?

A I'm trying to do the math. If it's 20 billion, 1 billion, it's 5 percent, yes. It took me a moment. Sorry.

Q You made that seem like a really big number, that 1 billion, like it was a reason you wouldn't do it; is that right?

A It's an exceedingly big number for a combined cycle unit to get natural gas.

Q But if you were comparing it to a 20 billion number, it's an exceedingly small number; correct?

A It's one-twentieth of it, yes.

Q Okay. So what are the two national parks?

A Biscayne National Park and the Everglades.

Q And does Biscayne National Park include the Florida Keys?

A I don't know the boundaries of that national park.

Q Are you familiar with the area around Turkey Point?

A Generally.

Q John Pennekamp State Park is nearby in Key

Largo?

A Yes, south of there.

Q Does it strike you as curious that the chief reason that you talked about to not put gas at Turkey Point is environmental concerns with respect to two national parks that exist for a combined cycle plant, but it doesn't seem that a nuclear plant presents similar concerns?

A We're talking about air emissions, and nuclear is non -- no air emissions. Any other type of fossil fuel plant that would be down there would have air emissions.

Q Okay. But if we would look at it more wholistically, nuclear, spent nuclear fuel is going to be stored onsite at Turkey Point; correct?

A Yes.

Q Do you know what the life of spent nuclear fuel is, the radioactive life?

A I'm sorry. I do not.

Q It's like thousands of years; right?

A Right. But I assume all of this has been addressed in all of the permits and the EIAs that have been -- that FPL has pursued for Turkey Point 6 and 7. And, again, for that, Mr. Scroggs would have been the more appropriate witness.

Q All right. I think I'm close to -- to wrapping up.

Just -- just one thing. On 28, page 28, line 14, there's a distinction between the nominal cost and the CPVRR cost, and you're answering a question about projected capital cost savings; is that right?

A That's correct.

Q So there's a big difference between 12.3 billion and 584 million; correct?

A Yes.

Q Okay. So -- so why is that difference?

A It's due to costs that would be incurred out through a 40-year life of the plant discounted back to the present. So the first number, the larger number are nominal dollars. Then when you discount those back, you get a smaller number as what always happens with discounting.

Q Okay. So when you say nominal dollars, you just add up the numbers for each year; is that right?

A That's correct.

Q Okay. And what discount rate do you typically use, or did you use in this study, if you know?

A I believe it was 7.51 percent.

Q Do you know, has the Nuclear Cost Recovery Clause saved any money for ratepayers to date as we sit

here today?

A I do not know if it has saved money to date.

Q I mean, I don't -- we can talk through it. I don't think it has, right, because the customers -- there's 250 million in sunk costs. You're in today asking for 34 million. Where would any savings be?

A I'll accept your -- the premise of your question and agree with you. I don't believe that it has saved money for customers yet.

Q And it would only save money if it becomes operational; correct?

A Yes.

Q Do you have an understanding of the -- of the phrase used and useful?

A I have heard the term.

Q What does that mean?

A I assume it -- my interpretation of it is it is an asset that the utility is using to provide service to its customers.

Q And that if something is not put in service typically under a general construct, the utility doesn't recover for it; is that right?

A I think you're moving away from my area of knowledge.

Q Okay. Let's -- let's move into your rebuttal.

And let me just go back. On the testimony that you just talked about, your direct, did you assist in preparing that testimony?

A I reviewed the draft of the testimony, yes.

Q Okay. And then -- so the difference between what I'm going to ask you about now, your rebuttal, how is that -- that different? You crafted this rebuttal testimony?

A Yes.

Q Are you more comfortable talking about the rebuttal than the direct?

A I'm comfortable talking about either.

Q Okay. So why did you move the start date of the forecasted CO2 cost per ton?

A We moved it because the draft rules for EPA's Clean Power Plan, the CPP, had come out, I think it was June of last year, and the projected targets for when CO2 compliance would begin was in 2020. Before that, the projections we were using from ICF had projected that that start date would be in 2023. So we advanced those costs, after discussing it with ICF, up to 2020.

Q And when you -- when you advanced the costs, it makes the Turkey Point Units 6 and 7 more favorable as compared to extending the time frame; correct?

A I'm sorry. Can you repeat?

Q Sure. What -- what does the effect do of moving when the CO2 costs are going to be, you believe, realized? If you move them up in time, my understanding is it makes the economic analysis more favorable to move forward with Turkey Point 6 and 7. If you move them back in time, my understanding is it makes the economic analysis less favorable. Do I have that right or wrong?

A I think you have the general concept right, but this wasn't the only moving part. Let me mention one other.

Q Well --

A The in-service date for Turkey Point 6 and 7 moved back.

Q Okay.

A The CO2 cost moved forward. One would tend to lower your CO2 cost benefit moving the in-service dates back. The advancement from 2023 to 2020 would tend to enhance the benefits. So they're conflicting with each other, and I don't know where they would have netted out.

Q Okay. And I just wanted to focus on CO2 for -- for right now. Your point -- tell me your point on moving the start date back. That increased the cost; is that right?

A The key in regard to where the CO2 costs begin

to become benefits is when the unit goes into service. By moving it back to 2027, we're discounting those back further.

Q Okay. Okay. You're aware that there is a whole host of legal challenges to the Clean Power Plan?

A I am.

Q Are you aware that the State of Florida has gotten involved in that litigation and has sued the federal government related to the Clean Power Plan?

A I have read that.

Q Did that factor into your consideration about moving the date for when you thought the cost of carbon would be in place?

A No, because we froze assumptions back in fourth quarter of 2014, first quarter of 2015, which is well before the -- the final rules came out and the lawsuit which Florida has joined occurred.

Q And Congress hasn't made any moves to put in place more restrictive air emissions, have they?

A I don't believe I can agree with that, because in the last several months one has read -- or at least I've read in the newspapers of discussion emerging again regarding a carbon tax that would be piled on top of the EPA's Clean Power Plan, which would add even more carbon-based cost.

Q And when you read about that, do you remember whether that was referencing someone who was talking about that who was in the party that controls Congress or in the party that doesn't control Congress?

A My recollection, it was a Democratic senator not controlling the senate.

Q And there -- I didn't ask the right question, but there's no laws that have passed that have put additional restrictions on emissions recently, correct, acts of Congress?

A Agreed.

Q Okay. On your rebuttal on -- on page 24, we talked a little bit about these three PV facilities, and you reference them again starting on -- on line 3. Are you there?

A Yes, sir.

Q Okay. Why are they 74 megawatts?

A They're 74 megawatts because that would allow us to move forward more quickly than if they were greater than 75 megawatts. Again, the goal for this project was they were projected to just be cost-effective if we could move them in by the end of 2016 and take advantage of the 30 percent tax credit, and we could not have if we had had to go through the additional process if they were over 75 megawatts.

Q Because that would have required you to get competitive bids, go through the bid rule; is that right?

MS. CANO: Objection. Again, we're traveling down the same road. All he says in his rebuttal is in responding to Mr. Meehan that we do, in fact, have solar and plans for solar, that's all, not any of the decision-making process leading up to these projects.

MR. MOYLE: I asked him a question about why they did it, he explained it, and I had a follow-up whether that was part of it or not.

CHAIRMAN GRAHAM: I think he sufficiently explained his -- the reason.

MR. MOYLE: That's all I have.

CHAIRMAN GRAHAM: SACE.

EXAMINATION

BY MR. CAVROS:

Q Good afternoon, Dr. Sim.

A Good afternoon, Mr. Cavros.

Q When I saw that Mr. Brown had filed testimony, I thought you had retired in this docket. But it's good to see you again.

A Thank you.

Q You had a brief conversation with Mr. Moyle about FPL's resource mix, and you talked about

renewables making up a -- kind of a very small portion. Isn't it true that the company generates right now from solar power one-tenth of 1 percent of its generation mix?

A In 2014, we projected from solar two-tenths of 1 percent.

Q Okay. And let's -- I mean, I can point you to the page in your rebuttal or you can just agree that the CO2-related benefits in FPL's 2015 feasibility analysis are significant. Would you agree with that?

A Yes, they're significant.

Q Okay. And in your -- in your -- the values that you use for your CO2 compliance costs were challenged by Witness Meehan; correct?

A Yes.

Q And he referred to them as unreasonable or something to that effect, is that correct, implausible?

A Words to that effect, yes.

Q Okay.

A Which I disagree with.

Q Okay. Then I'm looking at page 11 of your rebuttal testimony related -- which addresses your concerns with Mr. Meehan's testimony.

A I'm there.

Q You're there? Thank you. And on page 4 the

question is, "Did Mr. Meehan provide an alternative CO2 cost forecast from an independent outside source to compare to FPL's?" The answer there is no.

So that's one of the problems that you have with Mr. Meehan's testimony is that there was no outside independent source to compare to FPL's; is that correct?

A That is certainly one of the statements I have. He merely criticized, but offered nothing that he thought was better.

Q Okay. And --

A And there are other forecasts that were out there at approximately the time that we filed our direct testimony in this case.

Q And another problem you have with his rebuttal is that he used -- he reduced the benefits by 50 percent. So the problem you had with his testimony in your rebuttal further down the page is that he used an arbitrary value of 50 percent to reduce those benefits; is that correct?

A That's correct. He appeared to have selected 50 percent with no -- with giving no basis for that reduction.

Q Okay. Had there been a basis for that reduction, then you would not have referred to his --

you would not have referred to it as an arbitrary assumption; correct?

A That's probably correct.

Q Okay. And I've heard a bit today about a bounding -- bounding analysis where you look at the high value of something and the lower value of something. You use it, for instance, in your fuel projections, in your environmental projections. Is it fair to say that you use this bounding method to ensure to the Commission that the values that are within -- well, let me -- that the values will not -- will not be lower, will not be higher than the values that you provide?

A Can you repeat the last part of the question, please?

Q Sure. Is the premise of those bounding projections that the values in there represent the lowest value that one might find and the highest value that one might find, given the fact that they're projections, but is that the assurance that -- that you make to the Commission when you use these -- these bounding values?

A No. And let me try to clarify. I don't believe that in the testimony I've adopted or the rebuttal testimony that we used the term bounding. We provided a high, a medium, and a low fuel cost and

environmental compliance cost forecast, and we never said that this captured all of the potentially -- potential outcomes for either fuel costs or environmental compliance costs.

Q Uh-huh. Given that it doesn't capture all the potential outcomes, what percentage of potential outcomes do you feel comfortable stating here today that it would capture?

A I wouldn't hazard a guess as to what percentage it -- it covers. I could point you to -- in regard to environmental compliance costs, I mentioned earlier that there were other forecasts that were out there at the time that we provided our direct testimony. Although we had not looked at it at the time, since this became an issue in the Intervenor testimonies, I looked back and saw that in April of 2015 there was another forecast that was out there by a fairly well-respected fuel cost consultant, JD Energy. And when we looked at their forecasted cost for CO2, it was for the years 2020 through 2040 higher than our forecast in every year. And if you looked at the present value of those CO2 costs for that 20-year period, the benefits it would have attributed if we had used those costs would have been higher than ours by a factor of four. So that's one reason why we don't use the term bounding or try to

come up with a percentage.

MR. CAVROS: Okay. Well, I'd like to distribute an exhibit and mark it as No. 85. And it's the High/Low Environmental Compliance Forecast. It's already in the record, but I'd like to mark this as 85.

CHAIRMAN GRAHAM: Okey-doke. We'll mark it as 85. Okay.

(Exhibit 85 marked for identification.)

BY MR. CAVROS:

Q Okay. So, Dr. Sim, this is a response to an interrogatory request from staff, No. 18, where they ask you to show both your high and your low cost forecast for environmental costs. And I guess if we can turn to your Environmental III forecast first, which is the high end, you have a 2050 cost there for CO2 compliance in the last table of 234. Do you see that?

A Yes.

Q All right. And then if we look at your low forecast, again, third table, we have a value of 156 there. Do you see that?

A For 2050?

Q Correct. For 2050.

A Yes.

Q Okay. And if I could direct your attention now to ROB-2, and that's in your direct.

A Which page, please?

Q That would be page 2 of 4.

A I'm there.

Q Okay. So for 2050 for CO2 compliance, your midpoint is 195; is that correct?

A I wouldn't describe it as a midpoint, but it's the value for Environmental II, yes.

Q Okay. What other utilities did you poll to learn about what compliance costs they were using?

A I'm sorry. Can you repeat?

Q Sure. What other power companies did you poll or query to learn of what compliance cost values they were using?

A We didn't poll other utilities. We went to our consultant, which is the consultant for the EPA in regard to the Clean Power Plan. We felt they were the most knowledgeable people to provide guidance as to what compliance costs would be, and we've consistently done that since the need determination filing for Turkey 6 and 7.

Q Do you know if they polled any power companies? Did they poll Duke Energy Carolinas to learn what they might be using in --

A Did ICF poll them?

Q Correct.

A I do not know.

Q Okay. Same would go -- would hold true for Georgia Power?

A I do not know, but I'll expand my answer to say I doubt it.

Q Uh-huh. Okay. So did you rely on ICF exclusively for your values?

A For the starting point values, yes.

Q And the starting points take you to 2045; is that correct?

A The starting point value -- no. The starting point values take us to 2030. They provide real dollar values through 2030.

Q And at what point did you use an escalation factor to those?

A From 2031 on. And the approach we took for those escalation was discussed with ICF. As has been the case for virtually every year, they have provided numbers to us both in terms of how to convert real dollars into nominal dollars and then how to extrapolate numbers for later years.

Q What was the basis of the 8 percent escalation?

A It was a -- the best way to describe it is it was a curve fitting mathematical approach which used the

actual values from ICF as the starting point to create subsequent year values.

Q What was the basis of those curve values?

A Their actual numbers.

Q Their actual numbers for?

A For CO2 costs. In other words, they provided us real numbers, real dollar value numbers through 2030. That creates a curve over those years. We applied essentially a quadratic equation type approach to extend that curve based on discussions with ICF.

Q Okay. Maybe, maybe we'll come back to that.

So you're essentially extending the curve -- what you're saying is that -- is it your testimony that there was an 8 percent increase from year to year and then you just continued that 8 percent increase in the off years?

A No, that's not my testimony. Shall I expand?

Q Please.

A Okay. The value -- when you -- let's discuss in nominal dollars because those are the inputs used in our models. The values that ICF provided to us through 2030 escalated over those years in the range of 12 to 15 percent. What we did is, by using the mathematical curve fitting to expand, we rolled those costs out or projected those costs out. It was at a -- the best way

to describe it, it was a decreasing percentage growth from what ICF had projected for the original -- from the original values.

Then when we got out to where our computer model ends, which went out through 2044, we had to come up with an approach in which we would extend the -- the CO2 benefits. We looked at the projected costs that -- through our quadratic equation that went out beyond that time period of 2044, and we saw that it was averaging roughly 8 percent per year. And that was what we used from 2045 on to expand the CO2 cost values for both resource plans.

MR. CAVROS: Okay. I'd like to introduce another exhibit now, and I'd like to mark this as 86.

CHAIRMAN GRAHAM: I believe we can do that.

(Exhibit 86 marked for identification.)

MR. CAVROS: This is entitled Synapse CO2 Compliance Cost Projections.

CHAIRMAN GRAHAM: Okay.

MR. CAVROS: Thank you.

MS. CANO: I will go ahead and lodge a preliminary objection at this time per request. I believe it's going to be hearsay.

CHAIRMAN GRAHAM: Okay.

MR. CAVROS: And if I could re -- would you

like me to respond now, Chairman, or later?

CHAIRMAN GRAHAM: If you choose to.

MR. CAVROS: Sure. Section 120 has a very liberal view of hearsay. Hearsay evidence can be used to supplement evidence that is already in the record. There's been extensive testimony by Mr. Meehan and the witness on the value of CO2. So it's, it's absolutely relevant and it does supplement that testimony, and consistent with the provisions in, in Chapter 120.

MS. CANO: May I briefly respond?

CHAIRMAN GRAHAM: Sure.

MS. CANO: I believe Mr. Cavros just said that he was using this to supplement another party's witness's testimony, which would be inappropriate, completely objectionable. If Mr. Meehan wanted to introduce an alternate CO2 forecast, he could have done so with his testimony. So it would remain hearsay, not subject to the liberal interpretation of Section 120. Outside the scope of the witness's testimony as well. Thanks.

MR. CAVROS: Chairman, the witness just referenced another -- another study that was not in his testimony. He's an expert. Certainly he can, you know, is able to respond to the information. And certainly, you know, the Commission can consider it and give it the

weight that, you know, it deems appropriate.

CHAIRMAN GRAHAM: Let's see where you go with this questioning and we can go from there. Florida Power & Light, feel free to make objections as you go through your questioning.

MR. CAVROS: Sure. And there's really just a few questions for this particular exhibit.

BY MR. CAVROS:

Q But first let me -- let me lay a bit of foundation. Dr. Sim, you've heard of Synapse Energy Economics?

A Yes.

Q You know the firm? Okay. And are you aware that their clients include public utility commissions in the United States and Canada?

A I am not aware of that, but I have no reason to doubt you.

Q Okay. And are you aware that their clients also include offices of consumer advocates, attorney generals, and environmental organizations?

A Again, I have no knowledge of their client base.

Q Okay. Then would -- would you have any -- would you know if they -- one of their clients is the U.S. Environmental Protection Agency as well?

A I have no knowledge of their client base.

Q I would like to turn your attention to page 31.

A I'm there.

Q This is a table of Synapse's for this year, 2015, CO2 price projections, and it goes out to the year 2050. And if you look at the column 2050 and you go across that column, their mid-case scenario is $88 a ton. Do you see that?

A Yes.

Q Okay. Now I'd like to refer you back to ROB-2, page 2, that we had just looked at, and your, for lack of a better word I'll use midpoint is 195; is that correct?

A That's correct. That's in nominal dollars, as it says at the top of that page. The Synapse numbers to me appear to be in real dollars in terms of 2014 dollars.

Q Uh-huh.

A So these are apples versus something other than apples. In regard to getting you something that's a bit closer to real dollars, in response to POD -- I'm trying to find the reference, just a moment, please -- City of Miami's Second Request for Production of Documents No. 11, we provided a number of documents.

The starting point for ICF's numbers are on Bate Stamp FPL 001002. Now this is not an exact match because ICF gave real dollars in terms of 2010 dollars, Synapse is giving real dollars in terms of 2014 dollars, but you're at least closer to apples versus apples.

Now ICF provided values through 2030, so perhaps we look at 2030. Synapse is giving values of $35 --

MR. MOYLE: Is this in the record, what he's referencing?

CHAIRMAN GRAHAM: The chart that he's reading from the City of Miami?

MR. MOYLE: No, the discovery response.

MR. HABER: That is not in staff's Comprehensive Exhibit List.

CHAIRMAN GRAHAM: He's just -- if there's a decision to put it into the record, we'll make that decision at the time. Right now he's trying to give Mr. Cavros an apples-to-apples discussion, so I'll let Mr. Cavros let this continue as far as he wants to let it go.

MR. MOYLE: Yeah. I mean, he's --

CHAIRMAN GRAHAM: I understand --

MR. MOYLE: -- about to put it in through his

testimony, but --

CHAIRMAN GRAHAM: Well, he's -- he's trying to answer his question as close as he can, trying to give it an apples-to-apples comparison.

MS. CANO: And as a point of clarification, this discovery response is in the record. It's part of Exhibit 40.

MR. HABER: I apologize.

CHAIRMAN GRAHAM: Okay.

MR. CAVROS: Please continue.

THE WITNESS: May I continue?

CHAIRMAN GRAHAM: Yes.

THE WITNESS: Again, the value for ICF in real dollars is, in 2030 is $13 versus Synapse of $35. They are in different year real dollars. To move Synapse's down to 2010 dollars, you would probably divide that by 2.5 percent for four years. So best guess is $35 would transfer down, I can't do the math exactly in my head, into the low twenty dollars versus ICF's $13.

So by -- by my view of this, Synapse numbers are, put on a comparable basis are considerably higher than the ICF numbers that we used as a starting point for all of our CO2 work.

BY MR. CAVROS:

Q I'd like to turn your attention to page 27.

Here Synapse has compiled nonconfidential utility used CO2 values from power companies across the country. Did ICF conduct such a -- such an analysis in arriving at their figures?

A To my knowledge, no. What ICF does is they run their model, which is referenced -- which is termed the IPM model, which you see referenced or which you saw referenced frequently in the CPP draft rules. So they conduct their own analysis with which they use to advise the EPA.

And I'll note also on page 27 these also appear to be in real dollars in terms of 2014 dollars, so they are not directly comparable to the nominal values that FPL shows on ROB-2, page 2 of 4.

Q All right. Okay. Let's -- let's switch over to the rate impacts of the -- of the proposed power plant. And you represent the cost of the reactors in overnight costs, correct, throughout -- throughout your testimony or at least through -- throughout Witness Scroggs' testimony; correct?

A We refer to breakeven costs in both CPVRR and dollars per kW.

Q Okay. And you're familiar with the term levelized cost, are you not?

A Yes.

Q Okay. And it's the cost to build and operate a resource over its lifetime; is that correct?

A That's one use of the term, so, yes.

Q And the levelized cost of the proposed reactors at a 90 percent capacity factor is over 16 cents a kilowatt-hour; is that correct?

A Are you referring -- can you refer me to a document where that number -- that you're reading from?

Q Sure. It's actually in an interrogatory, FPL's response to interrogatory -- staff's interrogatory No. 29. You might have that with you.

A Just a moment. I have that in front of me.

Q And there's a table there identified as Table Staff 29A. Do you see that?

A Just a moment, please.

Q It's table 8 of 9.

A Is the top of the table labeled Turkey Point 6 and 7 in the center of the page?

Q It is not. It is labeled Table Staff 29A.

A That's in the left-hand side of the page?

Q This must -- this must have been a table in, in response to interrogatory No. 29.

A I believe we're looking at the same page.

Q Okay.

A If you would read me the value for the

90 percent capacity factor. Let's --

Q Sure. It's $168 --

A Yes.

Q -- a megawatt-hour.

A We're looking at the same page.

Q Okay.

A Thank you.

Q So you'd agree then that the levelized cost of the proposed reactor at 90 percent capacity factor is over 16 cents a kilowatt-hour?

A Yes and no, with -- with the following explanation.

First of all, as the text leading into these tables explains, and as we have discussed in at least two nuclear cost recovery dockets prior, as well as in at least one DSM goals docket, a levelized cost of electricity is -- is essentially a meaningless way to compare resource options because it ignores all system cost impacts.

Q Right. And I understand that's your opinion. But my question was just simply, you know, straight levelized cost, if my --

A Well, we've -- we've supplied two tables of levelized cost of electricity for Turkey Point 6 and 7. The first one is the traditional one that's used that

encompasses no system impacts.

Q And my --

A The value for that is $168 a megawatt-hour or 16.8 cents per kilowatt-hour.

Q If I could clarify my -- I was referring to the traditional interpretation of, of --

A Right. But there are two tables here that take a look at the levelized cost of electricity for Turkey Point 6 and 7.

CHAIRMAN GRAHAM: Dr. Sim, hold on for a second.

So, Mr. Cavros, be specific about what your question is. We'll see if we can get an answer for you.

MR. CAVROS: Sure.

BY MR. CAVROS:

Q Under the traditional cost of -- traditional definition of levelized cost, the proposed reactors at a 90 percent capacity factor will have a levelized cost over 16 cents a kilowatt-hour.

A If by traditional levelized cost of electricity you mean there are no system impacts calculated, then the projection here is 16.8 cents per kilowatt-hour.

Q Okay.

A Which I'll say is a meaningless number because

it accounts for no system impacts.

CHAIRMAN GRAHAM: I understand.

BY MR. CAVROS:

Q I think I got my answer. Your, your residential retail rate is about 11 cents a kilowatt-hour; is that correct?

A I think it may be closer to 10 cents.

Q Your avoided cost rate, what is -- what is that generally?

A Can you be more specific?

Q Sure. Your -- your rate -- well, yeah. Let me be more specific. If a renewable energy developer were to come to you and that renewable energy developer could provide some capacity, would meet the capacity requirements of Florida Power & Light and could, you know, provide as-available energy as well, what would that -- what value, what payment would that renewable energy developer be entitled to roughly?

A I couldn't tell you. It would have -- it would depend upon what the in-service date was, the size of the unit, the projected output of the unit, the projected firm capacity value, et cetera. There's no one-size-fits-all avoided cost value.

Q It's fair to say it's somewhere within the 4- to 6-cent range?

A Not necessarily. Again, I do not have a walking around one size number fits all.

Q It's fair to say that it would not be 16.8 cents a kilowatt-hour; correct?

A I think we're -- it would not, likely not be, but, again, you're comparing apples to something other than apples. An avoided cost payment, we would give a renewable developer or any other developer who came in with a PPA type proposal, we would be looking at the entire system cost impact, not just the cost of building and operating a particular type of unit.

Q Okay. Thank you. So the reactors, as you recover through the NCRC clause, are placing upward pressure on rates; correct?

A In the early years they will put upward pressure on rates, but for the majority of the years, as shown in one of staff's interrogatories, they put downward pressure on rates.

Q And by rates, you're talking about the fuel portion of the rates; correct?

A No. I'm talking about total system impact, again, as shown in one of staff's interrogatories.

Q Okay. Let's turn to ROB-1, if we could, for a moment.

A I'm there.

Q Great. Now you project 47 billion in savings nominally over the 40-year life there; is that correct?

A For the 40-year life, yes, that's the current projection.

Q Okay. Why don't you project that in that present value?

A This was for illustrative purposes. We could -- we could have projected it in present value. We chose to do it in nominal.

Q Okay. You would agree that annual customer fuel savings have a time value to the customer?

A Repeat, please.

Q You would agree that annual customer fuel savings have a time value to the customer?

A I don't understand the question. I'm sorry. Can you explain or rephrase?

Q Sure. Yeah. Sure. I mean, a nominal value is just, you know, savings year after year added up; correct? There's no discount factor.

A That's correct.

Q Okay. Don't you think a discount factor would have been more appropriate given the time value of money?

A No, not for what we are presenting here. We're just presenting how much fuel total would be saved

over a given time period. Again, nominal value is one way to look at it. A present value would have been another way to look at it.

Q Okay. The shareholders' rate of return is -- is 10.5 percent; is that correct?

A I believe so.

MR. CAVROS: Okay. I'm going to introduce another exhibit, and we'll label this as -- as 87.

CHAIRMAN GRAHAM: Net Fuel Savings Crossover?

MR. CAVROS: Correct, Chairman.

CHAIRMAN GRAHAM: Okay.

(Exhibit 87 marked for identification.)

BY MR. CAVROS:

Q Dr. Sim, this is a response by FP&L to interrogatory No. 13. I imagine you're familiar with this response?

A Yes.

Q And I want to -- in describing the attached response, this is the present annual cumulative -- present value revenue requirement net cost projections for Turkey Point 6 and 7. This is graph 13b2 that is attached there; is that correct? And did I describe it correctly?

A Yes.

Q Okay. And I am going to look at the medium

fuel and the Environmental II scenario indicated there by that, by that X shape. And it seems that it appears to cross over sometime in the 2075 time period. Do you see that?

A Yes.

Q Okay. And we're in 2015; is that correct?

A We are.

Q So if I subtract 2015 from 2075, I -- I get 60 years. Would you agree with that?

A Yes.

Q Okay. And so if I'm a 45-year-old FPL customer today, I won't receive a net present value cumulative savings until I'm 105 years old; correct?

A A net present value savings would be correct. A nominal savings, you would begin to receive those in 2036, which is the companion piece to this selected page you have put in front of me.

Q Okay. Likewise, if I'm a 70-year-old FPL customer, I won't receive a net present value cumulative savings until I'm 130 years old; is that correct?

A In terms of net present value, yes. In terms of nominal or actual savings, when they begin, 2036 is when they would start and they would continue.

Q And lastly, if I'm 80 years old and I'm an FPL customer, I won't receive a net present value of

cumulative savings until I'm 140 years old; is that correct?

A That's correct on a net present value basis. Again, on a nominal you would be receiving benefits in 2036 and every year thereafter. And the nominal values represent actual bills and rates incurred by the customer in those years.

Q Let me put this in context in terms of the net present value of -- of fuel savings. But before I do that, you're arguing that net present value is not the correct way to look at it, nominal is. Again, there's a time value to money; correct?

A There is a time value of money, and that is one way to look at it.

Q Okay. And that's --

A Another equally valid way to look at it is on nominal dollars, what your actual rates and bills will be in each year.

Q Uh-huh. But this particular graph takes into consideration the time value of money.

A It does.

MR. CAVROS: Okay. I would like to introduce at this point another exhibit.

CHAIRMAN GRAHAM: Sure. We're up to 88, I believe.

MR. CAVROS: I will wait for FPL counsel to object, and then I will respond.

CHAIRMAN GRAHAM: So Palm Beach County Demographics?

MR. CAVROS: Correct.

(Exhibit 88 marked for identification.)

MS. CANO: Sure, I'll object. I doubt this witness is going to be able to authenticate this document.

CHAIRMAN GRAHAM: You can ask your question.

MR. CAVROS: Sure. Do you want me to go ahead and ask?

CHAIRMAN GRAHAM: Yes.

MR. CAVROS: Yeah. Sure. Okay.

BY MR. CAVROS:

Q Dr. Sim, what you have here before you is demographic information from the U.S. Census Bureau. Are you familiar with the U.S. Census Bureau?

A I've heard of it and know generally what it does, yes.

Q Okay. In modeling your forecasts for sales and so forth, do you know if Census Bureau figures are utilized as a foundation or -- in terms of projecting out your future population growth in Florida?

A I do not know. I don't create the company's

load forecast.

Q Uh-huh. You do see the U.S. Census Bureau title at the top?

A Yes.

Q And I assume in your capacity as a system planner you've also run across similar type of information presented in perhaps this table format?

A No, I have not.

Q You'd agree that the U.S. Census Bureau is a government entity, federal government entity?

A Yes.

Q Okay. I'd like to turn your attention to page 4 of 6.

MS. CANO: I'll renew my objection. I don't believe he's established a foundation for questioning this witness on any of this information. He testified he has no knowledge in response to most of the questions asked.

CHAIRMAN GRAHAM: We'll see where this is going to go. Continue, Mr. Cavros.

BY MR. CAVROS:

Q Okay. Dr. Sim, the reason I'm presenting you with demographic information from Palm Beach County is because Palm Beach County is a county that FP&L serves; is that correct?

A Yes.

Q Isn't it also one of the most populous counties that FPL serves?

A Yes.

Q Okay. And I want to draw your attention to the first column, which is entitled Sex and Age, and I want to draw your attention to several rows down that start 45 to 50 years. Do you see that?

A 45 to 54.

Q 54 years; correct.

A Yes, sir, I see that.

Q Okay. And do you see below that 55 to 59 years?

A Yes, sir.

Q And then below that 60 to 64 years?

A Yes.

Q Okay. And then so on until 85 years and over?

A Yes.

Q Okay. Now I'd like to draw your -- your attention to the third column, Percent, and -- and point your attention to 14.1 for 45 to 54 years. Do you see that?

A Yes.

Q And then beneath that is 6.5 percent for 55 to 59; is that correct?

A Yes.

Q Okay. And then below that is 5.8 percent for the 60 to 64 year category; correct?

A Yes.

Q And then below that is 10.2 percent for 66 to 74 years; correct?

A I'm sorry. Repeat.

Q I'm sorry. 65 to 74 years is 10.2 percent?

CHAIRMAN GRAHAM: Mr. Cavros, can I get you to move along to where your question is going to be?

MR. CAVROS: Sure.

BY MR. CAVROS:

Q Would you agree, subject to check, that the total percentage of individuals that are 45 years or older is 48.4 percent?

A That looks about right.

Q Okay. Thank you.

You had talked with -- there was some conversation with you and Mr. Moyle regarding the potential siting of natural gas plants in South Florida. One of the concerns was emissions concerns. You currently have two 400-megawatt oil and natural gas units there currently; correct?

A I'm sorry. Repeat.

Q Sure. At Turkey Point you currently have two

400-megawatt natural gas/oil units there.

A The equipment is there. One of them is being run as a synchronous condenser. The other one is currently being run as a power plant with plans to change it over to a synchronous condenser in a couple of years.

Q Okay. Are there plans to retire those units?

A I'm sorry. I couldn't hear the question.

Q Are there plans to retire those units?

A To my knowledge, no, other than in the sense they're ceasing to become a generator of electricity and becoming a synchronous condenser as one already has.

Q In your response to Mr. Moyle, you assumed that there would be required some sort of external hazard review by the NRC. In the situation where two natural gas units replace the nuclear units in FPL's resource planning process, that external hazard review would not have to take place; is that correct?

A I don't believe that's accurate. I think the -- the NRC's review of Turkey Point 6 and 7 does take into account the possible implications of the new units on Turkey Point 3 and 4. I would imagine they are viewed as a -- as a package at the site. My term, not -- probably not the official term.

Q And I'm -- if I could turn your attention to

ROB-4.

A May I ask a question? Are we done with Exhibit 88?

Q We are, yes. Thank you.

A Okay. And I'm sorry, you asked me to turn to ROB --

Q Four, please, page 1 of 1.

A Thank you. I'm there.

Q Great. You have a resource addition coming on in your resource plan with Turkey Point 6 and 7 -- in your resource plan without Turkey Point 6 and 7 in 2027; is that correct?

A That's correct.

Q Okay. And that would be a greenfield site.

A Yes.

Q Okay. Now one of the concerns you mentioned to Mr. Moyle's inquiry about that was also natural gas capacity coming to that site; is that correct?

A If you mean a new pipeline would be needed to be built down there, permitted and built, yes.

Q Okay. And you said that -- and I apologize, what was the cost of that pipeline?

A We do not have a detailed cost estimate. We have, I would say, a rough estimate from several years back for 2018 which exceeded a billion dollars overnight

construction cost.

Q I'm sorry. Was that a million?

A Billion.

Q A billion. Okay.

Now isn't it true that the Sabal pipeline will be capable of transporting over a billion cubic feet per day once that's completed?

A Subject to check, I believe that's true.

Q Uh-huh. And that's intended to serve local distribution companies, industrial users, and also gas-fired power generation in the southeast; correct?

A Generally, yes.

Q Okay. And isn't it true that some existing plants are currently being provided gas from the Florida Gas Transmission pipeline?

A Yes.

Q Yeah. And isn't it true that then Sabal Trail will deliver natural gas to FPL for some of its electrical generation needs?

A That is the plan.

Q Okay. And isn't it also true that Sabal Trail will displace natural gas that is currently being transported to FPL power plants by Florida Gas Transmission?

A Yes, but not to the Turkey Point site. And

that pipeline is full.

Q Isn't it true that if you displace demand upstream of a pipeline, it opens up more capacity downstream?

A It does unless there's a leg on that pipeline such as the one to Turkey Point which is full.

Q Can you explain full?

A Yes. There's not enough gas there to power additional combined cycle units at Turkey Point. In order to provide that gas, a new pipeline would have to be built down to the Turkey Point site.

Q Is it a size of the pipe issue? Is it a pressure issue?

A The problem of getting more gas down there cannot be solved by compression.

Q Can it be solved by increasing the size of the pipe?

A If one -- theoretically, yes. But the pipeline would have to be essentially along the same right-of-way dug up, and it goes through heavily urbanized areas of Broward and Dade, including, subject to check, I believe it goes right through Miami International Airport. The solution is not to go that route. The permitting and the cost would be prohibitive is what I've been informed. A new pipeline would be

needed.

Q Okay. Let's talk about energy efficiency for a second. You've been the witness for FP&L in the last few conservation goal setting dockets; is that correct?

A Yes.

Q Okay.

A At least one of the witnesses.

Q Okay. And the FPL Ten-Year Site Plan forms the foundation for the feasibility analysis; is that correct?

A In general terms, yes. It's simply a report as to what our resource plans, based on the prior year's research planning analyses, project out over the next ten years. But what really forms the basis are all of the forecasts, assumptions, et cetera, in our models.

Q Okay. Let me ask you just some very simple yes or no questions.

The Turkey Point units were not used as the avoided unit in the cost-effectiveness test utilized during the 2004 FEECA proceeding; correct?

A That's correct.

Q Okay. The Turkey Point units were not used as an avoided unit in the cost-effectiveness test utilized during the 2009 FEECA proceedings; correct?

A That's correct.

Q Okay. And the Turkey Point units were not used in avoided cost in the cost-effectiveness test utilized during the 2014 FEECA proceedings; is that correct?

A That's correct.

Q Okay.

A For good reason.

Q In 2005 you used a different unit. I'm guessing it was probably a natural gas unit; correct?

A Yes. At that point in 2005, Turkey Point 6 and 7 was not on our drawing board.

Q Yet you came into the Commission in 2007 with a need determination petition for the construction of Turkey Point 6 and 7; correct?

A That's correct. There was no decision in '05 to go forward with Turkey Point 6 and 7.

Q But in 2005 obviously it was -- you were thinking about it.

A We're going back a long way in my memory, but I don't recall when we froze assumptions, which would have been in 2004, we were discussing or analyzing Turkey Point 6 and 7. I do not recall us doing that.

Q Okay. So from 2004 to 2007 you were able to issue an RFP and develop all the requisite regulatory filings for any determination for a large nuclear

facility in three years?

A We did not issue an RFP for nuclear capacity.

Q One last thing, you have now stretched the useful life out in one of your scenarios to 60 years for the project; correct?

A That's correct.

Q Uh-huh. Isn't it true that there are no nuclear units that have operated for 60 years?

A I believe that's correct. However, a number of the units, including all four of FPL's, have been licensed to operate for 60 years, and we fully anticipate they will operate for that long.

MR. CAVROS: I have no other questions. Thank you.

CHAIRMAN GRAHAM: Thank you.

City of Miami, how many questions -- how long of questions do you have?

MR. HABER: We have -- pardon me, Mr. Chairman. We have quite a few.

CHAIRMAN GRAHAM: Staff?

MS. MAPP: We only have a couple of questions.

CHAIRMAN GRAHAM: All right. Let's -- I'm trying to decide if we're going to break for lunch or if we're just going to take a brief break and try to get through this. Commissioners? Brief break? Let's take

a ten-minute break. It's 20 till back there. At 10 till we'll reconvene.

MS. MÉNDEZ: Chairman, is there any way it can be 15?

CHAIRMAN GRAHAM: Sure.

(Recess.)

CHAIRMAN GRAHAM: All right. My official clock back there says that it's about 16 minutes, so I think we need to reconvene.

Dr. Sim, are you ready?

THE WITNESS: Yes.

CHAIRMAN GRAHAM: City of Miami, are you ready?

Now try it.

MR. HABER: Thank you.

CHAIRMAN GRAHAM: I had everybody muted.

MS. MÉNDEZ: You muted everyone.

MR. HABER: I'd note that FPL's counsel is not in the room. Should I still move forward?

CHAIRMAN GRAHAM: Fair enough. Maybe we need to wait for them to get here.

MR. HABER: I don't want to --

MS. MÉNDEZ: Are you going to call them out like you did me the other day?

CHAIRMAN GRAHAM: I -- and they know better.

MS. MÉNDEZ: Chairman, if I could take the time just to tell you I have a 6:55 flight, so I might -- well, no, no.

CHAIRMAN GRAHAM: I guarantee you you'll make it.

(Laughter.)

COMMISSIONER BRISÉ: One way or the other.

MS. MÉNDEZ: But just in case, if at 5:00 you see me bow out and I leave my able co-counsel, I'm sorry, but --

CHAIRMAN GRAHAM: Okay.

MS. MÉNDEZ: Thank you.

MR. SAYLER: The last I saw FPL, they were at Eatz or heading into Eatz, so.

CHAIRMAN GRAHAM: They were where?

MR. SAYLER: Heading to Eatz cafe. Is it still called Eatz over here?

CHAIRMAN GRAHAM: I was going to say 10, 15 minutes -- let's just go ahead and get started because I said we were going to reconvene in 15 minutes.

MR. SAYLER: I believe they're -- not to take up for FPL, but I believe they need to be represented by counsel. Oh, here he is.

CHAIRMAN GRAHAM: We were getting ready to get started. Believe it or not, OPC jumped up to help you.

City of Miami, please.

MR. HABER: Thank you, Mr. Chairman.

EXAMINATION

BY MR. HABER:

Q Good afternoon, Mr. Sim.

A Good afternoon.

Q So before getting into the meat of it, I wanted to touch on some preliminary matters with you. Earlier you had mentioned that you had not only adopted and read all of Mr. Brown's testimony, but that you had also participated in reviewing at least one draft of it; correct?

A That's correct.

Q Do you know if anyone else was involved in reviewing or helping Mr. Brown to draft his direct testimony?

A I believe his current supervisor as well as one of our attorneys almost certainly had a hand in reviewing the draft.

Q Moving to your rebuttal testimony, who else was involved in helping you to draft and review that rebuttal testimony?

A At least one of our attorneys reviewed it.

Q Other than your attorneys, was -- were any other FPL employees involved in helping you to review

and draft that testimony?

A I believe Mr. Brown was.

Q Thank you.

So moving to Mr. Brown's testimony, I'd like to discuss some of the contents of FPL's feasibility analysis. And both Mr. Brown and yourself have described it as a snapshot of various assumptions such as load forecast, fuel forecast, environmental compliance cost forecast, operating life of Turkey Point 6 and 7, et cetera. Do you still agree with that description?

A I'm sorry. What was the question?

Q I was asking if you still agree with that description of FPL's feasibility analysis?

A Yes. Most resource option analyses are a snapshot in time of current -- of current assumptions and forecasts.

Q Now this isn't an impeachment. This is -- this is purely just going to be, you know, bread and butter, very simple stuff.

Mr. Scroggs also described it as, you know, the analysis calculated a projected breakeven cost for new nuclear, a cost that results in the same life cycle costs or cumulative present value of revenue requirements as an alternative plan relying on natural

gas combined cycle units assuming a 40-year operating life. The analysis was conducted for seven scenarios comprised of combinations of three fuel and three emissions cost forecasts. Again, do you agree with this -- that this statement is accurate?

A Yes.

Q Okay. Just so you understand, all I'm trying to do is to create a basic understanding of what this document is.

A Yes, sir.

Q So we had also said in essence, and rather than going directly to the record and quoting it, that Turkey Point Units 6 and 7, the projected new nuclear reactors, are being compared against a new combined cycle natural gas plant similar to the one that's being installed at FPL's Cape Canaveral and Riviera Beach sites and the one that is being installed at Port Everglades.

A Yes. Actually they're being compared to two such combined cycle units.

Q Okay. Because there are two nuclear reactors, there'd be two combined cycle units.

A Yes.

Q And so the two resource plans that this -- strike that.

The two resource plans that this feasibility analysis is based on, they differ beginning in the year 2027; otherwise, up to that point they're completely the same?

A That's correct.

Q Okay. And so when you're looking at the comparison between the two nuclear reactors and the two hypothetical gas-fired combined cycle plants had both a 40- and a 60-year operating life, it's a comparison across several variables?

A Could you repeat the question, please?

Q Sure. In essence, the comparison between the two combined cycle units and the two nuclear reactors, it's a comparison across several different variables. I can be more specific.

A That would help. Thank you.

Q You're comparing it -- sure. You're comparing those two different units -- or those four different units, rather, across fuel forecasts, environmental compliance forecasts, that sort of thing?

A That's correct.

Q Okay. So in there it is fuel forecasts; correct?

A That's one -- one component of scenarios.

Q Right. And so we just said another component

was the environmental compliance cost.

A Correct.

Q And another component was the breakeven cost.

A I wouldn't view those the same as -- the fuel forecasts and environmental compliance costs are inputs to the analysis.

Q Okay.

A Breakeven cost is a result of the analysis.

Q And the capital -- sorry -- the capital cost estimates?

A For which type of unit?

Q For both. I'm basically going through -- I'm checking off what these are compared across or whether or not those are inputs or, as you said for the breakeven costs, a result.

A The capital cost for the combined cycles are the same in both resource plans. The nuclear cost is assumed to be zero, and we work backwards to a breakeven cost.

Q Okay. So those are inputs or they're results of the various plans?

A The breakeven capital cost for nuclear is an output or a result of the analysis.

Q And sunk costs are similarly a result?

A No. Sunk costs are costs that are not

included in the analysis.

Q Okay. If you would, please go to page 12 of Mr. Brown's direct. You can look at lines 8 -- 11 through 18.

A I'm there.

Q Mr. Brown states, "Five informational items were listed in Order No. PSC-08-0237 that should be updated and included in FPL's annual long-term feasibility analysis of Turkey Point 6 and 7." So basically the entire list of items that I just read off to you, I got them from that page in that statement. Do you agree with Mr. Brown that -- have you read that order? Let's start off with that. Are you familiar with the order that Mr. Brown references?

A Do I agree with the order in which they're presented?

Q No. I'm sorry. I did fumble that question. Have you read the order he's referencing, Order No. PSC-08-0237?

A Yes.

Q And do you agree with Mr. Brown that it says that these five informational items should be updated and included in each FPL annual long-term feasibility analysis?

A Either updated as inputs or presented as an

updated output, which is breakeven cost.

Q Okay. In essence what I'm getting at is that updated information on all of those items are requirements for the annual long-term feasibility analysis.

A Yes.

Q And just as a -- still a preliminary matter, the PSC requires that feasibility analysis must be updated each year.

A Updated with the appropriate information.

Q So one of those pieces of appropriate information -- and, again, this is -- this is still we're going basic -- are the environmental compliance costs.

A That's one of the items on the list. Yes.

Q And that would include the cost of emitting carbon.

A Yes.

Q But it does include other costs.

A Yes.

Q So in your rebuttal testimony now, would you mind turning to page 8? And you've already stated this many times today, but in lines 22 to 23 you stated that all of FPL's CO2 cost forecasts have been based on projections made by the respected consulting firm ICF

International; correct?

A Yes.

Q And these cost projections, they are generally released in terms of real dollars through the year 2030.

A Correct.

Q And by FPL's current estimates, 2030 would also be the third year of the operating life for Turkey Point 6 and 7?

A Third or fourth, depending upon which unit you're referring to.

Q For both units.

A It would be third or fourth.

Q Okay.

A One comes in in '27, one comes in in midyear '28.

Q Okay. So the actual forecast that you get from your vendor, it only accounts for the third or fourth year of the project's operating life.

A Yes. That is the extent of their projection, which we then, with consultation with them, extrapolate to later years.

Q And on page 9, line 6, of your rebuttal testimony, you also state that this carbon cost projection provided to FPL by ICF, it's from the year 2012; correct?

A That's correct. We checked with them in 2013, we checked with them in 2014, we checked with them again in 2015, and they said that the 2012 forecast is the most reliable, most meaningful forecast that they had available to use.

Q So I'm going to make you flip back a couple of pages to page 5 of your testimony.

A Rebuttal or direct?

Q Your -- your rebuttal testimony. I apologize.

So on lines 2 through 13 you stated that, "Both parties recognize that major assumptions and forecasts change from year to year." Is that true?

A Yes. I would state that not necessarily all assumptions and forecasts change from year to year.

Q But what you said is that major assumptions and forecasts change from year to year.

A That is generally true.

Q Okay. But that's not in your rebuttal testimony. What you and several other parties and FPL attorneys agreed to in the language of your rebuttal testimony was that major assumptions and forecasts change from year to year; is that correct?

A As I stated, that is generally the case.

Q And on page 7, lines 5 through 7 of your rebuttal testimony, you stated assumptions -- you stated

that, "Assumption changes are made on a regular basis by FPL in order to utilize the best and most current information available in its resource planning analyses"; is that correct?

A That's correct. The statement is correct, and the statement holds true for environmental compliance costs.

Q Beautiful. And we also agreed earlier that PSC Order No. 08-0237 requires, among other inputs, that the environmental compliance costs must be updated in each annual long-term feasibility analysis; correct?

A That's what it says.

Q And so that obviously includes the environmental compliance cost forecasts.

A It includes it, and we have updated when it was appropriate to do so when we had better information that would supersede information we had previously.

Q Nevertheless, the carbon cost projection forecast that FPL submitted to the PSC this year has not been updated for three years; is that correct?

A Yes and no.

Q The forecast that you received from ICF has not been updated in three years.

A It has not been updated because they have not published anything that they view is better than what

they forecast in 2012.

Q Have they stopped their forecast? They're no longer publishing forecasts on CO2 emissions and what that would cost?

A I can't fully answer that question because they have a number of private clients that they may have published forecasts for.

Q So --

A When we went to them and asked do you have a better forecast than what you gave us in 2012, one that is more meaningful, that supersedes what we used --

Q Sir, I'm sorry to interrupt you, but you've already made that point. I understand it and I respect it. But you also made a point that is a little bit conflicting with it, which is hypothetically perhaps they have other clients to whom they have provided more updated CO2 emission cost forecasts.

A I didn't say more updated. That's your words.

Q You said other.

A I said they may have provided different forecasts.

Q Can you conceive of a situation where they would provide a client with an older forecast?

A Probably not, but it would depend upon the request of the client as to what the specific nature of

the forecast would be.

Q So I'm going to bring you back to your rebuttal testimony, page 10, lines 6 through 14. You state, "Around 2013, discussion of CO2-related legislation at the federal level basically stalled. As a consequence, ICF advised FPL that ICF's most recent (2012) CO2 cost forecast was the best projection it had regarding future CO2 costs. Consequently, FPL used that projection in its 2013 and 2014 resource planning work including the nuclear feasibility analyses in this those years." That's the same point that you've made just a couple -- a couple of times now recently; correct?

A That's correct. It was viewed as the best forecast.

Q But if FPL used the 2012 carbon forecast for its long-term feasibility analysis in 2013, 2014, and 2015, the cost of CO2 air emissions really was not updated, even though Mr. Brown and yourself have testified that they were updated.

A If you wish to get technical, the 2015 forecast is different than the 2014. We moved up the start year for those costs to 2020 from 2023, so technically it was updated.

Q Right. So that is a little different. I want to refer you back to something you had said earlier

about your own expertise. If you'll give me a moment to go to my notes. You had stated, in effect, that your expertise is in using CO2 forecasts as inputs, not creating them; correct?

A Yes.

Q So there is, albeit a technical one, but there is a distinction between making allowances within a -- strike that, please. I want to start over.

There is a distinction between creating wholesale a new CO2 cost forecast and then using one that has already been created and adapting it for other purposes; correct?

A That would be your perspective of it. My perspective is the 2015 forecast, if you look year to year, is different than the 2014. I would view that as an update.

I would also say that FPL doesn't change a forecast or assumption just because it's a different year. We use the best available information, whether it's the same as last year or this year. A case in point would be return on equity.

Q Hold on a second. Before you get onto a different point about equity, I want to go back to this idea of using the best available forecast or, you know, as -- as the PSC has ordered, using the most updated

forecast.

In effect, when you chose not to update or to obtain a new forecast from ICF for three years, you did so based purely on a conversation with the vendor; correct?

A Primarily, yes.

Q Primarily.

A I would say yes.

Q Thank you. I want to bring you to page 10, lines 16 to 18, of your rebuttal testimony. You state that, "FPL agrees with Mr. Meehan that there is considerable uncertainty regarding CO2 compliance costs. Most of that uncertainty will not be cleared up until, one, the CPP final rules are issued this summer or soon thereafter," et cetera. In that line, CPP refers to the EPA's Climate [sic] Power Plan?

A Clean Power Plan.

Q Clean Power Plan.

A Yes, sir.

Q Thank you. So would you agree that although there is always uncertainty in forecasting and using forecasts that are provided by vendors, that certain outcomes are more or less likely than other outcomes?

A Can you expand on that to give an example perhaps?

Q Sure. I'll give a hypothetical. It's -- it's reasonable to assume that at some point the federal government will begin regulating carbon emissions and putting a cost on that. It's less reasonable to assume that the federal government will begin issuing licenses on having children.

A I accept the analogy, yes.

Q So even though there is some uncertainty in carbon cost forecasts, it makes sense to update with, with the best information that is available; correct?

A Yes, and I believe that's what we have done.

Q So going pack to page 10, lines 16 to 18 of your rebuttal testimony, you mentioned again that there was uncertainty because the Clean Power Plan final rules were not issued. The EPA has now issued the -- rather they have released the Clean Power Plan; correct?

A Yes, approximately a week ago.

Q And, as you mentioned, FPL knew that the Clean Power Plan would be -- would be released around this time; correct?

A We knew within, say, a quarter or two when it would be -- when it was expected to be released.

Q So now that the Clean Power Plan has been released, will FPL update its analysis?

A We will for the 2016 feasibility analyses.

All analyses for each nuclear cost recovery docket that we provide to the Commission is based on the best information that was available at the time when assumptions needed to be frozen so that the analysis could be performed in time to file the feasibility analysis on May 1st. When we next update the analysis, all forecasts and assumptions will be reviewed, and those that are appropriate to change will be changed.

Q But you agree that it is an important component of, in essence, updating the CO2 forecasts used in the FPL feasibility analysis.

A It certainly is an important one, and it will be reviewed in light of that.

Q Sure.

A As will all other forecasts and assumptions when we gear up to do this again for next year.

Q But the Commission will, in essence, have a one-year lag time on making a decision based on that analysis based on that federal regulation which is available today?

CHAIRMAN GRAHAM: I think this question has been asked and answered. You need to move on.

MR. HABER: Thank you, Mr. Chairman. I will.

BY MR. HABER:

Q So we were talking a bit about -- not us per

se, but in these chambers -- we've been talking a little bit about the transmission costs associated with the alternative combined cycle units that are in this feasibility analysis; correct?

A It is a subject of discussion in this docket, yes.

Q And earlier I believe it was to Mr. Moyle that you gave an explanation about why those combined cycle units could not be located at the Turkey Point site in the manner that the new reactors are planned to be sited there; correct?

A Not quite. I don't believe my testimony was that they could not be sited. I think my testimony was it appears unlikely they could be sited there. You don't know for certain until one would try to site them.

Q That's a fair distinction.

You mentioned a few different issues, one of which was a potential billion dollar pipeline to get the fuel to the plant. The other issues related to the proximity of the plant location to two very important national parks, the Everglades National Park and Biscayne National Park; is that correct?

A That's correct.

Q Would you say that it is primarily the environmental concerns or the cost-related concerns that

have made this a less attractive option for FPL?

A I wouldn't call it unattractive or less attractive. I would call it unlikely. And the primary reason would be the difficulty our environmental folks see in gaining permits for such a unit or pair of units down there.

Q By permit, do you -- can you speak a little bit more on that? Which kind of permit are you relating -- are you referring to?

A I'm speaking in general terms of all necessary permits and approvals that are needed in order to site -- that would be needed in order to site a combined cycle at that site.

Q There are certainly quite a few environmental licenses and permits required to build nuclear reactors at that site; correct?

A That's true, and we are pursuing those now.

Q Sure. But my question is more about what's the distinction between the environmental permits and licenses you would need for the combined cycle unit versus the reactors. Why is it more likely that you would get the units for -- the licenses for the reactors than it is for the combined cycle units?

A My understanding is that one of the primary concerns that was mentioned to me is the air emission

portion of getting permits, particularly the particulate matter.

Q Right. And that's -- that's primarily where I'm drilling down at. So the distinction here isn't broadly environmental concerns, because I think if we needed to, we could point to quite a few with the reactors relating from hydrological issues to, you know, spent fuel rods. But the distinction between the two units we're getting at here is that combined cycle units do have significant air emissions and nuclear reactors do not; correct?

A That's certainly a distinction between the two types of plants.

Q So I just want to make sure I'm clear on this, and I apologize if it's repetitive. But the primary driver that makes it less likely for FPL to be able to construct and operate combined cycle units at Turkey Point is the difficulty in obtaining emissions -- air emissions-related licenses and permits.

A I can't quite agree with that, and let me explain why. When I asked the question of our environmental folks as to the likelihood of gaining approvals necessary to build one or two combined cycles at Turkey Point, I'll paraphrase their answer. It was we think it would be very difficult to the point of

unlikely, and, for example, the particulate issue in regard to air emissions would be very problematic. They didn't go beyond that. There may be other issues that would be problematic. That's the only example that I was provided at the time.

Q And so when we've been talking about this transmission issue, it's primarily a question of -- strike that.

What we've been talking about now is locating combined cycles either outside of the two-county area or why FPL believes it's unlikely it could site the combined cycles at the Turkey Point plant site; is that correct?

A Could you repeat, please?

Q Sure. The topic of conversation that you and I have just engaged in and that you've engaged in with several other Intervenors in this proceeding is -- it relates to -- strike that. I'm sorry. I'm having difficulty phrasing this question.

In essence, when we're looking at the possibility of siting these combined cycles, we've looked at two options. One of them is locating the hypothetical alternative combined cycle plants outside of the two-county area, and that's where we get this additional $1.7 billion in transmission costs in the

feasibility analysis. The other is locating the combined cycle units at the Turkey Point plant site in lieu of the reactors that are currently planned for that site; correct?

A In general terms, yes.

Q So let's add a third option into that mix, and that is locating the combined cycle units elsewhere within the two-county area but not in Turkey Point. And so my question is has FPL looked at that option?

A We have certainly looked at sites for capacity, primarily combined cycle capacity throughout our service territory and specifically within Broward and Miami-Dade, and there are no known sites that look particularly attractive for various reasons elsewhere within Broward and Miami-Dade.

Q One of those reasons must be cost; correct?

A Cost is always a concern, yes.

Q Sure. Others would be licensing issues and NIMBYism and what have you; correct?

A Land, zoning, air permits, congestion, et cetera.

Q Focusing primarily on cost, this project, Turkey Point Units 6 and 7, we're looking at a range between $13 billion and $20 billion; correct?

A I believe that's correct.

Q In your estimation, is it likely that the price of acquiring land sufficient to site new combined cycle units would top out over $13 billion?

A No.

Q I'm going to pivot our topics a little bit right now. So if you wouldn't mind, let's return to Mr. Brown's direct testimony. He stated on page 17, lines 20 through 22, "In its 2015 feasibility analyses, FPL again is using two operating life assumptions, a 40-year operating life and a 60-year operating life." That is correct?

A Yes.

Q Now I'm going to ask you to go back to your rebuttal testimony, to page 17. So on lines 10 through 13 you discuss one of the exhibits -- you discuss one of the exhibits submitted by the City of Miami's expert, Mr. Meehan, and state that, "One of his exhibits, ETM-2, is based on a 40-year operating life. Because his testimony is that he believes a new nuclear unit will operate for 60 years, this exhibit can be completely ignored," and then the sentence continues. Is that correct?

A That's correct.

Q To be clear, that Exhibit, ETM-2, is based on a 40-year operating life.

A Yes.

Q Now FPL's long-term feasibility analysis uses a 40-year operating life as well as a 60-year operating life; correct?

A Correct.

Q Mr. Meehan's Exhibit ETM-2 is based on the same information that FPL has submitted to the PSC, right, a 40-year versus a 60-year analysis; correct?

A That's correct.

Q So is it your position that the PSC ought to ignore Mr. Meehan's 40- to 60-year comparison when FPL submitted the exact same analysis?

A Mr. Meehan made -- the answer is yes for purposes of those exhibits because Mr. Meehan stated that he believes the nuclear units will operate for 60 years.

Q Thank you. So let's go to page 13 of your rebuttal testimony.

CHAIRMAN GRAHAM: I'll let you handle it on redirect.

BY MR. HABER:

Q If you look at -- are you there?

A Page 13 of rebuttal.

Q Lines 6 through 7, you're essentially saying that there's minimal impact of any 2067 cost value on

the present value of costs reflected in FP&L's analysis; is that correct?

A That's what it says, yes.

Q Basically you're saying that costs 52 -- strike that.

Basically you're saying that costs 52 years from now will have a minimal impact on the results of FPL's long-term feasibility analysis; is that accurate?

A Putting in context, in comparison to costs that are nearer term and less discounted back.

Q I'm going to ask you to turn to Exhibit ROB-6 -- sorry, it's R-O-B 6. FPL recently provided us with an updated version of that. The exhibit I'm familiar with is marked as Exhibit 26 by staff. In this exhibit, FPL has claimed present value benefits of Turkey Point 6 and 7 ranges from $10.4 to $15.6 billion; is that correct?

A Repeat the numbers, please.

Q Sure. They are about, these are rounded, about 10.4 billion and 15.6 billion.

A Correct.

Q And I'm going to ask you just for some clarity for my sake because I'm not an economist, but present value in this instance is the value of a dollar at some point in the future stated in terms of today's dollars;

correct?

A Yes.

Q As a conceptual example, a dollar in 2016 could be worth 93 cents in 2015 present value dollars; correct?

A Rounding off, yes.

Q And this is a separate concept from inflation; right?

A Yes.

Q So, again, I'm just going to say it one more time and ask for clarity, in this exhibit FPL is claiming that the benefits of Turkey Point Units 6 and 7 are worth about $10.4 to $15.6 billion in 2015 present value dollars; is that right?

A Yes.

Q So with those numbers in mind, with that range in mind, would you consider a present value cost impact of 3 billion to be minimal given the total claimed benefit amount?

A In the context, no.

Q And would you consider a present value cost impact of about 2 billion to be minimal, given that total claimed benefit amount?

A Generally, no.

Q And would you consider a present value cost

impact of 1 billion to be minimal, given the total claimed benefit amount?

A In general, no.

MR. HABER: Mr. Chairman, I'd like to use an exhibit on cross. It is an excerpt from the exhibit that is marked as Exhibit No. 20 -- sorry -- the exhibit that is marked as Exhibit No. 33 in staff's list. It is FPL's responses to staff's fourth set of interrogatories. I'd like some help passing them out.

CHAIRMAN GRAHAM: Sure. To keep it simple, we'll give it an exhibit number of 89.

(Exhibit 89 marked for identification.)

BY MR. HABER:

Q Mr. Sim, have you received a copy?

A I have.

Q In the long-term feasibility analysis, using the 40-year operating life, FPL claims that Turkey Point 6 and 7 avoid carbon costs equal to about 4 billion in the Environmental II scenarios; is that correct?

A I'm sorry. Can you point me to a number on the page?

Q Sure. Okay. So if you look at the first set of tables, there are columns labeled Total Nominal and then Total CPVRR. Look at the latter one. You have one resource plan with Turkey Point 6 and 7, another without

Turkey Point 6 and 7.

If you look at Environmental II on the high fuel cost, there is a 35,884, and then in the next column a 39,854. If you subtract the first number from the second number, it's about 4 billion; is that correct?

A Yes.

Q And in the Environmental III scenarios, same thing, FPL is claiming about a $4.8 billion in avoided carbon costs; correct?

A Yes.

Q And these are the high fuel cost and the medium fuel cost scenarios; correct?

A Yes, with different environmental scenarios.

Q So moving on to the 60-year operating life for FPL's long-term feasibility analysis, the company is claiming that Turkey Point 6 and 7 avoid carbon costs equal to about 6.3 billion in the Environmental II scenarios; correct?

A For which fuel cost?

Q I think it's for the high and the medium both, about the same.

A Yes.

Q And it's about 7.6 billion for the Environmental III scenario?

A Ball park, yes.

Q So the amount of present value benefits in the Environmental III cases that comes from the carbon savings after the year 2067 is 28 -- sorry. Strike that.

The amount of present value benefits in the Environmental III cases that comes from carbon savings after the year 2067 is $2.8 billion; is that correct?

A Yes, over the additional 20 years.

Q Likewise, the amount of present value benefits in the Environmental II cases that comes from the carbon savings after the year 2067 is 2.3 billion; is that correct?

A Ball park, yes, over an additional 20 years.

Q So I would like to take you back to Exhibit ROB-6. With the projected benefits worth 10.4 to 15.6 billion in 2015 present value dollars, the 2.3 to 2.8 billion in post-2067 avoided carbon costs makes up a significant portion of the project's future value; is that correct?

A Yes. CO2 cost benefits are a significant portion of the benefits of the project.

Q So how do you square that with your statement that there is a minimal impact of any 2067 cost value on the present value costs reflected in FPL's analysis?

A I wasn't referring to the benefits. I was simply referring to a particular cost in 2067 when discounted back is relatively minimal compared with costs closer to the present.

Q One moment, please.

So continuing from that point, you do concede that the benefits -- the costs after -- strike that.

So continuing from that point, you would concede that the costs avoided after the year 2067 do have a significant impact on the feasibility of the project.

A Yes. An additional 20 years of benefit is generally significant, and it is again in this case.

Q So I want to pivot one last time to another topic. Counsel for SACE asked you a few questions about the determination of need, and I wanted to follow up.

In 2007 or so, FPL was asking for the determination of need from the PSC; is that correct?

A For which project?

Q For this project.

A I believe that year is correct, yes.

Q The information in the original request for determination of need has -- strike that.

The market value for natural gas particularly, the main -- strike that again.

Natural gas would be the primary alternative to building nuclear; correct?

A In what sense, please?

Q So in your feasibility analysis you only look at one other fuel type as a comparison point for this project, and that comparison point is a combined cycle natural gas plant.

A Yes, because it's the most cost-effective alternate type fuel project that FPL would be likely to build.

Q So since the determination of need was issued, we've stated this several times, the market for natural gas has changed dramatically; correct?

A You mean price for natural gas?

Q Exactly.

A Yes.

Q And that's been a downward trend; correct?

A No. I believe it went up for a while, and then in the last several years it has gone down.

Q So today natural gas is much cheaper than it was when this need determination was issued.

A I believe that's correct, and that's been reflected in the current analyses.

Q And at the same time, since the application for Turkey Point 6 & 7 was first submitted, the

projected costs for this project have also continued to increase.

A Are you referring to the nonbinding capital cost estimate?

Q Right. Now -- now the range is 13 to $20 billion. That was not the original cost estimate.

A Neither was the in-service date, as Mr. Scroggs explained yesterday, which brings into account escalation over a greater number of years.

Q So you agree with me.

A I'm not sure. You're comparing something that was scheduled to be built in 2018 and 2020 with something that's going to be built in 2027 and 2028. Those have significantly different escalation adders to the cost. So -- but you're not comparing two similar things because of the difference in the in-service dates. Same project but different in-service dates.

Q Understanding the distinction, ultimately when you make an application, you're saying this is what we want to build and this is what we think it's going to cost, and now at this point in time the cost has changed for the same project.

A The nonbinding cost estimate range has changed.

Q Thank you. I'm not trying to impeach you on

this one. This was a pretty basic point.

A And that, again, has been reflected in the 2015 feasibility analysis.

Q I'm not disputing that. But what I do want to ask you is the determination of need, when it's -- when it was issued, it -- strike that.

Your application when it was first submitted, it wasn't contemplating a 60-year operating life; is that correct?

A That's correct. We were conservative in that assumption by design.

MR. HABER: Thank you. No further questions.

CHAIRMAN GRAHAM: Staff.

MS. MAPP: Thank you.

EXAMINATION

BY MS. MAPP:

Q Good afternoon, Dr. Sim. I only have a few questions for you.

A Good afternoon.

Q If you could turn to page 7 of your rebuttal testimony, please.

A I'm there.

Q Okay. On lines 15 to 16 you state that the projected CO2-related cost benefits used in FPL's 2015 feasibility analysis are smaller than those used in

previous projections. Is that essentially what you said there?

A That's correct.

Q How exactly are you using the term smaller? Are you referring to a smaller total dollar amount, forecast price, or some other kind of variable?

A If you'll give me just a moment, I'll try to provide you an example.

Q Yes.

A If you would turn, please, to, in direct testimony, Exhibit ROB-2, page 2 of 4. All right. If you'll look under the last box at the bottom, it's forecasted CO2 compliance cost, you'll see that in 2014 -- well, let's just concentrate on 2015. The 2030 value is $31 a ton. In 2011, that projected cost was $68 a ton. Going down one more row, for 2040 the current forecasted price is $85 a ton. In 2011, the forecasted price was $141 a ton. So compared with a couple of years ago, the forecasted cost for CO2 compliance has significantly dropped.

Q Thank you. And could you now turn to page 13 of your rebuttal testimony?

A Yes, ma'am. I'm there.

Q On lines 22 to 23 you stated that the projected transmission-related cost benefits used in

FPL's 2015 feasibility analysis are smaller than those used previously. Again, what exactly is the term smaller referring to?

A I was referring to the projection that was in last year's feasibility analysis. In last year's feasibility analysis, the projected transmission benefits was approximately 1.9 billion. This year it's 1.7 billion.

MS. MAPP: Thank you. We have no further questions for this witness.

CHAIRMAN GRAHAM: Commissioners?

Okay. Redirect.

MS. CANO: Just a few questions. Thank you.

EXAMINATION

BY MS. CANO:

Q Dr. Sim, Mr. Moyle asked you to look at page 2 of the prefiled direct, lines 1 through 3.

A I'm there.

Q And he pointed out that it was Mr. Brown who performed the economic feasibility analysis since 2011. Do you recall those questions?

A Yes.

Q Okay. Could you please briefly explain your role in the nuclear cost recovery feasibility analyses since the year 2011?

A Since 2011, Mr. Brown was my direct report, so the analyses were done under my direct supervision, and I sponsored both the direct and, as needed, any rebuttal testimony in those dockets.

Q Thank you. And with respect to the questions that were posed to you today that were actually within the scope of the prefiled direct, did you encounter any questions that you were unable to respond to due to a lack of personal knowledge on the subject matter?

A No.

Q Okay.

A Mr. Brown conferred with me on more than one occasion as he was performing the analyses with questions that he had, so I was familiar with the analyses as they went forward.

Q Mr. Cavros asked you some questions about what has been marked as Exhibit No. 88, which is the U.S. Census Bureau data.

A I have that document.

Q Okay. And he was just pointing out the various ages of customers in Palm Beach County. Are you familiar with the term intergenerational equity or inequity?

A Yes.

Q Okay. Is intergenerational equity a concept

unique to the new nuclear power plants?

A Certainly not unique to new nuclear. It is present in any number of utility decision-making.

Q In response to Mr. Cavros, you also responded to a series of questions about whether the Turkey Point 6 and 7 project was used as an alternative in the FEECA dockets, and you responded each time that the 6 and 7 project was not considered to be the avoidable unit and you stated that was done for good reason. Could you please explain what those good reasons were?

A Yes. There are several reasons for this. I think the primary one was since its inception, Turkey Point 6 and 7 has been 2,200 megawatts. We have -- when we go through the DSM goals docket, one of the first things we do is we determine what over the ten-year period is an achievable amount of cost-effective DSM. In order to avoid the nuclear units, one would have to take the 20 percent reserve margin, factor that in, essentially divide 2,200 megawatts by 1.20, and you'd have to have 1,833 megawatts of DSM that would be cost-effective so it could avoid Turkey Point 6 and 7. We've never seen achievable cost-effective potential for DSM close to that value; therefore, it simply wasn't an option. In addition, based on prior nuclear cost recovery feasibility analysis, nuclear generally beat

combined cycle. So, therefore, in comparing DSM against combined cycles, DSM would have faired even worse against a more cost-effective opponent, which would have been Turkey Point 6 and 7.

Q Turning now to questions from Mr. Haber for the City of Miami. If you could take another look at this document that was provided to you marked Exhibit 89, and that's FPL's response to staff's fourth set of interrogatories No. 51.

A I have that.

Q Just for clarification purposes, this exhibit presents the CO2 compliance costs over the lives of the new nuclear units, not the cost values in a particular year such as the year 2067; correct?

A Yes, it actually goes beyond that. It presents the CO2 costs from 2015 on, and in this case it would have been, since there are zero CO2 costs from 2020 on, there would have been from 2020 out through 2068 or 2088.

Q And back to Mr. Moyle, he asked you about the UPLAN model, and you responded that FPL tests models before it decides to use them; correct?

A That's correct.

Q To your knowledge, is the UPLAN model used by other electric utilities for planning?

A It is, and we use it for all of our production costing, including fuel cost recovery and all of our resource planning analyses.

Q Okay. And lastly, in discussing the results of this year's feasibility analysis with Mr. Moyle, he was asking you about the -- the use the terms clearly economic versus potentially economic. Do you recall that discussion?

A Yes.

Q Okay. And does FPL's use of those adjectives depend upon how the breakeven cost compares to the nonbinding cost estimate range?

A Yes.

Q Could you please explain how so?

A If the projected breakeven cost or projected, I'll term it, benefits of the project exceed the high end of the nonbinding capital cost range, we say that the project is projected to clearly be cost-effective. If the benefits fall somewhere in the range of the nonbinding cost estimate, then we say it is potentially cost-effective.

Q And out of the 14 scenarios analyzed this year, what were the results?

A Of the 14 scenarios, eight showed that the project was projected to clearly be cost-effective. The

other six fell within the nonbinding capital cost range, and we viewed those as potentially cost-effective.

MS. CANO: Thank you. No further questions.

CHAIRMAN GRAHAM: Okay. Exhibits.

MS. CANO: FPL moves Exhibits 21 through 26 and 84, which was the corrected prefiled exhibit.

CHAIRMAN GRAHAM: 21 through 26 and 84. Okay. Any other exhibits?

MR. HABER: City of Miami, Exhibit 89.

CHAIRMAN GRAHAM: If there's no objections.

MS. CANO: I'm sorry. No objection, but this is already in evidence as part of Exhibit 33.

MR. HABER: It was just for ease of reference.

CHAIRMAN GRAHAM: Sure. There's no downside to that. Any other exhibits?

MR. CAVROS: SACE would like to enter 85 through 88.

MS. CANO: One second.

CHAIRMAN GRAHAM: Any objections to 85 through 88?

MS. CANO: My -- I would have no objection to these exhibits, and that includes No. 86, if only the pages actually questioned of the witness are included from 86.

CHAIRMAN GRAHAM: Do you remember what

question -- what page that was?

MS. CANO: 31 and 27, I believe.

CHAIRMAN GRAHAM: Okay. So we'll include 85, 87, 88, and on 86 we'll include that exhibit, but only pages -- one more time.

MS. CANO: Twenty-seven and 31.

CHAIRMAN GRAHAM: Twenty-seven and 31. Any other exhibits?

(Exhibits 21 through 26 and 84 through 89 admitted into the record.)

Okay. Would you like to excuse your witness?

MS. CANO: Yes, please.

CHAIRMAN GRAHAM: All right. Dr. Sim, thank you very much.

THE WITNESS: Thank you, sir.

CHAIRMAN GRAHAM: Please travel safe.

All right. Concluding matters. Are there any other matters to be addressed?

MS. BARRERA: No, Commissioner.

CHAIRMAN GRAHAM: All right. I do thank you all for your time and your patience. I apologize that we were unable to do lunch, and -- but we did get it done in a day and a half and not three days. I wish everybody travel safe, and I'll see you the next time. City of Miami, welcome to the process.

MR. HABER: Thank you.

MS. MÉNDEZ: Thanks.

CHAIRMAN GRAHAM: Briefings, the briefs are due September 4th. Remember, we pushed that back from September 1st. And I think that's it. Staff, is there anything that I forgot?

MS. BARRERA: No, there isn't.

CHAIRMAN GRAHAM: That all being said, we are adjourned. Thank you very much.

(Proceeding adjourned at 3:00 p.m.)

STATE OF FLORIDA)
: CERTIFICATE OF REPORTER
COUNTY OF LEON)

I, LINDA BOLES, CRR, RPR, Official Commission Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 25th day of August, 2015.

Linda Boles

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