

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

FLORIDA POWER & LIGHT CO.

(Turkey Point Nuclear Generating Units 6 and 7)

Docket Nos. 52-040-COL  
52-041-COL

**ORDER**  
**(Setting Deadline for Proposed Transcript Corrections)**

The Commission held an evidentiary hearing on December 12, 2017, at its Rockville, Maryland headquarters to receive testimony and exhibits in the uncontested portion of the captioned proceeding. The hearing transcript is appended to this Order. Pursuant to my authority under 10 C.F.R. § 2.346(a) and (j), the parties may file any proposed transcript corrections no later than January 9, 2018. The parties may coordinate their responses and file a joint set of corrections.

IT IS SO ORDERED.

For the Commission

**NRC SEAL**

/RA/

Annette L. Vietti-Cook  
Secretary of the Commission

Dated at Rockville, Maryland,  
this 18<sup>th</sup> day of December, 2017.

# **Official Transcript of Proceedings**

## **NUCLEAR REGULATORY COMMISSION**

Title: Hearing on Combined Licenses for  
Turkey Point, Units 6 and 7

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Tuesday, December 12, 2017

Work Order No.: NRC-3428

Pages 1-190

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
  
+ + + + +  
HEARING ON COMBINED LICENSES FOR TURKEY POINT,  
UNITS 6 AND 7: SECTION 189A. OF THE  
ATOMIC ENERGY ACT PROCEEDING

+ + + + +  
TUESDAY,  
DECEMBER 12, 2017

+ + + + +  
ROCKVILLE, MARYLAND

+ + + + +  
The Commission met in the Commissioners'  
Hearing Room at the Nuclear Regulatory Commission, One  
White Flint North, 11555 Rockville Pike, at 9:03 a.m.,  
Kristine L. Svinicki, Chairman, presiding.

COMMISSION MEMBERS:

KRISTINE L. SVINICKI, Chairman  
JEFF BARAN, Commissioner  
STEPHEN G. BURNS, Commissioner

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission  
MARGARET DOANE, General Counsel

1  
2 NRC STAFF:

3 FRANCIS AKSTULEWICZ, Director, Division of New  
4 Reactor Licensing, Office of New Reactors

5 MANNY COMAR, Senior Project Manager, Office of New  
6 Reactors

7 JENNIFER DIXON-HERRITY, Branch Chief, Licensing  
8 Branch 4, Office of New Reactors

9 PEYTON DOUB, Biologist, Office of New Reactors

10 JOSEPH GIACINTO, Hydrologist, Office of New Reactors

11 ZACHARY GRAN, Health Physicist, Office of New  
12 Reactors

13 MOHAMMAD HAQUE, Senior Hydrologist, Office of New  
14 Reactors

15 ANDREW KUGLER, Senior Project Manager, Office of New  
16 Reactors

17 DANIEL MUSSATTI, Office of New Reactors

18 VONNA ORDAZ, Deputy Director, Office of New Reactors

19 ELLEN SMITH, Hydrologist, Oak Ridge National  
20 Laboratory

21 SESHAGIRI TAMMARA, Office of New Reactors

22 ALICIA WILLIAMSON, Project Manager, Office of New  
23 Reactors

24 MEGAN A. WRIGHT, Counsel for NRC Staff  
25

1 APPLICANT REPRESENTATIVES:

2 STEPHAN FRANZONE, Licensing Manager, Florida Power &  
3 Light Company

4 PAUL JACOBS, Engineering Supervisor, Florida Power &  
5 Light Company

6 ANNE LEIDICH, Counsel for Florida Power & Light  
7 Company Staff

8 WILLIAM MAHER, Senior Licensing Director, Florida  
9 Power & Light Company

10 MANO NAZAR, President, Nuclear Division and Chief  
11 Nuclear Officer, Florida Power & Light Company

12 RICHARD ORTHEN, Licensing Engineer, Florida Power &  
13 Light Company

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## P R O C E E D I N G S

9:03 a.m.

CHAIRMAN SVINICKI: Good morning, everyone. I call this hearing to order and a good morning.

And, there's a wonderful number of people in the room and a great energy, so we're going to have a good hearing today.

I want to welcome the Applicant, Florida Power and Light, or FPL, the NRC staff, members of the public in the room with us and those who are observing remotely.

The Commission convenes today to conduct and evidentiary hearing on FPL's application for Combined Licenses to construct and operate two new nuclear power plants at the existing Turkey Point site in Miami-Dade County, Florida.

This hearing is required under Section 189(a) of the Atomic Energy Act of 1954 as amended.

The Commission will also be reviewing the adequacy of the NRC staff's environmental impact analysis under the National Environmental Policy Act of 1969, or NEPA.

The general order of today's hearing is as follows.

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1 First, I will address procedural matters  
2 associated with the swearing in of witnesses and the  
3 admission into the record of the parties' exhibits.

4 FPL and the NRC staff will then provide  
5 testimony in witness panels that provide an overview  
6 of the application as well as address safety and  
7 environmental issues associated with its review, with  
8 Commission questions following each panel.

9 The Commission expects to issue a decision  
10 after the hearing promptly with due regard to the  
11 complexity of the issues after it makes the following  
12 necessary findings.

13 On the safety side, the Commission will  
14 determine, one, whether the applicable standards and  
15 requirements of the Atomic Energy Act and the  
16 Commission's regulations, specifically those in 10 CFR  
17 Section 52.97 have been met.

18 Two, whether any required notifications to  
19 other agencies or bodies have duly been -- been duly  
20 made.

21 Three, whether there is reasonable  
22 assurance that the facility will be constructed and  
23 will operate in conformity with the licenses, the  
24 provisions of the Atomic Energy Act and the NRC's  
25 regulations.



1 Four, whether the Applicant is technically  
2 and financially qualified to engage in the activities  
3 authorized.

4 And, five, whether issuance of the  
5 licenses would be inimical to the common defense and  
6 security or to the health and safety of the public.

7 On the environmental side, as noted in 10  
8 CFR Section 51.07(a), the Commission will determine  
9 whether the requirements of the National Environmental  
10 Policy Act, Section 102(2)(a)<sup>©</sup> and (e) and the  
11 applicable regulations in 10 CFR Part 51 have been  
12 met.

13 Second, we will independently consider the  
14 final balance among conflicting factors contained in  
15 the record of the proceeding with a view to  
16 determining the appropriate action to be taken.

17 Third, we will determine, after weighing  
18 the environmental, economic, technical and other  
19 benefits against environmental and other costs and  
20 considering reasonable alternatives, whether the  
21 Combined Licenses should, on the basis of the  
22 environmental review be issued, denied or  
23 appropriately conditioned.

24 And, fourth, determine whether the NEPA  
25 review conducted by the NRC staff has been adequate.

1           This meeting is open to the public and we  
2           do not anticipate the need to close the meeting to  
3           discuss nonpublic information. If a party believes  
4           that the response to a question may require a  
5           reference to nonpublic information, then that party  
6           should answer the question to the extent practicable  
7           with information in the publically available record  
8           and file any nonpublic response promptly after the  
9           hearing on the nonpublic docket.

10           I will now ask my fellow Commissioners  
11           whether they have any opening remarks for today's  
12           mandatory hearing. We've done a few of these as a  
13           group.

14                   (NO RESPONSE)

15           CHAIRMAN SVINICKI: So, okay.

16           So, we will now proceed to the swearing in  
17           of witnesses and we will begin with FPL. So, counsel  
18           for FPL, would you please introduce yourself?

19           MS. LEIDICH: I'm Anne Leidich with the  
20           firm Pillsbury Winthrop Shaw Pittman.

21           CHAIRMAN SVINICKI: I think you might have  
22           turned it off. Okay, thank you.

23           MS. LEIDICH: I'm Anne Leidich with the  
24           firm Pillsbury Winthrop Shaw Pittman and I have the  
25           pleasure of representing Florida Power and Light

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1 Company.

2 CHAIRMAN SVINICKI: Thank you.

3 So, I would ask you now to read the names  
4 of FPL's witnesses and each witness should stand as  
5 her or his name is read and please remain standing.

6 MS. LEIDICH: Mano Nazar, William Maher,  
7 Stephan Franzone, Paul R. Jacobs and Richard F.  
8 Orthen.

9 CHAIRMAN SVINICKI: Okay, thank you.

10 I will ask you now to please raise your  
11 right hand while I read the oath.

12 Do you swear or affirm that the testimony  
13 you will provide in this proceeding is the truth, the  
14 whole truth and nothing but the truth?

15 (CHORUS OF I DO)

16 CHAIRMAN SVINICKI: Thank you.

17 Are there any witnesses of the witnesses  
18 standing who did not take the oath?

19 (NO RESPONSE)

20 CHAIRMAN SVINICKI: Hearing none. Are  
21 there any objections to including the witness list as  
22 part of the record?

23 MS. WRIGHT: None from staff.

24 CHAIRMAN SVINICKI: Okay, thank you.

25 In the absence of objections, the witness

1 list is admitted into the record and the witnesses may  
2 seat.

3 Thank you.

4 For FPL counsel, we will now turn to FPL's  
5 exhibits. Counsel, I would first ask, are there any  
6 changes to your exhibit list?

7 MS. LEIDICH: No, there are not.

8 CHAIRMAN SVINICKI: Please read the range  
9 of numbers of the exhibits to be admitted.

10 MS. LEIDICH: FPL-001 to FPL-010.

11 CHAIRMAN SVINICKI: Is there a motion to  
12 admit the exhibits into the record?

13 MS. LEIDICH: Yes, there is.

14 CHAIRMAN SVINICKI: Are there any  
15 objections to the admission of the exhibits and the  
16 exhibit list as part of the record?

17 MS. WRIGHT: No objections.

18 CHAIRMAN SVINICKI: In the absence of  
19 objections, the exhibits and exhibit list are admitted  
20 into the record.

21 I now turn to the NRC staff counsel for  
22 the presentation of the NRC staff's witnesses,  
23 counsel, please introduce yourself.

24 MS. WRIGHT: Hi, I'm Megan Wright, counsel  
25 for NRC staff. We have quite a bit more witnesses

1       than FPL.

2                   CHAIRMAN SVINICKI:   Those of us who have  
3       been here before understand this will take a little  
4       bit longer.

5                   So, I will now ask NRC counsel to please  
6       read the names of the staff witnesses.   Each witness  
7       should stand as her or his name is read and please  
8       remain standing.

9                   MS. WRIGHT:   Frank Akstulewicz, Clinton  
10       Ashley, Dan Barss, Laurel Bauer, Anthony Bowers,  
11       Lawrence Burkhart, Robert Caldwell, Anthony Campbell,  
12       Nan Chien, Manny Comar, Christopher Cook, David  
13       Curtis, Thinh Dinh, Jennifer Dixon-Herrity, Michael  
14       Dudek, Robert Fitzpatrick, John Frost, Joseph  
15       Giacinto, Zachary Gran, Michelle Hart, Brad Harvey,  
16       Shawn Harwell, David Heeszal, Shana Helton, John  
17       Honcharik, Diane Jackson, Kerri Kavanagh, Taylor Lamb,  
18       Tuan Le, Mark Lintz, Kosmas Lois, Timothy Lupold, Greg  
19       Makar, Tania Martinez Navedo, Matthew Mitchell, John  
20       Monninger, Bruce Musico, Ryan Nolan, Vonna Ordaz,  
21       Donald Palmrose, Pravin Patel, Malcolm Patterson, Tom  
22       Pham, Kevin Quinlan, Sheila Ray, Sujit Samaddar, Ellen  
23       Smith, Angelo Stubbs, Edward Stutzcage, Emil Tabakov,  
24       Seshagiri Tammara, Robert Taylor, Theodore Tjader,  
25       Richard Turttil, Yuken Wong, Zuhan Xi, Jack Zhao,

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1 Daniel Barnhurst, Jack Cushing, Jennifer Davis, J.  
2 Peyton Doub, Kenneth Erwin, Mohammad Haque, Stacey  
3 Imboden, Andrew Kugler, Ann Miracle, Daniel Mussatti,  
4 Kevin Quinlan, Lance Vail and Alicia Williamson.

5 CHAIRMAN SVINICKI: Thank you.

6 And, I can generally see most of you.  
7 There may be a couple of witnesses that are blocked a  
8 little bit by the pillars. Maybe if you would move  
9 off to one side or the other so I can cast my gaze on  
10 you while I read the oath.

11 So, please, for all the NRC staff  
12 witnesses, would you raise your right hand while I  
13 read the oath?

14 Do you swear or affirm that the testimony  
15 you will give -- provide in this proceeding is the  
16 truth, the whole truth and nothing but the truth?

17 (CHORUS OF I DO)

18 CHAIRMAN SVINICKI: Are there any  
19 witnesses who did not take the oath?

20 (NO RESPONSE)

21 CHAIRMAN SVINICKI: Okay, hearing none.  
22 Are there any objections to including the witness as  
23 part of the record?

24 MS. LEIDICH: No, there are not.

25 CHAIRMAN SVINICKI: In the absence of

1 objections, the witness list is admitted to the  
2 record.

3 The witnesses may please take their seats  
4 again.

5 Thank you very much.

6 We will now turn to the NRC staff's  
7 exhibits. Counsel, are there any changes to your  
8 exhibit list?

9 MS. WRIGHT: No, there are not.

10 CHAIRMAN SVINICKI: Please read the range  
11 of numbers of the exhibits to be admitted.

12 MS. WRIGHT: NRC-001 to NRC-011.

13 CHAIRMAN SVINICKI: Is there a motion to  
14 admit the exhibits into the record?

15 MS. WRIGHT: Yes, there is.

16 CHAIRMAN SVINICKI: Are there any  
17 objections to the admission of the exhibits and the  
18 exhibit list into the record?

19 MS. LEIDICH: No, there are not.

20 CHAIRMAN SVINICKI: In the absence of  
21 objections, the exhibits and exhibit list are admitted  
22 into the record.

23 Okay, thank you, counsel.

24 That is -- we've disposed of those  
25 important matters very capably, so I ask now that

1 we're going to turn to the first of the witness panels  
2 and the counsel may be excused at this point. Thank  
3 you.

4 MS. LEIDICH: Thank you.

5 MS. WRIGHT: Thank you.

6 CHAIRMAN SVINICKI: So, as I noted earlier  
7 in the order of the day, we will now begin with two  
8 separate overview panels.

9 The first of those will be provided by the  
10 FPL witness and they will provide an overview of FPL's  
11 application.

12 After each overview panel, we will have a  
13 round of questions from the Commissioners.

14 For the two subsequent presentations, the  
15 safety panel and the environmental panel, first, FPL  
16 and then the staff will testify followed by an  
17 opportunity for the Commission to pose questions to  
18 both parties.

19 The Commissioners will have an opportunity  
20 to bank their time as they see fit to focus on  
21 particular questions over the course of the day. And,  
22 as is our practice, we will rotate the order of  
23 questioning throughout the day.

24 I remind all witnesses of this panel and  
25 other panels who will appear before us throughout the



1 day that they remain under oath and that the  
2 Commission is also familiar with your prehearing  
3 filings.

4 And, I will note, I don't think it will  
5 happen for this overview FPL panel, but if a witness  
6 or individual should need to come to the podium to  
7 respond to a question or otherwise speak, please  
8 approach the podium and wait to be addressed and to be  
9 sworn in if you have not previously been sworn in.

10 So, with that opening, I would ask the FPL  
11 panelists for the overview panel to please introduce  
12 themselves and then proceed with the presentations.

13 Thank you.

14 MR. NAZAR: Good morning, Commissioners.  
15 My name is Mano Nazar. I'm the president of the --  
16 and Chief Nuclear Officer of the Florida Power and  
17 Light and its parent company, NextEra Energy.

18 I'm very pleased to appear before you  
19 today on the issuance of the Combined Construction  
20 Permit and Operating License for Turkey Point 6 and 7.

21 Before I start, I would like to recognize  
22 the significant work put forth by the NRC staff in  
23 reviewing our application and the diligent work of all  
24 employees at the FPL supporting that review.

25 I know that the NRC staff has totally

1 analyzed our application, demonstrating that the  
2 construction and operation of the Turkey Point 6 and  
3 7 would be consistent with the NRC mandate to protect  
4 the public safety and health.

5 Staff also has performed a detailed review  
6 of the environmental impacts associated with the  
7 project.

8 Now, let me talk a little bit about the  
9 FPL, if we could change to slide number two.

10 FPL is one of the largest rated regulated  
11 electric company, electric utility in the United  
12 States. It serves approximately about 10 million  
13 people, to 4.9 million customer accounts in Florida.

14 Florida Power and Light service  
15 reliabilities is better than 99.98 percent which ranks  
16 among the best nationwide.

17 FPL also high fuel efficient power plant  
18 fleet is one of the cleanest among the utility  
19 nationwide.

20 The typical customer bill is 30 percent  
21 lower than national average and the lowest residential  
22 bill in Florida.

23 As I mentioned, FPL is wholly owned  
24 subsidiary of the NextEra Energy. NextEra Energy, a  
25 little about the company as a whole, the parent

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1 company of the FPL, Florida Power and Light and also  
2 NextEra Energy resources, is based on the market cap,  
3 the largest electric company in the world.

4 NextEra Energy is the leading clean energy  
5 company with consolidated revenues of approximately  
6 \$16.2 billion.

7 Over 45,000 megawatt generation capacity  
8 and approximately 14,270 employees in 30 states and  
9 Canada as of end of the 2016.

10 In addition to FPL, NextEra Energy and  
11 other principle subsidiaries, NextEra Energy  
12 resources, as I mentioned earlier, which is the  
13 world's largest generator of the energy from the wind  
14 and the sun.

15 Two, it's a fairly adept entity is NextEra  
16 Energy resources owns and operates three nuclear power  
17 plants, four units, Seabrook Nuclear Power Plant,  
18 Point Beach Nuclear Power Plant and Duane Arnold.

19 Let's go to slide three.

20 I want to talk a little bit about the  
21 nuclear fleet within the NextEra Energy.

22 NextEra Energy nuclear fleet has extensive  
23 experience with nuclear power plants. And, FPL is  
24 well-qualified to construct and operate Turkey Point  
25 6 and 7.

1 NextEra Energy nuclear fleet is one of the  
2 largest in the country with 8 units at five different  
3 sites representing approximately about 6 percent of  
4 the U.S. nuclear power electric generation capacity.

5 And, it accounts for about a quarter -- 25  
6 percent of the NextEra Energy total generation.

7 FPL, on the FPL side, we operate 4 units,  
8 two units at St. Lucie Nuclear sites and 2 units at  
9 Turkey Point with a total net generation of about  
10 approximately about 3,500 megawatts.

11 The investment to build these units in  
12 60s, 70s and 80s resulted in significant value to the  
13 FPL customers in terms of safe, reliable, clean, cost-  
14 effective, base load energy and is one of the reasons  
15 why FPL is leading in the low-cost reliable and clean  
16 electricity today.

17 Turkey Point and St. Lucie accounted for  
18 nearly about 25 percent of the FPL generation in 2016.

19 As I mentioned previously, FPL affiliated  
20 NextEra Energy resources also owns and operates at  
21 Seabrook, Point Beach and Duane Arnold plants.  
22 Together, that NextEra nuclear fleet the capacity to  
23 generate more than 6,500 megawatts of the emission-  
24 free electricity, enough to supply the needs of nearly  
25 about 5 million households.

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1           NextEra takes its commitment to protect  
2           the health and safety of the public very seriously.  
3           The operational performance of the NextEra Energy  
4           nuclear fleet reflects strong nuclear safety and  
5           reliability record.

6           NextEra's top priority remains to provide  
7           safe and reliable generation and has maintained the  
8           safety and reliability of its nuclear fleet by  
9           following our core principle which is defined in our  
10          nuclear excellence model.

11          Over the past decade, the FPL successfully  
12          completed extended power operating projects at both  
13          St. Lucie, two units at St. Lucie and two units at  
14          Turkey Point, four units.

15          In addition, at NextEra Energy resources  
16          also the power operate was implemented at two units of  
17          Point Beach, I mentioned earlier.

18          At FPL, those operates provided  
19          approximately about 530 megawatts of the additional  
20          nuclear capacity. All together approximately about  
21          750 megawatts within the NextEra Energy at six units,  
22          two Point Beach units, two St. Lucie and two Turkey  
23          Point.

24          Today, FPL's customers are benefitting  
25          from lower fuel costs and reduced system emissions

1 provided by this additional nuclear capacity.

2 Similarly, a Combined License for Turkey  
3 Point 6 and 7 would be particularly valuable to FPL.  
4 It would provide an option for new carbon-free power  
5 to Florida clean energy portfolio that would help to  
6 maintain system reliability.

7 And, also provides fuel diversity and  
8 protect against price volatility.

9 At this time, the best path forward for  
10 FPL is to preserve all of its options to meet future  
11 demand, including Units 6 and 7.

12 I will now turn the presentation over to  
13 Bill Maher to my left who is the Senior Licensing  
14 Director, New Nuclear Projects and to Steve Franzone,  
15 New Nuclear Projects Licensing Manager who will  
16 provide an overview of the proposed units and their  
17 licensing.

18 MR. MAHER: Good morning, Commissioners.  
19 I'm Bill Maher, Senior Director of Licensing and New  
20 Nuclear for Florida Power and Light.

21 I want to begin by echoing the sentiments  
22 you just heard and thank the NRC, especially the NRC  
23 staff for its diligence in conducting a thorough review  
24 of our application.

25 Likewise, I want to recognize the current

1 and former members of our FPL team who have worked  
2 tirelessly over the past several years to reach this  
3 point.

4 As you are well aware, the work required  
5 to get to this hearing is very challenging and we are  
6 very pleased to have the opportunity to discuss our  
7 Turkey Point COL application with you.

8 The development of the Turkey Point COLA  
9 has presented some unique challenges and learning  
10 experiences for us in applying the Part 52 licensing  
11 process.

12 Our presentations today will focus on the  
13 safety and environmental aspects that are unique to  
14 Turkey Point.

15 We selected the AP1000 as our design for  
16 a variety of reasons, chief among them being the  
17 passive safety features and our familiarity with PWR  
18 technology.

19 The opportunity to collaborate with other  
20 utilities in the southeast who also chose and are  
21 constructing the AP1000 design offers significant  
22 advantages and we have benefitted from this  
23 collaboration.

24 We have been following the experiences at  
25 Vogtle and Summer over the past year with great

1 interest and will continue to monitor the ongoing  
2 progress at Vogtle to ensure we can leverage their  
3 experience.

4 Issuance of the COL would provide FPL with  
5 a valuable option to meet future generation needs.  
6 Although we have not made a final decision to build,  
7 the ability to add emission-free nuclear generation in  
8 Florida is an important element in our integrated  
9 resource planning.

10 Our integrated resource plan which is  
11 annually updated and filed with the Florida Public  
12 Service Commission projects significant growth in  
13 electric demand over the next ten years.

14 Slide number four, please?

15 Once FPL began its consideration of new  
16 nuclear, we engaged in a robust and comprehensive site  
17 selection process, evaluating alternative sites and  
18 completing extensive site characterization at Turkey  
19 Point.

20 As part of Florida's site certification  
21 process, numerous public outreach sessions were held  
22 to solicit public input into options for transmission  
23 line routing.

24 The plant site has excellent placement  
25 within our transmission system and has been approved



1 by the State of Florida.

2 Florida's unique geography with its  
3 largest metropolitan area near the southern end of a  
4 peninsula present challenges for transmission planning  
5 and large generating facilities that must be located  
6 with adequate foresight.

7 FPL's site selection study looked at its  
8 entire service territory with a special focus on areas  
9 that would serve the Miami Load Center.

10 FPL did not identify any alternative site  
11 that was obviously superior.

12 Our COL application, the NRC staff's final  
13 safety evaluation report and the NRC's final  
14 environmental impact statement fully support each of  
15 the Commission's findings required for issuance of the  
16 COL.

17 In summary, FPL believes it is well  
18 positioned to construct, own and operate an additional  
19 nuclear facility.

20 We have the operational experience to make  
21 Turkey Point project a success. Our staff of proven  
22 nuclear professionals will ensure safe, reliable,  
23 economic and environmentally sound operation at the  
24 Turkey Point facility.

25 At this point, I would like to introduce

1 the rest of our presenters for today's hearing.

2 Steve Franzone to my left has over 38  
3 years of industry and Navy nuclear experience in plant  
4 operations, licensing, engineering and major projects.  
5 He is responsible for the licensing at Turkey Point.

6 Paul Jacobs, Paul has worked in the  
7 nuclear industry for over 40 years with experience in  
8 design and plant engineering. He is responsible for  
9 engineering support of the Turkey Point project.

10 Rick Orthen, Rick has worked in the  
11 nuclear industry for over 38 years with experience in  
12 radiation protection and environmental support of  
13 plant operations. He is responsible for environmental  
14 support and required for Turkey Point licensing and  
15 permitting.

16 Thank you for your time and attention.  
17 And, I'll turn it over to Steve Franzone to provide  
18 overview of site and licensing activities.

19 MR. FRANZONE: Slide five, please?

20 Thank you, Bill, and good morning,  
21 Commissioners.

22 This is Steve Franzone. I would like to  
23 give the Commission a brief overview of the Turkey  
24 Point 6 and 7 site.

25 This is a map of south Florida area and it

1 shows the Turkey Point location relative to Miami.  
2 The site is located in southeastern Miami-Dade County  
3 and is approximately 25 miles south of Miami.

4 On the east side of the site are Biscayne  
5 Bay and Biscayne National Park. To the west of the  
6 site are the two closest cities, Homestead and Florida  
7 City. And, further west, you'll find Everglades  
8 National Park.

9 The site is eight miles east of Florida  
10 City and nine miles south-southeast of Homestead.

11 The closest primary public roads are US  
12 Highway 1 and the Homestead Extension of the Florida  
13 Turnpike.

14 The site is typically accessed from Palm  
15 Drive which is also known as Southwest 344th Street  
16 which runs directly east/west from the site to Florida  
17 City.

18 Slide six, please?

19 FPL proposes to locate its two 1,100  
20 megawatt electric AP1000 units on an approximately 218  
21 acre island area located within the existing  
22 industrial waste water facility.

23 This industrial waste water facility  
24 contains the cooling panels that are associated with  
25 the existing units.

1           The site is permanent on limestone site  
2           with alternating layers of silty sand. For associated  
3           facilities such as the reclaim water treatment  
4           facility and the radial collector wells, where  
5           possible, wetland impacts were avoided and minimized  
6           by selecting previously impacted areas and  
7           environmentally sensitive engineering. I will talk  
8           about those plant features shortly.

9           As you can see in the picture, the current  
10          grade at the nuclear island is near sea level. During  
11          construction, it will be raised to an elevation of 26  
12          feet to accommodate storm surge and wave run up  
13          heights.

14          The major site preparations include  
15          removal of the top layer of the island which ranges  
16          from 3 to 11 feet and building a mechanically  
17          stabilized earth wall.

18          One of our goals while performing this  
19          work will be eroding interactions with existing units  
20          in the operation at the site.

21                 Next slide, please?

22          Planning 6 and 7, FPL was able to take  
23          advantage of existing well-established technologies in  
24          order to not only minimize our impact to the  
25          surrounding environment, but also to help governments

1 with environmental compliance.

2 As you are aware, we are proud to have  
3 been able to work out an agreement with Miami-Dade  
4 County for the use of reclaimed water as a primary  
5 source of cooling water for Unit 6 and 7. This will  
6 help the county meet mandated water use requirements.

7 Many examples of the beneficial use of  
8 reclaimed water exist in various industries including  
9 power generation. This resource has been used  
10 successfully at Palo Verde.

11 In the event this reclaimed water is not  
12 available in the quantity or the quality that we need,  
13 radial collector wells will serve as a back up source  
14 of cooling water.

15 Again, this is a well-established  
16 technology used for many different purposes including  
17 power generation.

18 Extensive ground water modeling has been  
19 performed to demonstrate that all these wells will  
20 have minimal impacts to the surface water.

21 If you look at the photo on the right hand  
22 side of this, you'll see -- on the right hand side of  
23 the slide, you'll see the actual Turkey Point from  
24 which the site took its name.

25 The radial collector wells will be

1 installed here on the point and extend laterally  
2 underneath Biscayne Bay. Paul Jacobs will go into  
3 further detail about the construction and operation of  
4 both the reclaimed water and the radial collector  
5 wells during the safety and environmental panels.

6 Slide eight, please?

7 I will now point out a few of the features  
8 to assist in the construction and operation of the  
9 facility.

10 Construction laid out is within the  
11 industrial waste water facility. We will construct an  
12 onsite facility to treat the reclaimed water to meet  
13 the requirements for use in a nuclear plant and  
14 cooling towers.

15 Location of the reclaimed water treatment  
16 facility was selected to optimize the routing of the  
17 reclaimed water pipelines and minimize associated  
18 wetland impacts.

19 Working with Miami-Dade County, FPL moved  
20 the proposed facility to this location in an effort to  
21 reduce wetland impacts.

22 As to the radials, the existing road to  
23 the radial collector well will be used. No widening  
24 of the existing access road to the Turkey Point  
25 peninsula is proposed.

1           Other features include separate  
2 construction access roads, barge slip improvements as  
3 well as the installation of a heavy haul path using  
4 existing roadways.

5           Slide nine, please?

6           Okay, so, for this figure, the south is on  
7 the bottom on the figure.

8           So, we'll start -- and then if you wanted  
9 to know where 3 and 4 was, above and slightly to the  
10 right outside the figure would be the Units 3 and 4,  
11 just to kind of give you a feel for where we're at.

12           So, we'll start from the south and work  
13 our way up. And, just above the bottom of the  
14 photograph, you'll see the light blue area which is  
15 actually the make up water reservoir and that has  
16 about a three day supply or reclaimed water for  
17 cooling water for the units.

18           Within the makeup cooling water reservoir,  
19 you'll find the mechanical draft cooling towers, three  
20 per unit. Okay? And then, right above that, you'll  
21 see these little orange boxes with the dot in the  
22 middle, okay, those are our underground injection  
23 wells. And, those are for effluent and blow down  
24 disposals. And, Paul will be talking about those,  
25 too, later on.

1           Next, you'll find Unit 6 and 7, it's a  
2           standard layout. Unit 6 is on the right hand side,  
3           Unit 7 is on the left hand side. And then, right  
4           above that, you'll see the Clear Sky Substation on the  
5           left and then parking and other facilities on the  
6           right.

7           Okay, slide ten, please?

8           Okay, so, as a point of reference, this  
9           view would be looking north from Unit 6 and 7. Let's  
10          talk about the history of the site.

11          Construction on the site started in 1965  
12          with the two original fossil units. Construction on  
13          the first nuclear unit started in 1967 when the AEC  
14          granted the construction permit for Units 3 and 4.

15          Units 3 and 4 commenced commercial  
16          operation in 1972 and 1973 respectively.

17          The first American crocodile was found in  
18          the cooling canals in 1976.

19          One of the milestone events which impacted  
20          not only the site but the entirety of south Florida  
21          was when the eye of Hurricane Andrew made landfall in  
22          1992 over the plant.

23          Compared to Homestead and other  
24          surrounding areas, the site was relatively undamaged  
25          and its robust design really enabled the existing



1 nuclear units to be available early in the recovery  
2 process.

3 I was working at the maintenance  
4 department at Turkey Point during this time period.  
5 We had a mandatory evacuation for my neighborhood,  
6 however, I was to make -- I was able to make it back  
7 home the day after Andrew hit.

8 My home at the time was located just a  
9 little south of the maximum surge, and being within  
10 one to two miles of Biscayne Bay, we had shrimp and  
11 puddles outside my front door and we had lots of fish  
12 swimming around in our pool.

13 After driving through the devastated area  
14 on the way to the plant, I was both relieved and  
15 pleased to see how little damage the plant had  
16 sustained compared to the surrounding area.

17 Now, we'll jump ahead to 2007 when a  
18 combined cycle natural gas unit began commercial  
19 operation at the fifth power generating facility at  
20 the site.

21 As a result, these AP1000 units would be  
22 Units 6 and 7 at Turkey Point. Since we submitted the  
23 application, the two existing nuclear units completed  
24 power up rates of approximately 100 megawatts electric  
25 each and are now approximately 800 megawatts net.

1 Turkey Point's Units 1 and 2 are no longer  
2 operating and have been converted to synchronous  
3 condenser mode which either generates or absorbs  
4 reactor power as needed to adjust the grid to voltage  
5 or to improve the system power factor.

6 The smoke stack which you can see in this  
7 picture had been a landmark for Boda and Biscayne Bay  
8 many, many years and have now been removed.

9 Okay, slide 11, please?

10 Okay, this slide shows a rendering of the  
11 proposed units. Of course, it's a little dated as it  
12 includes the stacks from Units 1 and 2. But, this  
13 gives us a sense of the overall project as it would be  
14 built.

15 Realizing that the site has a unique  
16 location and potential impact environmental resources,  
17 FPL has endeavored to take this into account in the  
18 planning for the new units.

19 For instance, FPL will use an existing  
20 barge slip for receiving and unloading heavy  
21 equipment. We relocated the reclaimed water treatment  
22 facility to reduce wetland impacts and, foremost, we  
23 are using land for the site which is in the already  
24 impacted industrial waste water facility.

25 Slide 12, please?

1           During our Combined License review, we  
2           were able to take advantage of the design center  
3           working group process and gain efficiencies from other  
4           AP1000 applicants.

5           Several generic design issues were  
6           identified during the application process and were  
7           efficiently resolved for Turkey Point once those  
8           issues were resolved for the Levy Plant.

9           In addition, FPL addressed such issues as  
10          the Fukushima event, Central Eastern United States  
11          seismic source characterization and the NRC electrical  
12          bulletin 2012-01 related to an off site power loss of  
13          phase event as part of the design center working group  
14          process.

15          We have continued to interface with the  
16          licensees as these same benefits of the DCWG process  
17          apply after an applicant receives its license.

18          It was very helpful resolving issues one  
19          time and we're able to take full advantage of the  
20          process.

21                 Slide 13, please?

22          Slide 13 shows a total list of exemptions  
23          for our application. In fact, all of these same  
24          exemptions have been approved by the NRC for other  
25          AP1000 applicants.

1           The five previous generic issues  
2 exemptions were issued -- were taken by Levy and WS  
3 Lee.

4           The maximum wet -- safety wet bulb non-  
5 coincident air temperature exemption was necessary  
6 because the Turkey Point value exceeded the DCD value  
7 by 1.3 degrees Fahrenheit.

8           This is the same exemption granted to VC  
9 Summer, although their value was one-tenth of a degree  
10 less than the Turkey Point value.

11           A sensitivity analysis was performed and  
12 there was no increase in containment peak pressure for  
13 Turkey Point when using the higher Turkey Point value.

14           VC Summer was able to use our analysis for  
15 their exemption since our value was bounding.

16           Next slide, please?

17           FPL has a 50-year history of  
18 environmentally responsible power generation at the  
19 Turkey Point site which includes part of the critical  
20 habitat for our population of American crocodiles.

21           This photo on the bottom right side is our  
22 crocodile nursery which had its first customer before  
23 we even finished our nursery.

24           Our proposed units carry on this history  
25 in environmental protection philosophy. We are proud

1 of our use of reclaimed water to help turn a waste  
2 stream into a benefit for Miami-Dade County and the  
3 environment.

4 Our back up cooling water system, largely  
5 unseen from land, will operate with no discernable  
6 impacts to aquatic communities it shares.

7 FPL's philosophy is to avoid environmental  
8 impacts first, if they can't be eliminated, we will  
9 then minimize impacts and finally mitigate the  
10 remaining impacts an acceptable level using approaches  
11 such as wetland restoration, enhancement projects and  
12 mitigation bank credits.

13 Our project location allows for the  
14 avoidance of a significant wetland impact, the biggest  
15 one are here is our site lies within the existing  
16 industrial waste water facility.

17 Practically 80 percent of our transmission  
18 lines will be in existing corridors. I should note  
19 that our assessments of project impacts used bounding  
20 assumptions and we fully expect that the realized  
21 impacts will be much smaller than what we predicted.

22 Slide 15, please?

23 The NRC began its independent  
24 environmental review of the project, including FPL's  
25 environmental report in 2009. The environmental

1 scoping was completed in 2010 and the staff issued the  
2 draft environmental impact statement in 2015.

3 There is a large amount of interest in the  
4 project from stakeholders at every stage of its review  
5 who comment extensively on the impacts process and  
6 conclusions.

7 FPL met with several stakeholders in order  
8 to help them better understand the issues the NRC were  
9 tasked to examine.

10 The stakeholder input was an important  
11 aspect of bringing the NEPA review process to closure  
12 in 2016 when the final EPIS was made available.

13 For me, personally, having never been  
14 through the environmental review process before, I was  
15 impressed with the breadth and depth of the  
16 environmental review associated with licensing a  
17 nuclear plant.

18 I was pleased to see the interest from the  
19 public during the many meetings for the project.

20 During this time period as well, the NRC  
21 licensing board reviewed a challenge to the  
22 environmental review of certain nonradiological  
23 aspects of disposing of waste water using injection  
24 wells.

25 Ultimately, the board concluded that the

1 NRC staff's EIS adequately evaluated these potential  
2 impacts with no changes necessary to the staff's  
3 review in the EIS.

4 Last slide, please?

5 Thank you very much for this opportunity.  
6 This completes FPL's overview presentation.

7 CHAIRMAN SVINICKI: Thank you very much  
8 for that overview presentation.

9 We will begin on this question and answer  
10 period. I will be recognized first, so let me begin.

11 Again, that was a very informative  
12 overview. Also, I appreciate that you have given some  
13 context to the specific and novel issues that were  
14 posed in the staff's review of this particular  
15 application.

16 So, I think that will be helpful, some of  
17 that we'll be exploring, I know, in more depth when we  
18 get to the safety and environmental panels later this  
19 morning and this afternoon.

20 I -- my questions are fairly general.  
21 Again, this is an overview discussion.

22 I know that there may be some duration of  
23 time between if the Commission authorizes the issuance  
24 of the licenses. Between that action and a decision  
25 on whether or not to construct these units, there has

1       been mention made of your integrated resource planning  
2       and the annual update that is done to that.

3               Could you discuss or describe, though, at  
4       a very high level as that integrated resource plan is  
5       looked at on an annual basis, how would these licenses  
6       come into play in the potential construction of these  
7       units?

8               What are some of the triggers or high  
9       level factors, obvious need for power, but you don't  
10      need to choose these units to be the new units to  
11      provide that power.

12              Can you give a kind of at a strategic or  
13      very high level how that will be approached in the  
14      years between granting of the licenses, should the  
15      Commission vote to do that, and initiation of  
16      construction, what would that period look like in  
17      terms of weighing strategic options for FPL?

18              MR. NAZAR: Madam Chairman, the additional  
19      nuclear capacity remains an important consideration at  
20      FPL resource planning.

21              With respect to obtaining the COL for  
22      Turkey Point 6 and 7, we're going to pause, as you  
23      know, that the first wave of construction that is  
24      ongoing, there are significant opportunities for  
25      learning from those constructions.



1           So, at this point, we plan to pause and  
2           continue monitoring the construction of the Vogtle  
3           projects and lessons learned from that.

4           As I mentioned during my remarks, that  
5           when we implemented the operate at six of our units  
6           that we gained significant experience of the  
7           construction. And, actually, dealt with some of the  
8           construction companies that they are building actually  
9           new nuclear power plants.

10          That mega project was more than \$4 billion  
11          project. So, we had a great deal of learning from  
12          that particular project.

13          In addition to that, as we continue  
14          learning from the first wave of construction, then, at  
15          that point, that we're going to decide as far as the  
16          timing. It's very important for us to make sure that  
17          the lessons learned are going to be incorporated into  
18          our decision making.

19          And, that would serve not only our company  
20          but our customers a great deal to make sure that we --  
21          once we decide to start with the pre-construction,  
22          that we are going to be very efficient, cost-effective  
23          and providing the benefit that our customers expect  
24          from us.

25          CHAIRMAN SVINICKI: Thank you.

1           From that, is it accurate to characterize  
2           that FPL will have an active knowledge management  
3           program over this, again, option of building these  
4           units at some point in the future?

5           You indicated that you would be monitoring  
6           ongoing activities with AP1000. Will you have kind of  
7           a center of expertise within FPL that will be the  
8           institutional knowledge in case there is, again, this  
9           duration of time between the hearing and the  
10          Commission subsequent authorization of issuance of the  
11          license, should we authorize that and the decision  
12          that you would have to construct?

13          MR. NAZAR: Madam Chairman, at this point,  
14          that we plan to maintain the COL. And, in order to  
15          maintain that, we're going to continue keeping up with  
16          the lessons learned from the first wave of  
17          construction.

18          We plan to keep some Duke Power employees  
19          that they've involved with the application for the COL  
20          -- on Turkey Point 6 and 7, that they're going to  
21          continue those learning opportunities and then we're  
22          going to incorporate in real time as we're learning  
23          those opportunities.

24          CHAIRMAN SVINICKI: Thank you.

25          My second question is a little more narrow

1 in scope. There was a description of the departures  
2 and exemptions that were taken in the application.  
3 And, I would characterize those as being a very  
4 judicious pursuit of exemptions and departures.

5 Because I think, essentially, there was  
6 only one Turkey Point specific exemption and it's only  
7 the value for wet bulb that varied with another  
8 applicant. So, that wasn't truly unique in the sense  
9 that only Turkey Point pursued that exemption.

10 What was the overall strategic approach to  
11 deciding to limit yourselves in that way? Obviously,  
12 there could have been other matters that you might  
13 have taken some site specific approach to.

14 So, was it to have strong coherence with  
15 the referenced COLA? Could you just describe again  
16 how you approached taking such a, again, such a narrow  
17 pursuit of exemptions and departures?

18 MR. MAHER: Yes, Madam Chairman.

19 The reason for the narrow pursuit, if you  
20 will, is really to benefit from the design center  
21 working group and be able to coordinate with the other  
22 AP1000 applicants in a combine way to be able to share  
23 costs associated with those and share the lessons  
24 learned and calculations associated being able to  
25 apply those.

1           So, like Mr. Franzone had told you with  
2       respect to the non-coincident air temperature, Summer  
3       units had the exact same issue and we were able to  
4       coordinate with Westinghouse and the associated  
5       calculations and requests to the Nuclear Regulatory  
6       Commission to be able to provide that appropriate  
7       level of calculations and exemptions.

8           CHAIRMAN SVINICKI:   Okay, thank you for  
9       that.

10          Next, I will recognize Commissioner Baran  
11       for any questions he may have.

12          COMMISSIONER BARAN:   Thanks.

13          Well, welcome, thank you for your  
14       presentations.

15          Mr. Franzone mentioned Hurricane Andrew.  
16       Given the location of Turkey Point, hurricanes are  
17       obviously a natural hazard that the proposed units  
18       would need to be able to handle.

19          Hurricane Irma made landfall in Florida a  
20       couple months ago well to the southwest of this site.  
21       At its peak, Irma had sustained winds of 185 miles per  
22       hour and estimated gust wind speed of 225 miles per  
23       hour.

24          Would the proposed units be able to safely  
25       handle a direct hit from a hurricane like Irma?

1 MR. FRANZONE: Well, the short answer is  
2 yes. Right? Because we -- and, you'll see in the  
3 safety panel, we discuss some wind events.

4 But the -- for the AP1000, the controlling  
5 event was the tornado missiles. And, we actually went  
6 a step further and looked at hurricane generated  
7 missiles because the straight line winds of the  
8 hurricane.

9 And, when we evaluated that, Westinghouse  
10 evaluated for that, there was no issues.

11 So, even a hurricane like Irma was easily  
12 -- could have been handled by the -- because the  
13 actual wind that we used was 260 miles per hour, we  
14 got that from the Reg Guide 1.221. So --

15 COMMISSIONER BARAN: You have substantial  
16 margin over a hurricane like Irma?

17 MR. FRANZONE: Correct.

18 COMMISSIONER BARAN: Okay, thank you.

19 That's all I have for this panel.

20 CHAIRMAN SVINICKI: Thank you.

21 Commissioner Burns?

22 COMMISSIONER BURNS: Yes, thank you.

23 And, I appreciate the presentations and  
24 the testimony of the -- on this opening panel on  
25 behalf of the Applicant.

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1           Mr. Maher, you made a reference to unique  
2 experiences. I think I've got the sentence right. In  
3 terms of Part 52 and the implementation of the Part 52  
4 process, and, if you don't mind, I'd appreciate if you  
5 would elaborate what your experiences were with Part  
6 52.

7           If you want to put it in the context, what  
8 may have surprised you or what were bigger hurdles?  
9 Because, I think, and part of it is, you know, from my  
10 own interest in terms of having been involved with  
11 this process almost since the beginning, well, yes,  
12 since the beginning.

13           And, knowing that, in some respects, it's  
14 only, even though this is a rule that dates back to  
15 1989, this is really a rule that has only been  
16 exercised since the turn of the century.

17           So, I'd appreciate the insights you were  
18 alluding to from your experience with it.

19           MR. MAHER: Yes, sir.

20           Part of my unique experiences with Part 52  
21 is being able to utilize the design certification  
22 process as part of the application.

23           I think that it was a very unique feature  
24 associated with the licensing process. And,  
25 understanding the previous licensing process was a

1 very big benefit associated with applicants and I  
2 believe with NRC staff and being able to go through  
3 and approve those licenses.

4 With respect to the unique features of it,  
5 I would say having a standardized design and being  
6 able to coordinate with other applicants, both on the  
7 -- on engineering features and engineering issues that  
8 came up as a result of that particular standardized  
9 design in a coordinated fashion was very beneficial to  
10 both us as an applicant and, hopefully, to NRC and the  
11 other utilities.

12 COMMISSIONER BURNS: Okay.

13 And, some of -- what would you say were  
14 some of the challenges with it? Because, as you say,  
15 one of the -- and you've actually spoken to what I  
16 would call some of the intention behind Part 52, which  
17 is to enhance standardization of units.

18 And, thus, and also in terms of making the  
19 licensing process more effective as a result of that  
20 standardization.

21 But, I think there have been some  
22 unintended consequences, too. So, what I'd  
23 appreciate, you know, sort of your perspective on  
24 that.

25 MR. MAHER: Thank you.

1           And, there were some challenges associated  
2           with that. And, Steve alluded to that as part of his  
3           overview presentation dealing with the design issues,  
4           if you were, that came about as a result of the  
5           ongoing construction aspects and design finalization  
6           on the Summer and Vogtle units.

7           Those particular design issues came up as  
8           a -- at a time when they were constructing their  
9           units. But, when there were three other applicants  
10          that needed to go through and complete their COL  
11          process.

12          And, as a result of that process, that  
13          challenged both us and Duke in being able to finalize  
14          those particular issues as COL applicants to the NRC  
15          staff's satisfaction even though they were actually  
16          identified as part of the design finalization efforts  
17          at Vogtle and Summer.

18                 COMMISSIONER BURNS: Okay, thank you.

19                 Just out of curiosity, I saw some of the  
20          maps, although a little strained to be able to see  
21          them on those screens.

22                 Have you undertaken any what we'll call  
23          pre-construction activities or site preparation  
24          activities for the area that would be used for 6 and  
25          7?



1 MR. MAHER: No, sir, we have not taken any  
2 pre-construction activities associated with the site.  
3 Under Florida law, we are precluded from actually  
4 doing --

5 COMMISSIONER BURNS: Okay.

6 MR. MAHER: -- those activities until we  
7 get public service commission approval.

8 COMMISSIONER BURNS: Okay, all right,  
9 thank you.

10 And, my final question for this panel, you  
11 spoke about sort of cooperation among other applicants  
12 and following the activities, for example, the  
13 construction activities that have been undertaken at  
14 both Vogtle and Summer.

15 Mr. Nazar may have mentioned this, but,  
16 are you also trying to get any insights from the  
17 experience with the construction in China?

18 MR. NAZAR: Yes, Commissioner.

19 Actually, we have visited both of the  
20 sites, AP1000 sites in China. And, during the  
21 construction. And, there we keep all the exactly as  
22 you mentioned, they have been learning opportunities  
23 from China also.

24 Myself in addition to some of the staff,  
25 we visited both sites when they were at 60 percent

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1 completion and at 80 percent completion. And, we had  
2 significant learning opportunities, especially some of  
3 the design changes that Mr. Maher referred to and also  
4 making sure that our COL was going to take those into  
5 consideration for our applications.

6 COMMISSIONER BURNS: Okay, thank you.

7 Thank you, thank you, Chairman.

8 CHAIRMAN SVINICKI: Again, I thank the  
9 panel.

10 I will now ask the NRC staff overview  
11 witness panel to please take the seats at the table.

12 In this panel, the staff will provide an  
13 overview of its review of the application and a  
14 summary of their regulatory findings.

15 As the panelists are preparing to take  
16 their seats here, before they begin presenting, I  
17 would ask that they introduce themselves.

18 And, I believe that we will begin with the  
19 Deputy Director of the Office of New Reactors, Vonna  
20 Ordaz. Vonna, when you are ready, please proceed.

21 MS. ORDAZ: Good morning.

22 CHAIRMAN SVINICKI: Good morning.

23 MS. ORDAZ: I'm Vonna Ordaz. I'm the  
24 Deputy Director for the Office of New Reactors.

25 MR. AKSTULEWICZ: Good morning,

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1 Commissioners. I'm Frank Akstulewicz, I'm the  
2 Division Director in the Division of New Reactor  
3 Licensing.

4 MS. DIXON-HERRITY: And, I'm Jennifer  
5 Dixon-Herrity, I'm Chief of Licensing Branch IV, the  
6 branch that manages the AP1000 design center reviews.

7 CHAIRMAN SVINICKI: Great, Vonna, please  
8 lead off.

9 MS. ORDAZ: Thank you, Chairman, good  
10 morning.

11 On behalf of the NRC staff, that reviewed  
12 the Turkey Point Units 6 and 7 Combined License  
13 Application, or COLA, we are pleased to address the  
14 Commission at this mandatory hearing.

15 The team here today will present the  
16 results of the staff's review of the Turkey Point  
17 Units 6 and 7 COLA.

18 The Applicant, Florida Power and Light, or  
19 FP&L, proposed to locate the new units in Miami-Dade  
20 County, Florida at the Turkey Point site where it has  
21 five existing power generating units.

22 Unit 1 and 2 operate as synchronized  
23 condensers to stabilize the grid but do not generate  
24 power. Units 3 and 4 are two pressurized water  
25 reactor nuclear units. And Unit 5 is a natural gas

1 combined cycle steam electric generating unit.

2 The staff's final safety evaluation  
3 report, or FSER, was made publically available on  
4 November 14, 2016. And, the staff's final  
5 environmental impact statement, or FEIS, was published  
6 on October 28, 2016.

7 These documents are a combination of a  
8 seven year review by the staff and represent the  
9 results of the coordinated effort of scientists,  
10 engineers, attorneys and administrative professionals  
11 from multiple offices within the Agency as well as  
12 other agencies and our consultants.

13 Slide 2, please?

14 With me on this panel, Mr. Frank  
15 Akstulewicz, the Director of the Division of New  
16 Reactor Licensing and Ms. Jennifer Dixon-Herrity, as  
17 she mentioned, Chief of the Licensing Branch IV who  
18 has responsibility for all of the AP1000 reviews.

19 Jennifer kindly is replacing Anna Bradford  
20 today at this hearing. Anna had an unexpected  
21 emergency.

22 Slide three, please?

23 Today, I will give you an overview of the  
24 COLA and the staff's review.

25 Mr. Akstulewicz will summarize the staff's

1 findings in the safety review.

2 And, Ms. Dixon-Herrity will give an  
3 overview of the environmental review and findings.

4 The staff docketed the initial version of  
5 the COLA in September 2009 and completed its review in  
6 December 2016.

7 During that period of time, the staff  
8 expended approximately 89,000 hours on the safety and  
9 environmental reviews.

10 This effort involved well over 100  
11 engineers, scientists and technical specialists.

12 During this time, the staff conducted  
13 approximately 80 public meetings and conference calls  
14 in support of the Turkey Point COLA review.

15 The Applicant responded to approximately  
16 516 staff questions, of which 340 were associated with  
17 the safety review and 176 with the environmental  
18 review.

19 In addition, the staff considered over  
20 11,000 public comments on the draft environmental  
21 impact statement.

22 Contractors working in collaboration with  
23 the staff devoted over 16,000 hours to support the  
24 environmental and safety reviews.

25 The review of this application was a very

1 thorough effort and focused on safety and protecting  
2 the environment.

3               Within the NRC, the offices that  
4 contributed to the review include the Office of  
5 Nuclear Security and Incident Response which reviewed  
6 the emergency preparedness and security areas, the  
7 Office of Nuclear Reactor Regulation which evaluated  
8 financial qualification aspects of the application and  
9 the Office of the Nuclear Material Safety and  
10 Safeguards which support the reviews for the licenses  
11 under Part 30 for byproduct material, Part 40 for  
12 source material and Part 70 for special nuclear  
13 material.

14               The Office of the General Counsel reviewed  
15 the FSER and the FEIS.

16               And, finally, the Advisory Committee on  
17 Reactor Safeguards, or ACRS, reviewed and reported on  
18 the safety aspects of the Turkey Point application in  
19 accordance with the requirements of 10 CFR 52.87.

20               In addition, NRC Region II supported  
21 environmental meetings in the community near the  
22 Turkey Point site.

23               The U.S. Army Corps of Engineers, National  
24 Park Service and the Department of Homeland Security  
25 also contributed to the NRC review.

1           Specifically, the U.S. Army Corps of  
2 Engineers provided input on the various sections of  
3 the FEIS including, but not limited to, wetlands,  
4 ecology and cultural and historic resources.

5           I would like to note that Ms. Meghan  
6 Clauser from the Corps, the Corps is Jacksonville  
7 District is with us today, welcome Meghan. And, we  
8 thank her for assistance throughout this process.

9           The National Park Services provided  
10 special expertise for the areas in and around the  
11 adjacent Biscayne and Everglades National Parks.

12           And, the Department of Homeland Security  
13 reviewed the offsite emergency plans.

14           Slide four, please?

15           On June 30, 2009, FP&L submitted the COLA  
16 to construct and operate two AP1000 units in Miami-  
17 Dade County, Florida.

18           The Turkey Point Units 6 and 7 COLA  
19 incorporates by reference the AP1000 design  
20 certification document revision 19 and Appendix D to  
21 10 CFR Part 52, the AP1000 design certification rule.

22           The AP1000 design was certified by rule in  
23 2011 and documented in NUREG-1793 and its supplements.

24           Based on the finality that NRC regulations  
25 afford to a certified design, the scope of the staff's

COL technical review did not include items that were resolved within the scope of this certified design.

Additionally, the staff's review applied the design center review approach, the Commission's policy intended to promote standardization of COLAs.

This policy directs the staff to perform one technical review for information, comments and multiple applications that is outside the scope of the design certification and used the decision resulting from the single review to support decisions on multiple COLAs or subsequent COLAs.

The review for the Turkey Point Units 6 and 7 primarily focused on plant specific aspects of the application that are the responsibility of the Applicant such as operational programs, site specific design, COL information items and departures from the certified design.

The Turkey Point COLA is the only remaining application referencing the AP1000 design currently before the Commission.

The Commission has previously issued eight Combined Licenses for units referencing the AP1000 design.

Slide five, please?

In accordance with 10 CFR 52.87, the ACRS



1 examined the staff's safety review of the Turkey Point  
2 Units 6 and 7 COLA.

3 The Applicant and staff support one AP1000  
4 ACRS Subcommittee meeting, specifically related to  
5 Turkey Point COLA and safety evaluation.

6 The staff presented the results of its  
7 review of the Turkey Point COLA to the full ACRS in  
8 September 2016.

9 Following the 2016 September full  
10 Committee meeting, the ACRS issued a report on  
11 September 16, 2016 concluding that there is reasonable  
12 assurance that Turkey Point Units 6 and 7 can be built  
13 and operated without undue risk to public health and  
14 safety.

15 This ACRS report recommended approval of  
16 the Turkey Point COLA.

17 The staff issued the Turkey Point Units 6  
18 and 7 FSER on November 14, 2016. This FSER and FEIS  
19 and our statement in support of the hearing provide  
20 what the staff considers an adequate basis for the  
21 Commission to make the necessary regulatory findings  
22 under 10 CFR Part 52.97.

23 We look forward to responding to your  
24 questions at this hearing. I will now turn the  
25 presentation over to Mr. Frank Akstulewicz.

1 MR. AKSTULEWICZ: Thank you, Vonna.

2 Good morning. I'm Frank Akstulewicz, the  
3 Director in the Division of New Reactor Licensing in  
4 the Office of New Reactors.

5 Slide six, please?

6 The staff prepared SECY-16-0136 dated  
7 December 2, 2016 to support this mandatory hearing.  
8 In that paper, the staff summarized the bases that  
9 would support the Commission's determination that the  
10 staff's review is adequate to support the findings set  
11 forth in both 10 CFR 52.97 and 10 CFR 51.107.

12 The SECY paper provided an overview of the  
13 findings that support the issuance of COLs for Turkey  
14 Point Units 6 and 7.

15 The Commission must make each of the  
16 following findings in 10 CFR 52.97 in order to issue  
17 a COL. I will summarize the staff's bases supporting  
18 each finding.

19 First, the applicable standards and  
20 requirements of the Atomic Energy Act and the  
21 Commission's regulations have been met.

22 The staff reviewed and evaluated the  
23 application against the applicable criteria in the  
24 Commission's regulations. Based on the staff's review  
25 as documented in its final safety evaluation report

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1 and then the final environmental impact statement, the  
2 staff concludes that the applicable standards and  
3 requirements of the Atomic Energy Act of 1954 as  
4 amended and the Commission's regulations have been  
5 met.

6 Second, any required notifications to  
7 other agencies or bodies have been duly made.

8 As documented in SECY-16-0136, all  
9 required notifications such as to the Public Service  
10 Commission of Florida as well as the required Federal  
11 Register Notifications have been made.

12 Slide seven, please?

13 Third, there is reasonable assurance that  
14 the facility will be constructed and will operate in  
15 conformity with the license, the provisions of the  
16 Atomic Energy Act and the Commission's regulations.

17 As the SECY paper states, the staff  
18 believes that its review as documented in the safety  
19 evaluation and impact statement, the inspections,  
20 tests, analyses and acceptance criteria, or ITAAC, and  
21 the license conditions provide the necessary assurance  
22 that the units will be constructed and operated as  
23 required.

24 Fourth, the Applicant is technically and  
25 financially qualified to engage in the activities

1 authorized.

2 The technical and financial qualifications  
3 of the Applicant are summarized in the SECY paper and  
4 documented in more detail in Chapters 1, 13 and 17 of  
5 the final safety evaluation report.

6 Slide eight, please?

7 Fifth, the issuance of the COLs will not  
8 be inimical to the common defense and security or  
9 public health and safety.

10 The specific bases for inimicality finding  
11 have been provided in the staff's SECY paper.

12 And, sixth, the findings required by  
13 Subpart A of 10 CFR Part 51 have been duly made.

14 The staff's conclusion supporting the  
15 environmental findings required by Subpart A will be  
16 presented by Jennifer Dixon-Herrity who will now  
17 provide an overview of the staff's environmental  
18 review.

19 MR. DIXON-HERRITY: Thank you, Frank.

20 Good morning, I'm Jennifer Dixon-Herrity.  
21 As we said before, I'm Chief of Licensing Branch IV in  
22 the Office of New Reactors.

23 I'll be discussing the environmental  
24 review and will provide an overview of the process we  
25 used in conducting the review, the draft summary of

1 record of decision and the staff's recommendation as  
2 a result of that review.

3 I will also discuss the regulatory  
4 findings that need to be made under 10 CFR 51.107  
5 before the licenses can be granted.

6 Slide nine, please?

7 The staff prepared the EIS for the Turkey  
8 Point Units 6 and 7 COLA in accordance with the  
9 National Environmental Policy Act of 1969 and the  
10 requirements of 10 CFR Part 51.

11 The staff prepared the EIS based on  
12 independent assessment of the information provided by  
13 the Applicant and information developed independently  
14 by the staff including information gathered through  
15 consultations with other agencies.

16 The U.S. Army Corps of Engineers, or  
17 Corps, fully participated with the staff as a  
18 cooperating Agency in preparing the Turkey Point EIS  
19 under the terms of an existing Memorandum of  
20 Understanding between the NRC and the Corps.

21 The specific roles of the NRC and Corps  
22 for preparation of the EIS on the Turkey Point  
23 application are set forth in a Memorandum of Agreement  
24 between the NRC, the Corps and the National Park  
25 Service.

1           As a member of the Environmental Review  
2       team, the Corps staff participated in site visits,  
3       consultations with other agencies and development of  
4       the draft and final EIS.

5           In addition, the National Park Service  
6       participated in the environmental review as a  
7       cooperating Agency under the Memorandum of Agreement  
8       previously noted.

9           The National Park Service provided special  
10      expertise for the areas in and around the adjacent  
11      Biscayne and Everglades National Parks.

12          However, only the NRC and the Corps have  
13      specific regulatory actions related to the proposed  
14      Combined Licenses as explained in the Memorandum of  
15      Agreement, therefore, NRC and the Corps also referred  
16      to as the Review Team made the impact determination in  
17      the EIS and these impact determinations should not be  
18      attributed to the National Park Service.

19          Slide ten, please?

20          The NRC began the environmental process  
21      for the Turkey Point COLA by publishing a Notice of  
22      Intent to Prepare an EIS and conduct scoping in the  
23      Federal Register on June 15, 2010.

24          Two scoping meetings were held to obtain  
25      public input on the scope of the environmental review

1 in Homestead, Florida on July 15, 2010.

2 Furthermore, staff contacted federal,  
3 state, regional and local agencies and federally  
4 recognized Indian Tribes to solicit comments.

5 Staff considered all the comments received  
6 during the scoping process and developed responses for  
7 each comment. The responses are documented in the  
8 scoping summary report and also in Appendix D of the  
9 EIS.

10 To prepare the draft EIS, the staff  
11 carried out independent analyses and evaluations based  
12 on information provided by the Applicant which  
13 included supplement or clarifying information in the  
14 form of responses to Requests for Additional  
15 Information.

16 The staff considered information from  
17 federal, state, Tribal, regional and local agencies  
18 and independent information sources that we developed.

19 Slide 11, please?

20 All the information gathered during the  
21 scoping phase was analyzed and used to prepare the  
22 draft EIS which we published in February of 2015.

23 The public comment period ended on May 22,  
24 2015. The public -- on May 28, 2015, the NRC  
25 published a Notice reopening and extending the comment

1 period from May 22, 2015 to July 17, 2015 to allow  
2 more time for members of the public to develop and  
3 submit comments.

4 The staff held three public meetings to  
5 describe the results of the environmental report to  
6 provide members of the public with information to  
7 assist them in formulating comments on the draft EIS  
8 and to respond to questions and accept comments.

9 The first meeting took place on April 22,  
10 2015 in Miami, Florida. The second and third meetings  
11 took place on April 23, 2015 in Homestead, Florida.

12 All comments received on the draft were  
13 considered in preparing the FEIS and are documented in  
14 Appendix E of the EIS.

15 Slide 12, please?

16 On October 28, 2016, the staff published  
17 the FEIS as NUREG-2176. However, shortly after  
18 publishing NUREG-2176, the staff identified 59 comment  
19 letters received during the comment period that were  
20 inadvertently not addressed in the FEIS.

21 None of these comments changed the Review  
22 Team's analyses or conclusions in the FIES. To  
23 address these comments and to further the purposes of  
24 the National Environmental Policy Act, the staff  
25 issued a supplement to NUREG-2176 on December 2, 2016

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1 in accordance with 10 CFR 51.92.

2 The staff did not request comments on this  
3 supplement because the inadvertently omitted comments  
4 did not provide new and significant information  
5 bearing on the proposed action.

6 As stated in the FEIS, the staff's  
7 recommendation related to the environmental aspects of  
8 the proposed action is that the COL should be issued.

9 The staff based its recommendation on the  
10 Turkey Point COLA environmental report, consultation  
11 with federal, state, Tribal and local agencies, the  
12 team's independent review, the consideration of public  
13 comments received on the environmental review and the  
14 assessments summarized in the EIS, including the  
15 potential mitigation measures identified in the  
16 environmental report and the EIS.

17 This recommendation also rests on the  
18 staff determination that none of the alternative sites  
19 assessed is obviously superior to the Turkey Point  
20 site.

21 Slide 13, please?

22 The staff included a draft summary record  
23 of decision as a reference in the SECY. This document  
24 states the decision being made and identifies all  
25 alternatives considered in reaching the decision.

1           The draft summary record of decision also  
2       discusses preferences among the alternatives and  
3       states whether the Commission has taken all  
4       practicable measures within its jurisdiction to avoid  
5       or minimize environmental harm from the site selected.

6           Slide 14, please?

7           The next few slides list environmental  
8       findings pursuant to 10 CFR 51.107(a) that the  
9       Commission must make to support the issuance of the  
10      Turkey Point Units 6 and 7 COLs.

11          The staff believes that the scope of the  
12      environmental review, the methods used to conduct the  
13      review and the conclusion reached in the EIS are  
14      sufficient to support a positive Commission  
15      determination regarding these findings.

16          To satisfy the first finding as detailed  
17      on this slide, the staff's environmental review used  
18      a systematic interdisciplinary approach to integrate  
19      information from many fields, including national,  
20      natural and social sciences as well as environmental  
21      sciences in accordance with NEPA Section 202(2)(a).

22          The staff's review also comports with  
23      NRC's requirements in Subpart A of 10 CFR Part 51.

24          Staff concludes that the environmental  
25      findings in the EIS constitute the hard look required

1 by NEPA and have reasonable support and logic and  
2 fact.

3 In accordance with NEPA Section 102(2)©,  
4 the EIS for Turkey Point COLs addresses the  
5 environmental impact of the proposed action, any  
6 avoidable adverse environmental effect, alternatives  
7 to the proposed action, the relationship between local  
8 short-term uses of the environment and the maintenance  
9 and enhancement of long-term productivity and any  
10 irreversible and irretrievable commitments of  
11 resources that would be involved in the proposed  
12 action, should it be implemented.

13 As support by correspondence presented in  
14 Appendices C and F of the EIS, the staff concludes  
15 that the requirement of NEPA Section 102(2)© was  
16 fulfilled in part by consulting with and obtaining  
17 comments from other federal agencies with jurisdiction  
18 by law or special expertise.

19 As noted earlier, the Corps fully  
20 participated with the NRC as a cooperating Agency in  
21 preparing the EIS and the National Park Service also  
22 participated as a cooperating Agency by providing  
23 special expertise with the areas in and around the  
24 nearby national parks.

25 In accordance with NEPA Section 102(2)(e),

1 the staff concludes that the EIS Chapter 9  
2 demonstrates that the staff adequately considered  
3 alternatives to the proposed action.

4 The alternatives considered in the EIS  
5 include the no action alternative, site alternatives,  
6 energy alternatives, system design alternatives and  
7 mitigation alternatives for severe accidents.

8 To satisfy the second and third findings  
9 which appear on this slide and the next, Chapter 10 of  
10 the EIS provides the staff's cost-benefit assessment  
11 which considered conflicting factors such as the need  
12 for power as well as reasonable alternatives to the  
13 proposed action.

14 Slide 15, please?

15 Based on that analysis, the staff  
16 concluded that the construction and operation of the  
17 proposed Turkey Point Units 6 and 7 would have accrued  
18 benefits that would be expected to outweigh the  
19 economic, environmental and social costs.

20 As a result, the staff recommends that the  
21 COLs be issued.

22 For the fourth finding, the staff believes  
23 that the Commission will be able to find after this  
24 hearing that the NEPA review performed by the staff  
25 has been adequate.

1           The staff performed a thorough and  
2 complete environmental review sufficient to meet the  
3 requirements of NEPA and adequate to inform the  
4 Commission's action on the requested COLs.

5           I'll now turn this presentation back over  
6 to Vonna.

7           MS. ORDAZ: Thank you, Jennifer.

8           That completes the staff's overview.

9           Thank you, Chairman

10          CHAIRMAN SVINICKI: Well, thank you very  
11 much to the witnesses for the staff's overview  
12 presentation.

13          And, Jennifer, I want I want to thank you  
14 for stepping in on short notice for you colleague. I  
15 appreciate your willingness to do that here today.

16          We begin the questioning of this panel  
17 with Commissioner Baran. Please proceed.

18          COMMISSIONER BARAN: Well, thank you for  
19 your presentations. I actually don't have any  
20 questions for this panel, so I'll reserve my time.

21          Thanks.

22          CHAIRMAN SVINICKI: All right, thank you.

23          Commissioner Burns?

24          COMMISSIONER BURNS: Oh, thank you,  
25 Chairman.

1           Thank you to the staff witnesses for their  
2 presentations here this morning and as the Chairman  
3 said, for Jennifer for stepping up to the plate here.

4           Just a couple things in the nature of the  
5 overview since that's where we are at is the overview  
6 panel.

7           I think as Frank or Vonna may have said,  
8 we have issued eight AP1000 COLs to other applicants  
9 that have preceded FP&L here today.

10          And, again, as the answer to -- and  
11 elicited out of the -- from the first panel in terms  
12 of my question with respect to Part 52 process, part  
13 of this is in the design and intention of Part 52 is  
14 to enhance standardization across the fleet to improve  
15 the efficiency of licensing reviews and to reach -- in  
16 order to reach the necessary conclusions under the  
17 various statutes of the Atomic Energy Act as well as  
18 NEPA and others in making licensing decisions.

19          So, sort of at a high level, if you'd say,  
20 again, looking at going through the process where an  
21 applicant invokes the standardized design, what were  
22 the areas where the deviations from it or either  
23 deviations or a unique challenges that you think you  
24 faced with respect to this application, recognizing it  
25 starts out with a reference to a standardized design?

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1 MR. AKSTULEWICZ: So, it's a great  
2 question, Commissioner.

3 I think you have to step back and look at  
4 the context in which this application arrived to kind  
5 of answer the lesson learned.

6 We were in the midst of a design  
7 certification review in parallel with the COL review.  
8 And, I think one of the key lessons learned is that  
9 particular combination of activities is very  
10 challenging for the COL applicant, not only the staff,  
11 to try to maintain its application contemporary with  
12 whatever the design changes are that are happening  
13 with the certification as it's under review.

14 Once you set that aside, I think we have  
15 seen, aside from the issues that Mr. Maher raised  
16 which was how to deal with issues that are identified  
17 during the construction of units while other units are  
18 under review, I think that's still an issue that we're  
19 -- we have a handle on, but we're still trying to  
20 figure out what's the most efficient and effective way  
21 to deal with those matters.

22 And we have meetings with the industry  
23 that were set up to discuss how to deal with those in  
24 the near future as a matter of fact.

25 And then, the third part is, I think I can

1 speak very candidly to how the nature of the review  
2 has evolved.

3 And, we have -- the purpose of a Part 52  
4 was to focus on truly those site specific and unique  
5 matters.

6 And, I think as we've progressed along  
7 through the AP1000s, we've seen how those issues have  
8 narrowed to really just the site specific matters.

9 And, I think that has been a benefit, not  
10 a problem. But, clearly, the intent of the rule as it  
11 was structured, and we've seen that play out in the  
12 review process late in this particular application.

13 COMMISSIONER BURNS: So, to paraphrase  
14 what I think I heard you say is that we're -- as our  
15 experience has grown it really -- the model of  
16 focusing on site specific matters, we really have  
17 achieved that or are doing a better job at that, I  
18 think. I don't mean to put words in your mouth, but  
19 I think that's what hearing you say.

20 MR. AKSTULEWICZ: Yes, Commissioner,  
21 that's actually correct.

22 And, we've seen it to a lesser degree in  
23 the ESPWR design center because there's only two  
24 plants --

25 COMMISSIONER BURNS: Right.



1 MR. AKSTULEWICZ: -- in that center. But,  
2 here, where there has been a progression of activity  
3 over time we have seen the benefits play out.

4 COMMISSIONER BURNS: Yes, and just to  
5 reflect on one of your comments, again, if we go back  
6 in time and the vision of how Part 52 would work, I  
7 think it was -- because you alluded to in your  
8 testimony just now, you alluded to the fact that one  
9 of the difficulties for the staff as well as  
10 applicants is an ongoing design certification review  
11 at the same time you're trying to engage an applicant  
12 in the COL.

13 So, in this particular circumstance, as I  
14 recall, we had the amendment or significant amendment  
15 to the AP1000 pending before the Agency while -- and  
16 then it achieved or basically approved, as I recall,  
17 December 30 it was published in the Federal Register,  
18 December 31, 2001 for the AP1000 amendment.

19 But, at that time, it's that parallel  
20 activity which has some -- poses some challenges to  
21 the staff as well as the applicant, correct?

22 MR. AKSTULEWICZ: Yes, sir.

23 COMMISSIONER BURNS: Yes. Again, my --  
24 the -- I think the expectation, we go back to the  
25 mothers and fathers of Part 52 was this more

1 methodical we would have a design certification and  
2 then people would go into the shop and pick things off  
3 -- pick it off the shelf, right?

4 MR. AKSTULEWICZ: That's correct.

5 COMMISSIONER BURNS: Okay, thank you.

6 One last question I have, in prehearing  
7 question two, the Commission asked the staff about the  
8 construction cost estimates in the application.

9 And, a response the staff stated,  
10 estimates produced by applicants are, quote, order of  
11 magnitude costs estimations for high level planning  
12 purposes only.

13 And, that order magnitude estimates,  
14 quote, typically provide a point estimate cost within  
15 a plus or minus 50 percent range, unquote.

16 Is this a practice the staff has typically  
17 accepted in the past for cost estimates for similar  
18 projects?

19 MR. AKSTULEWICZ: So, I know what I don't  
20 know and I don't know that. So, I'm going to ask Dan  
21 Mussatti to come up and answer your question.

22 COMMISSIONER BURNS: That's fine, that's  
23 fine.

24 CHAIRMAN SVINICKI: And, again, as you  
25 approach the podium, please identify yourself, your

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1 organization and indicate if you've been sworn as a  
2 witness. Thank you.

3 MR. MUSSATTI: My name is Daniel Mussatti  
4 and I have been sworn in. And, I'm with the DSEA  
5 Environmental Group.

6 CHAIRMAN SVINICKI: Thank you.

7 MR. MUSSATTI: The question, again, is?

8 COMMISSIONER BURNS: Well, has this order  
9 of magnitude cost estimates, is this typical of what  
10 we have used in the past in our assessments on the  
11 financial qualifications?

12 MR. MUSSATTI: Yes, it is. This is a  
13 standard use throughout the cost estimating industry.

14 COMMISSIONER BURNS: Okay.

15 Can you describe, just at a high level,  
16 how we use those types of estimates in our review?  
17 How do they inform our decisions on the financial  
18 qualifications?

19 MR. MUSSATTI: Well, the NRC doesn't use  
20 the financial information that we gather for the cost  
21 estimation for any sort of commerce purpose. The only  
22 thing we're interested in is in resolving the  
23 questions that are safety related for nuclear  
24 materials.

25 And, in particular, question number four

1 from Chairman Svinicki's list of five safety questions  
2 that she brought up at the beginning of the meeting  
3 today, consequently, the numbers that we use here are  
4 very, very high level number that are just to give us  
5 a general range as to where those costs are.

6 They're typically produced by engineers  
7 very, very early in the planning stage. They don't  
8 have a great deal of idea as far as what the  
9 blueprints are going to look like, where the plant is  
10 exactly going to be sited.

11 The estimation is made based on similar  
12 projects elsewhere that have been boiled down to a  
13 dollars per megawatt level and then extrapolated back  
14 on to the project. So, it's a very rough estimate.

15 It's also considered an overnight cost  
16 estimate in that we don't take into consideration any  
17 sort of financial costs for the longevity of the  
18 project. We don't anticipate any sort of costs  
19 involved in materials escalating in price over time or  
20 anything like that.

21 It's a very -- it's a very antiseptic cost  
22 but this is the one that the industry uses.

23 COMMISSIONER BURNS: Okay, thank you.

24 Thank you, Chairman.

25 CHAIRMAN SVINICKI: Okay, I just have a

1 couple of questions for this panel.

2 I'll begin by kind of building off the  
3 foundation of what Commissioner Burns was talking  
4 about on the -- he has a little bit more history with  
5 Part 52 than I do.

6 But, my understanding of the purposes of  
7 the benefits of one-step licensing are the same as  
8 what he's articulated.

9 And, he talked about having a certified  
10 design and marrying that even perhaps with an early  
11 site permit and those efficiencies in the process that  
12 would yield a COL review that would be expected to  
13 take a shorter period of time.

14 Another efficiency I believe  
15 institutionalized in Part 52 is the notion of the  
16 design centered working group so you have a reference  
17 COL review that goes through and then a subsequent --  
18 we've mentioned that for AP1000s, that's probably the  
19 richest body of experience that we have as a regulator  
20 in reviewing those.

21 But, if we look at the numbers provided by  
22 staff in the mandatory hearings for the AP1000, the  
23 COLs that reference the AP1000, we see that there's  
24 just a strong variability, if my numbers are accurate,  
25 I think my staff described the transcripts from the

1 mandatory hearings.

2 For instance, Vogtle which would be your  
3 reference case, well, after it hopscotched around some  
4 other applicants, it ended up being the Vogtle  
5 application.

6 But, as approximately 31,000 hours, Summer  
7 at 17,000 hours. So, there, you say to yourself, oh,  
8 okay, well, that makes sense then, they were very  
9 close together in time, a lot of similarities. So,  
10 I'm sure we were harvesting various staff efficiencies  
11 of having people working on both.

12 But, then, you get to some of the ones  
13 that were a little bit further out. You've got 83,000  
14 hours, 67,000 hours.

15 So, and I say this not in any way to find  
16 fault with the review. Obviously, the Commission has  
17 determined the staff's review of all those previous  
18 matters to be adequate and thorough.

19 And so, what would the staff characterize,  
20 though, as kind of the scatter plot of the data there?  
21 Is it the uniqueness that you still -- the novel  
22 issues you find with each COL even if they are an S-  
23 COLA application?

24 And, Frank, I know you've got a lot of run  
25 time on all these matters. Is there any working

1 hypothesis you have about why you don't see a strict  
2 linear gain in efficiency on the S-COLA reviews?

3 MR. AKSTULEWICZ: Sure, thank you,  
4 Chairman.

5 I think the way I would characterize it  
6 is, each of the applications had some unique issue  
7 that was unanticipated. And, I think you can look at  
8 Lee Station which is an example of a high seismic  
9 response area following the earthquakes. Right?

10 And so, the whole reconstruction of the  
11 Central and Eastern U.S. seismic capability factored  
12 into a reanalysis of that particular application that  
13 was unanticipated.

14 With the present application, it had its  
15 own unique characteristics whether it be water  
16 resource issues, with the Park Service issues, with  
17 seismic or foundational issues, I'll say.

18 So, it's hard to predict whether or not  
19 those issues are going to be easily resolvable and  
20 whether it's going to show that there will be some  
21 direct linear relationship or some centralization of  
22 a scatter plot on resources from application to  
23 application.

24 CHAIRMAN SVINICKI: In your direct  
25 experience with these AP1000 COL applications, do you

1 think that if it were possible to extract out those  
2 unique issues, do you conclude that there is an  
3 efficiency in being a subsequent COLA, might not be  
4 reflected given the few data points we have, but say,  
5 if you were doing 30 or 50 of them, there would be a  
6 clear ability to see that the reference COLA and  
7 subsequent COLA structure does yield efficiencies?

8 MR. AKSTULEWICZ: So, I believe that if  
9 you could do that, you would find that efficiency.

10 My own personal experiences, when we were  
11 transitioning from the Phase II to Phase IV to Phase  
12 VI or, in this case, Phase B to D, you could see the  
13 ease at which the safety evaluation was being  
14 developed and those areas where there were no ongoing  
15 reviews because everything was either standard  
16 language from a previous application that had been  
17 approved or was part of the certification that all you  
18 were dealing with were those very specific chapters  
19 that were site specific.

20 CHAIRMAN SVINICKI: And, the phases for  
21 those who aren't familiar is that the NRC staff  
22 undertakes a phased review. Could you just describe  
23 that briefly?

24 MR. AKSTULEWICZ: Sure.

25 So, for a reference COLA, we use a six



1 phase review. The first phase is a Request for  
2 Information. The second phase is the development of  
3 a safety evaluation with open items.

4 A third phase is an ACRS review. A fourth  
5 phase is the completion of the safety evaluation by  
6 closing all of the open items.

7 The fifth phase is a revisiting with the  
8 ACRS again on matters that were open at the time.

9 And, the sixth phase is the final  
10 reconciliation of all outstanding issues in terms of  
11 a confirmatory nature that completes the licensing  
12 record for the application.

13 For a subsequent COLA, we use a four  
14 phased A, B, C and D. A is very similar to Phase I,  
15 it's a question and answer response phase.

16 Phase B is the development of the safety  
17 evaluation with open items.

18 Phase C is a visiting with the ACRS on  
19 matters of technical nature.

20 And, Phase D is the completion of the  
21 safety evaluation that resolves all open issues.

22 CHAIRMAN SVINICKI: Okay, thank you for  
23 that.

24 The other topic I would ask you to perhaps  
25 to respond, anyone on the panel who would like to, is

1 you heard in the panel immediately preceding yours, I  
2 asked the Applicant about kind of institutional  
3 knowledge keeping that together on a going forward  
4 basis.

5 And, the cases -- the case of the NRC  
6 staff, of course, is the Commission has approved to  
7 the merge of the Office of New Reactors with the  
8 Office of Nuclear Reactor Regulation. So, you know  
9 you're facing a restructuring on the NRC side of the  
10 house.

11 So, how is the staff, at a high level,  
12 approaching the same need to maintain a core and  
13 institutional knowledge should applicants, upon being  
14 granted licenses, decide ten years down the road to  
15 construct -- to initiate construction of the units?

16 MS. ORDAZ: Thank you.

17 I would offer that we have a number of  
18 procedures in place currently. They have been revised  
19 over time and they're going to continue to be revised  
20 as we're learning lessons through these reviews.

21 Many of the staff that have been involved  
22 through the years, I would offer Frank to my right  
23 here, has been involved since day one.

24 I've had some experience in the past four  
25 hearings and but the staff behind us and around this

1 room, I asked this morning when we did roll call for  
2 the witnesses, how many have been involved up to this  
3 point. And, there was quite a few hands in the air.  
4 So, many of the folks around this room have been  
5 involved since the very first time and also have had  
6 been here -- have been here for previous hearings.

7 So, we can't always declare that they're  
8 going to be here in future COLs, however, and there  
9 are no future ones on the horizon at the moment, but  
10 what we're trying to do is ensure that the procedures  
11 that we have in place continue to be updated, learning  
12 lessons.

13 And, when we take the opportunity,  
14 continuously to look back and factor those lessons  
15 into our procedures such that is there is that  
16 opportunity for a future COLs, we'll have turn over,  
17 we'll have dialogue and we'll be able to preserve  
18 knowledge.

19 CHAIRMAN SVINICKI: Thank you for that.

20 And, I would note that upon the issuance  
21 of the Commission's decision in this particular  
22 mandatory hearing, NRC does and new reactors achieves  
23 a significant milestone in the wrapping up of their  
24 work on the pending COL.

25 So, I think we will hit a different phase

1 here in terms of keeping institutional knowledge.  
2 And, we will, of course, make use of the very capable  
3 team that has worked on this in other capacities and  
4 as they move on to different assignments, we'll have  
5 the same challenge as the Applicant.

6 So, we'll have to maintain some focus on  
7 that. Of course, the notion of maintaining  
8 institutional knowledge is not something new for NRC.  
9 We do this on the operating reactor side and with  
10 other materials licensees. So, I'm very confident  
11 that the NRC staff will be able to keep the right  
12 knowledge management instruments in place.

13 With that, I would note, if my colleagues  
14 don't -- haven't thought of anything else that they  
15 care to raise, we will now take a short break. And,  
16 I think I'm going to give us until quarter to so that  
17 we may reset for the first safety panel and stretch  
18 our legs a bit.

19 So, we will reconvene at 10:45.

20 Thank you.

21 (Whereupon, the above-entitled matter went  
22 off the record at 10:36 a.m. and resumed at 10:45  
23 a.m.)

24 CHAIRMAN SVINICKI: Thank you, everyone.  
25 I now call the hearing back to order. We will now

1 conduct the Safety Panel, which as I have described is  
2 the first of the joined panels that will begin with  
3 the FPL witnesses and then continue with the NRC staff  
4 witnesses.

5 The parties will address relevant sections  
6 of the application and two chapters in particular from  
7 the Final Safety Evaluation Report, Chapter 2  
8 regarding site characteristics, including a novel  
9 issue associated with storm surge and sea level rise,  
10 and Chapter 11 regarding radioactive waste management,  
11 including a novel issue associated with the use of  
12 deep well injection for liquid radioactive waste  
13 disposal.

14 In connection with the staff's discussion  
15 of the liquid rad waste disposal issue I note that in  
16 the contested portion of this proceeding, which  
17 proceeded separately from today's hearing and has been  
18 completed, the Atomic Safety and Licensing Board  
19 considered an environmental issue designated  
20 contention 2.1.

21 The proponents of that contention argue  
22 that certain specified chemical concentrations in the  
23 wastewater proposed to be injected into the wells  
24 could adversely affect groundwater should they migrate  
25 into the Upper Floridan Aquifer and that the staff's

1 Environmental Impact Statement therefore incorrectly  
2 concluded that the environmental impacts from the  
3 wells would be small.

4 Following an evidentiary hearing on this  
5 contention the Licensing Board concluded in a decision  
6 designated LBP17-5 that the staff did in fact  
7 demonstrate that the environmental impacts from the  
8 injection wells would be small.

9 This specific issue has been finally  
10 determined and is not part of the Commission's  
11 consideration of the staff's review in the uncontested  
12 portion of this proceeding.

13 I will now begin by asking the panelists  
14 to introduce themselves, and we will begin with FPL.  
15 Please proceed.

16 MR. FRANZONE: Good morning. This is  
17 Steve Franzone, Licensing Manger.

18 MR. JACOBS: Paul Jacobs, Engineering  
19 Supervisor.

20 MR. ORTHEN: And Richard Orthen, Licensing  
21 Engineer.

22 CHAIRMAN SVINICKI: Thank you. Please  
23 proceed with the FPL presentation.

24 MR. FRANZONE: Good morning,  
25 Commissioners, this is Steve Franzone. Slide 2,

1 please. Okay.

2 If I may draw your attention to the blue  
3 at the bottom right of the figure on Slide 2 this  
4 represents the nominal sea level of Biscayne Bay and  
5 26 feet above that is our plant design grade.

6 To paint the final plant design grade we  
7 started by reviewing different scenarios identified in  
8 NRC guidance, such as floods, rains, tsunami, and  
9 storm surge.

10 The limiting event which could impact this  
11 site was determined to be the probable maximal storm  
12 surge. If we look at the figure it identifies the  
13 three components of the surge water level.

14 First we need a sea level which to base  
15 our storm surge computation. We have conservatively  
16 used an antecedent water level of 3.6 feet NAVD-88,  
17 which is the elevation standard.

18 The two components which make up this  
19 value are the 10 percent exceeding high spring tide  
20 and an added one foot projection for sea level rise.  
21 The one foot for sea level rise was calculated by  
22 using the local relevant data to determine the actual  
23 trend for South Florida following NRC guidance.

24 We used data from the closest available  
25 tide station to determine our sea level rise and

1 reviewed more recent data from tide stations that were  
2 farther away to see if there was a higher rate of  
3 change in the more recent data.

4 We were able to confirm our value was  
5 conservative. Accordingly, this adjusted initial  
6 water level condition was then used in our surge model  
7 simulations.

8 The analysis of the controlling storm  
9 surge included parameters such as storm track, wind  
10 feels, direction of wind approach, and bottom effects,  
11 and resulted in a value of 17.5 feet.

12 These parameters exceeded the documented  
13 historical parameters at the site. We conservatively  
14 added a factor of 20 percent for uncertainty to the  
15 model results.

16 We showed that the model accurately  
17 represented site conditions by benchmarking using  
18 events such as Hurricane Andrew. Our last component  
19 of our surge water level is wave run-up.

20 Wave run-up is calculated using a  
21 conservative model which yield a value of 3.7 feet.  
22 Therefore when we add these components together that  
23 equals 24.8 feet, that we then added 1.2 feet of  
24 additional conservatism to obtain the plant design  
25 grade of 26 feet.

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1 In conclusion, NRC guidance provides a  
2 conservative method for determining the potential  
3 surge for a site by adding conservatism to each  
4 individual component, the result is a conservatism  
5 plant design elevation.

6 Slide 3, please. Okay. All wind is not  
7 created equal. For other sites the DCD site parameter  
8 value of 300 mile per hour tornado wind speed is the  
9 limiting site characteristics.

10 Based on new NRC guidance we investigated  
11 missiles generated by hurricane winds which had the  
12 potential for our site to be more limiting than  
13 missiles generated by a tornado due to the straight  
14 line winds in a hurricane.

15 We reviewed potential hurricane missiles  
16 generated by our one in 10 million year hurricane wind  
17 speed of 260 miles per hour which was taken from their  
18 figure you see here.

19 Using the same methodology as described in  
20 the DCD the hurricane missiles were evaluated and  
21 found acceptable. Another wind design parameter is  
22 the operating basis wind speed which is used to  
23 establish the loads which could be applied repeatedly  
24 without interrupting operation.

25 We determined for our site that basic wind

1 speed is approximately 150 miles per hour, which is  
2 five miles per hour greater than the DCD value of 145  
3 miles per hour.

4 These are the winds expected to occur  
5 every 50 years. However, since the wind loads are a  
6 small contribution to the total applied loads to plant  
7 safety-related structures the small increase is  
8 acceptable.

9 And, finally, for Turkey Point 6 and 7 and  
10 likewise for the existing units we will actually shut  
11 down the plant in advance of the site being impacted  
12 by Category I hurricane winds, which translate to  
13 sustained winds of 74 to 95 miles per hour in  
14 accordance with our emergency plan.

15 Thank you. I will now turn the  
16 presentation over to Paul Jacobs, our Engineering  
17 Supervisor.

18 MR. JACOBS: Good morning, Commissioners.  
19 Slide 4, please. Let's see. As Steve mentioned  
20 earlier FPL proposed a different method of liquid  
21 effluent discharge for Turkey Point Units 6 and 7.

22 The process for collecting plant waste  
23 streams performing the required dilution and the  
24 release of the waste stream is standard practice for  
25 all plants.

1           The difference for Turkey Point Units 6  
2           and 7 is rather than releasing the waste stream to  
3           surface water we will release the waste stream to the  
4           boulder zone.

5           The boulder zone is an extremely permeable  
6           zone in a southeast region of Florida that is capable  
7           of receiving large liquid waste quantities.

8           The use of the boulder zone for injection  
9           of treated sewage, industrial and domestic waste, is  
10          permitted by the Florida Department of Environmental  
11          Protection.

12          The boulder zone is overlain by a  
13          confining unit which will prevent upward movement of  
14          the injected waste. The boulder zone has been in use  
15          for disposal of liquid waste since 1943 and there were  
16          over 180 permitted Class I injection wells.

17          The basic construction of the injection  
18          well consists of a series of concentric casings that  
19          are placed at various depths. Each of the casings is  
20          cemented in place to isolate the various geologic  
21          zones.

22          The depths of each size of casing are  
23          determined by the geology of the site and Florida  
24          regulatory requirements. The 24-inch and 34-inch  
25          casing is placed to provide double protection of the

1 underground source of drinking water.

2 FPL will install six pair of injection  
3 wells. Each pair of injection wells will have a dual  
4 zone monitoring well. The dual zone monitoring well  
5 is an early detection system used to identify if  
6 injectate is migrating upward from the boulder zone.

7 Slide 5, please. Slide 5 contains a cross  
8 section of a typical deep well injection arrangement,  
9 well arrangement. The figure is not to scale and is  
10 intended to point out significant features of the well  
11 system.

12 This official well shown in the upper left  
13 is simply shown for scaling purposes. The system  
14 shown includes an injection well, IW-1, and an  
15 associated dual zone monitoring well, DZMW-1.

16 As shown the injection well extends from  
17 grade to approximately 3000 feet below land surface.  
18 The actual depth of the injection well system that  
19 will be installed at Turkey Point will be determined  
20 for each well based on the specific well site but  
21 should be between 2900 and 3500 feet below land  
22 surface.

23 To offer some perspective I would like to  
24 point out some of the relevant elevations to  
25 demonstrate the features that make the use of these

1 wells a safe and reliable method of release.

2 The base of the underground source of  
3 drinking water is approximately 1450 feet below land  
4 surface. The injection elevation is 3000 feet below  
5 land surface.

6 Between the injection point and the  
7 underground source of drinking water is an area  
8 designated as the Middle Floridan Confining Zone. The  
9 layer is approximately 1000 feet thick and has a very  
10 low hydraulic conductivity that prevents flow through  
11 the confining layer.

12 The likelihood of any fluid from the  
13 injection zone rising into the underground source of  
14 drinking water is very small because the confining  
15 layer is thick and has low porosity.

16 Mr. Orthen will now describe the  
17 assessment FPL performed to determine how injection  
18 might affect the safety of members of the public.

19 MR. ORTHEN: Slide 6, please. Good  
20 morning. I will now talk a bit about FPL's work  
21 assessing the public safety implications of a  
22 non-traditional method of disposing the plant's  
23 radioactive liquid effluent using the injection wells  
24 Paul just described.

25 The combination of the natural barriers

1 preventing access to this deep saltwater formation  
2 coupled with relatively stagnant movement of water  
3 down there make this formation a very attractive  
4 alternative to surface water disposal.

5 These features quite simply minimize the  
6 prospects for human exposure and for the reasons Paul  
7 described we would not expect any member of the public  
8 to ever come in contact with this water.

9 But the NRC asked the question what if and  
10 so FPL conducted an extremely conservative dose  
11 assessment to demonstrate compliance with the NRC's 10  
12 CFR 50 Appendix I ALARA dose objectives under highly  
13 unlikely circumstances.

14 Because dose assessment methods for  
15 effluents released to surface water are not directly  
16 applicable to subsurface injection FPL developed a new  
17 modeling approach coupling groundwater transport in  
18 sites with traditional maximally exposed member of the  
19 public dosimetry approaches.

20 We developed several receptor exposure  
21 scenarios along the way postulating extraordinary  
22 events and assumptions, abnormal situations if you  
23 will, in order to hypothetically and maximally expose  
24 a member of the public to the injected effluence.

25 These abnormal situations were needed

1 because the ordinary expected injection practice would  
2 confine for decades the effluent within the saltwater  
3 formation with no reasonable or practical means for  
4 exposure. Then we decided which of these abnormal  
5 situations would deliver the highest dose.

6 In summary, FPL's modeling design was  
7 conservatively established to define a very unlikely  
8 sequence of events and human activities associated  
9 with an abnormal, highly unexpected exposure  
10 situation.

11 Through a careful screening and selection  
12 process FPL found that the worst case scenario  
13 involved an unusual person who is both a well driller  
14 and a subsistence farmer living about two miles away  
15 from Units 6 and 7.

16 FPL hypothesized that in this particular  
17 situation the subsistence driller would ignore all  
18 notification and permitting requirements for a large  
19 and expensive drilling operation and develop a well  
20 hundreds of feet deep into the brackish Upper Floridan  
21 Aquifer to supply water for drinking and production  
22 and consumption of food stuff, such as garden  
23 vegetables, beef, and milk.

24 To add to this conservatism we placed this  
25 well directly above a hypothetical failure in the

1 lowermost confining barrier above the saltwater  
2 disposal formation, in essence, short circuiting  
3 direct access to the Unit 6 and 7 effluence.

4 Despite this being a worst case situation  
5 and an extremely unlikely scenario the subsistence  
6 driller's dose was found to be less than a few  
7 millirem per year, in compliance NRC's Appendix I  
8 limits.

9 Because the slow horizontal movement of  
10 effluent in a saltwater formation also ensures long  
11 periods of radioactive decay before arriving below the  
12 subsistence driller's location we are confident this  
13 analysis is both conservative and bounding.

14 Slide 7, please. This ends my  
15 presentation. Thank you.

16 CHAIRMAN SVINICKI: Thank you. I would  
17 now ask the NRC staff panelists to please occupy the  
18 spaces behind their name cards. Please introduce  
19 yourselves and proceed with the staff's presentation.  
20 Thank you.

21 MR. COMAR: Good morning. I am Manny  
22 Comar.

23 MS. SMITH: Good morning. Ellen Smith.

24 MR. GIACINTO: Good morning. Joseph  
25 Giacinto.



1 MR. GRAN: Zach Gran with Health Physics.

2 MR. COMAR: Good morning, Commissioners.

3 My name is Manny Comar and I am the Lead Project  
4 Manager for the staff review of Florida's Turkey Point  
5 Units 6 and 7 Combined License Application review.

6 Slide 2, please. Joining me on the safety  
7 panel are Joseph Giacinto and Mr. Zachary Gran of the  
8 NRC staff and Ms. Ellen Smith of the Oak Ridge  
9 National Lab.

10 Slide 3, please. During this panel Mr.  
11 Giacinto and Ms. Smith will discuss the storm surge  
12 and sea level rise and Mr. Gran will discuss deep well  
13 injection for the liquid radioactive waste disposal.

14 I will now turn over the presentation to  
15 Mr. Joe Giacinto and Ellen Smith.

16 MR. GIACINTO: Thank you, Manny. My name  
17 is Joseph Giacinto and I am NRC's Lead Hydrologist for  
18 the staff's review of the Turkey Point Units 6 and 7  
19 Combined License Application.

20 With me is Ms. Ellen Smith who is a  
21 hydrologist on the research staff at Oak Ridge  
22 National Laboratory. Our testimony will focus on the  
23 external flood causing mechanism of storm surge and  
24 its related components.

25 Within 10 CFR Part 50 Appendix A General

1 Design Criterion II requires consideration of the most  
2 severe national phenomena historically reported for  
3 this site and surrounding area in establishing the  
4 plant design basis.

5 In regard to the potential for external  
6 flooding from storm surge the storm surge resulting  
7 from Hurricane Andrew in August of 1992 remains the  
8 highest of record in the State of Florida, including  
9 consideration of preliminary data on the recent series  
10 of 2017 hurricanes.

11 Hurricane Andrew was a Category 5 storm  
12 which is the most severe hurricane category with  
13 associated winds of 157 miles per hour or greater.  
14 Passing through Homestead, Florida, Hurricane Andrew  
15 made landfall approximately eight miles north of the  
16 Turkey Point site.

17 The hurricane produced a maximum storm  
18 surge of 15.4 feet north of the site and a storm surge  
19 elevation of three to four feet at the Turkey Point  
20 site.

21 We will move on to the staff's review of  
22 the storm surge analyses with the next few slides  
23 presented by Ms. Ellen Smith.

24 MS. SMITH: Thank you, Joe. Good morning,  
25 I am Ellen Smith, a hydrologist at Oak Ridge National

1 Laboratory and the Lead Technical Reviewer for surface  
2 water in support of NRC's staff review of the Turkey  
3 Point Units 6 and 7 COLA.

4 Slide 5, please. FPL's analysis for storm  
5 surge modeled a Probable Maximum Hurricane, or PMH,  
6 consistent with NRC guidance and Standard Review Plan  
7 2.4.5 of NUREG-0800 using the combination of hurricane  
8 parameters that yields the highest storm surge at  
9 Turkey Point.

10 This PMH is much more severe than  
11 Hurricane Andrew. The calculated storm surge height  
12 from this PMH was then increased by 20 percent to  
13 account for uncertainty.

14 The staff confirmed FPL's modeling results  
15 and confirmed that the FPL analysis also includes  
16 other conservatisms specified by NRC guidance.  
17 Specifically, the analysis used as the peak surge that  
18 occurs in an extreme high tide coincident with the  
19 highest recorded sea level anomaly in the area and  
20 that includes an allowance for sea level rise, which  
21 is discussed in the next slide.

22 Wave run-up on top of the surge was  
23 calculated as 3.7 feet based on using conservative  
24 straight line constant winds from a storm with wind  
25 speeds higher than the threshold for a Category 5

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1 hurricane.

2 The resulting total flood hazard elevation  
3 from storm surge was calculated to be 24.8 feet at the  
4 site, which is 1.2 feet below the design grade of 26.0  
5 feet. An ITAAC requires FPL to verify the design  
6 plant grade elevation.

7 Slide 6, please. Sea level rise is one  
8 component of the storm surge calculation, which is  
9 expanded upon in this slide.

10 NRC guidance and Standard Review Plan  
11 2.4.5 indicates that information from sea level  
12 records should be considered in flood analysis for  
13 coastal sites and JLD-ISG-2012-06 recommends using  
14 observed sea level trends at nearby tide gauge  
15 stations as a basis for estimating sea level rise,  
16 future sea level rise.

17 The National Oceanic and Atmospheric  
18 Administration, or NOAA, maintains a network of tide  
19 stations and publishes tide and sea level data from  
20 those stations.

21 Miami Beach is the nearest station to the  
22 Turkey Point site that has a period of record long  
23 enough to span multiple multi-decade tidal cycles.  
24 NOAA's data analysis shows that sea level there is  
25 rising at a rate of 0.78 feet per century.

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1 NRC staff reviewed the data and the  
2 analysis and confirmed this trend. The Miami Beach  
3 station was removed from service in 1981 but Transit  
4 Miami Beach are well correlated with Transit Key West  
5 where NOAA tide records are available from 1913  
6 through 2016.

7 Informed by the observed data and NRC's  
8 guidance FPL estimated a rise of 1.0 foot to account  
9 for sea level change over the life of the Turkey Point  
10 Units 6 and 7 nuclear plant.

11 The staff notes that sea level change is  
12 observable and gradual, so if sea level rise should  
13 exceed this estimate there would be opportunities to  
14 reevaluate the situation and take additional action if  
15 warranted.

16 Slide 7, please. In summary, the heights  
17 of the various components of the calculated flood  
18 hazard elevation are high tide plus sea level anomaly  
19 at 2.6 feet, sea level rise at 1.0 feet, storm surge  
20 with an added 20 percent uncertainty at 17.5 feet, and  
21 wind wave run-up at 3.7 feet, for a total flood hazard  
22 elevation of 24.8 feet, which is 1.2 feet below the  
23 design grade elevation.

24 Sea level rise is only one component in  
25 this flood hazard elevation and therefore any

1 discussion of the relative merits of the sea level  
2 rise component should also consider any conservatisms  
3 from other parameters that contribute to the overall  
4 design basis flood height. Thank you. Now to Joe.  
5 Slide 8, please.

6 MR. GIACINTO: Thank you, Ellen. The  
7 storm surge estimate exceeds the surge from the most  
8 extreme historical event. Considering the multiple  
9 layers of conservatism in the storm surge analysis the  
10 NRC staff concluded that the design basis value of  
11 storm surge flood height is appropriate and reasonably  
12 conservative.

13 Because the design basis flood elevation  
14 does not inundate the design plant grade it will not  
15 affect safety-related structures, systems, and  
16 components.

17 I will now turn the presentation over to  
18 Mr. Zachary Gran for a presentation of deep well  
19 injection for liquid radioactive waste disposal.

20 MR. GRAN: Thank you. Slide 9, please.  
21 Good morning.

22 COMMISSIONER BURNS: Could you move your  
23 mic a little closer?

24 MR. GRAN: Okay. How's that?

25 (No audible response)

1 MR. GRAN: Good morning. My name is  
2 Zachary Gran and I am a Health Physicist in the Office  
3 of New Reactors. I am the lead reviewer for Chapter  
4 11, Waste Management Systems, for the Turkey Point  
5 COLA.

6 I will be presenting the staff's review of  
7 the maximum potential dose resulting from the deep  
8 well injection method proposed by FPL.

9 FPL is proposing to use deep well  
10 injection to dispose of liquid effluent instead of  
11 disposal into surface water. This design feature has  
12 been designated as novel as it represents the first  
13 use of such a disposal method by a nuclear power plant  
14 in the United States.

15 10 CFR 20.2002 describes the information  
16 required for obtaining approval of a proposed disposal  
17 method.

18 Slide 10, please. First, some background  
19 on deep well injection. The injection will be into  
20 the boulder zone of the Lower Floridan Aquifer which  
21 is a cavernous, high permeability, saline zone located  
22 over 3000 feet below the surface at the site.

23 The salinity of water within the boulder  
24 zone is roughly the same as sea water. Water within  
25 the boulder zone is kept separate from the overlying

1 brackish Upper Floridan Aquifer by around 1500 feet of  
2 low permeability dolomitic limestone and dolomite.

3 This low permeability zone is referred to  
4 as the Middle Confining Unit of the Floridan Aquifer  
5 System and is relied upon in Florida to provide  
6 confinement of injected wastewaters.

7 In the vicinity of the site water within  
8 the Upper Floridan Aquifer is brackish and would  
9 require treatment before drinking.

10 Slide 11, please. Deep well injection of  
11 both municipal and industrial wastewater is widely  
12 used in the State of Florida in part because of laws  
13 that limit releases to surface water bodies.

14 Currently there are over 180 deep  
15 injection wells, which are also known as Underground  
16 Injection Control wells, permitted by the State of  
17 Florida under authority delegated from the  
18 Environmental Protection Agency.

19 At the Turkey Point site FPL proposes to  
20 install 12 Class I underground injection control wells  
21 and six dual-zone monitoring wells located between  
22 each injection well.

23 Slide 12, please. Given the nature of the  
24 discharge method it was necessary for FPL to  
25 demonstrate compliance with 10 CFR 20.2002, Methods

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1 for Obtaining Approval of Proposed Disposal  
2 Procedures.

3 In past reviews of applications, other  
4 than for a power reactor license, the staff has  
5 typically approved 10 CFR 20.2002 requests that result  
6 in a dose to a member of the public that is no more  
7 than a few millirem per year.

8 For this criterion the staff determined  
9 that the criteria present in 10 CFR Part 50 Appendix  
10 I were suitable for evaluating dose since these are  
11 the criteria used to demonstrate compliance with  
12 surface water disposals.

13 Slide 13, please. The staff performed an  
14 independent dose analysis using radionuclide  
15 concentrations provided by the Applicant.

16 The staff independently confirmed that the  
17 radionuclide concentrations described by the Applicant  
18 as having the highest contribution to dose were  
19 conservative.

20 The staff confirmed that four  
21 radionuclides, tritium, cesium-134 and cesium-137, and  
22 strontium-90 contribute 99 percent of the dose from  
23 the AP-1000 source term.

24 The staff identified the nearest  
25 hypothetical receptor location at 2.2 miles of the

1 site and staff considered multiple pathways as noted  
2 on the slide.

3 However, the staff's analysis for  
4 compliance only used the irrigated vegetable pathway  
5 since no other pathway is plausible based on land use  
6 practices around the site.

7 As part of the analysis of the fate and  
8 transport of injected effluent from the injection well  
9 to the receptor location the staff used conservative  
10 primaries and assumptions in order to evaluate the  
11 abounding injection scenario.

12 The conservative assumptions are discussed  
13 on the next slide. Slide 14, please. This slide  
14 illustrates a conceptual model of the bounding  
15 transport scenario which was used to describe the  
16 maximum exposure scenario at the receptor location.

17 On the right side we have the injection  
18 well, which is the point at which the liquid effluent  
19 is being injected into the boulder zone. Prior to  
20 being injected the effluent will be diluted to meet 10  
21 CFR Part 20 Appendix B, Effluent Concentration Limits.

22 In our analysis the staff used the smaller  
23 of the two possible dilution sources because that will  
24 result in the highest concentration of radionuclides  
25 in the injected effluent.

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1           Once the water is in the boulder zone the  
2 staff used conservative assumptions to minimize travel  
3 times to receptors and maximize the concentrations of  
4 the effluent.

5           Conservative parameters for dilution,  
6 radionuclide decay, sorption, and the aquifer  
7 effective porosity and thickness were all used to  
8 minimize the travel time to the receptor location.

9           Staff analysis confirms that the injection  
10 pressure would have a greater influence on plume  
11 migration rates than the slow natural flow within the  
12 boulder zone and would be the primary mechanism  
13 driving transport for radionuclides once inside the  
14 boulder zone.

15           Accordingly, the staff determined that the  
16 maximum radionuclide concentrations at the receptor  
17 well and for this does analysis the staff used the  
18 maximum concentration determined for each  
19 radionuclide.

20           At 2.2 miles from the site staff assumes  
21 that there is a private well completed in the Upper  
22 Floridan Aquifer located directly above a complete  
23 breach of the Middle Confining Unit.

24           This assumption is conservative since the  
25 staff analysis has determined that over the 100-year

1 simulation the effluent would not travel more than 310  
2 feet vertically through the 1500-foot confining unit.

3 The staff then calculated the dose to a  
4 member of the public through the irrigated vegetable  
5 pathway using the concentrations found at 2.2 miles in  
6 the boulder zone.

7 Slide 15, please. Based on the staff's  
8 analysis the staff determined that the calculated  
9 releases were below the limits specified by 10 CFR  
10 Part 20 Appendix B and 10 CFR Part 50 Appendix I.

11 The Health Physics Program required by  
12 Part 20 and the ALARA Program required by Part 50  
13 Appendix I are both operational programs and do not  
14 have associated ITAAC in accordance with the staff  
15 requirements memorandum on SECY-04-032.

16 The Applicant demonstrated compliance with  
17 10 CFR Part 20 Appendix B by specifying and  
18 maintaining flow rates at the blowdown sump discharge  
19 corresponding to the minimum dilution factor of about  
20 6000 gallons per minute per unit prior to discharge.

21 The staff confirmed the dose results  
22 reported by the Applicant through independent  
23 calculations. The staff confirmed that the doses were  
24 below the dose objectives in 10 CFR Part 50 Appendix  
25 I.

1 And, in addition, the Applicant has  
2 provided all of the information needed to demonstrate  
3 compliance with 10 CFR 20.2002 by, one, providing a  
4 description of the waste disposed and the manner of  
5 the disposal, and, two, demonstrating compliance with  
6 the limits of 10 CFR Part 50 Appendix I and the  
7 maximum dose criterion of a few millirem to the  
8 maximally exposed individual.

9 This concludes the staff's presentation.  
10 Thank you.

11 CHAIRMAN SVINICKI: Well thank you to the  
12 FPL and the staff panelists for those presentations.  
13 This is the part of the day, this part and the next  
14 panel where the room layout creates a slight bit of  
15 awkwardness but I know we can handle it, so we do have  
16 the FPL witnesses behind the staff.

17 I don't think you need to move yourselves  
18 all the way. I think that there is few enough of  
19 everybody that we can --

20 (Simultaneous speaking)

21 CHAIRMAN SVINICKI: Okay, all right. Well  
22 Commissioner Baran has a blocked view, but okay.

23 COMMISSIONER BARAN: That's good. You're  
24 good, you're good, you're good.

25 CHAIRMAN SVINICKI: Okay. And we will

1 begin the question period of this Safety Panel with  
2 Commissioner Burns. Please proceed.

3 COMMISSIONER BURNS: Well, thank you.  
4 Thank you for the overview on those two issues, on the  
5 deep well injection as well as the -- I think it was  
6 a very interesting issue in terms of designing to  
7 accommodate, or, you know, a severe, potentially  
8 severe flooding events and severe weather events given  
9 the experience of Turkey Point being in that very  
10 strong hurricane, Hurricane Andrew in 1992.

11 Let me actually start with a couple  
12 questions related to the deep well injection. I have  
13 one for the Applicant and then one for the staff.

14 For FPL, I think in the response to  
15 Pre-Hearing Question 18 on requirements associated  
16 with the deep well injection you discussed groundwater  
17 monitoring requirements imposed by the Florida  
18 Department of Environmental Protection and you stated  
19 that "it's expected that mechanical integrity tests in  
20 the injection wells will be performed every five  
21 years."

22 Can you tell me whether those tests are  
23 required by the Florida Department or is there some  
24 other commitment that FPL is making toward those  
25 testing, that testing?

1 MR. JACOBS: The license for the injection  
2 well is renewed on a 5-year basis and prior to that  
3 renewal you do a mechanical integrity test.

4 COMMISSIONER BURNS: Okay.

5 MR. JACOBS: So it is required by  
6 regulations.

7 COMMISSIONER BURNS: And that's, right,  
8 that's required by the Florida Department?

9 MR. JACOBS: By the environmental  
10 protection regulation, yes.

11 COMMISSIONER BURNS: Okay, all right.  
12 Thank you, that answered my question. And with  
13 respect to the staff, as the staff, as Mr. Gran noted  
14 I think this is the first circumstance in which we  
15 have had for a power reactor licensee, this type of  
16 mechanism or this type of design and I guess my  
17 question would be that if you, did you have particular  
18 guidance for reviewing deep well injection liquid  
19 effluence other than what is described in Part 20 and,  
20 you know, I think, yes, you also mentioned some  
21 documents on Slide 12, was there other experience and  
22 other circumstances or industries that you took into  
23 account in making your assessment?

24 MR. GRAN: Yes. Like you point out the  
25 few millirem criteria is where started off.

1 COMMISSIONER BURNS: Yes.

2 MR. GRAN: We're trying to assess the dose  
3 criteria. For normal reactors with the service water  
4 disposal we had our, we previously had our computer  
5 codes that we would use to do those dose analysis and  
6 we could leverage some of the dose conversion factors,  
7 the consumption factors, all these various injection  
8 pathways to determine the dose.

9 For this one it was definitely a bit  
10 different. I can only speak from the radiological  
11 point of view and maybe the -- If you want more  
12 details on the water transport we can refer to someone  
13 else, but for us it was really how we get the  
14 concentrations in the boulder zone.

15 But once we figured out what the  
16 radioactivity was inside the boulder zone determining  
17 the dose to a member of the public was somewhat  
18 similar to what we normally would do.

19 COMMISSIONER BURNS: Okay. Okay, all  
20 right. Thank you. Let me turn to some questions  
21 related to dealing with storm surge and the impact of  
22 weather conditions and potential flooding.

23 There was some illusion -- or I think  
24 actually, Mr. Giacinto, you referred to that we have  
25 looked preliminarily at data from the 2017 hurricane



1 experience, which as you noted I think, I think you  
2 testified that it's less, the parameters or the  
3 characterization of those events, the hurricane  
4 events, is less than that of Andrew, correct?

5 MR. GIACINTO: That is correct. We looked  
6 at the data for the 2017 hurricanes which some of it  
7 is preliminary but from the existing data that we have  
8 looked at the surge from those 2017 hurricanes was far  
9 below anything that PMH would approach.

10 COMMISSIONER BURNS: Okay. What's the  
11 nature, as you said what we have is in effect  
12 preliminary data, which doesn't surprise me given  
13 these events were only within the last couple of  
14 months, what other, what is the data to come and  
15 maybe, Ms. Smith, you --

16 MS. SMITH: Well typically the data on the  
17 storm surge from a hurricane event is largely based on  
18 places where people found debris.

19 COMMISSIONER BURNS: Yes.

20 MS. SMITH: So in the immediate aftermath  
21 of the hurricane we did have some tide records where  
22 they weren't knocked out. The records in Puerto Rico  
23 were largely lost, but the numbers from the gauges are  
24 typically less than the numbers you end up with later  
25 on when somebody does a detailed retrospective.

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1           The highest value I have seen for storm  
2 surge in Florida from this year's hurricanes was a  
3 news report indicating about ten feet of surge in the  
4 Florida Keys from Hurricane Irma.

5           The highest measured surge was at  
6 Jacksonville and was about 7-1/2 feet above the tide  
7 level and then the tide was fairly high, so it was  
8 probably in the same order totally when you added tide  
9 to surge, but those numbers are well below the kinds  
10 of numbers we are talking about.

11           COMMISSIONER BURNS: Okay. Now would the  
12 Applicant have anything it would like to add on this  
13 question of where we are in terms of preliminary?

14           MR. FRANZONE: No, I think you accurately  
15 portrayed it though.

16           COMMISSIONER BURNS: Okay. Perhaps one if  
17 I can cut through my notes and find it. Again, Ms.  
18 Smith, you talked about sort of historical  
19 observations with respect to sea level rise and it was  
20 something like about three-quarters of a foot or 0.77,  
21 0.78 feet rise over the, about the last century.

22           Are there -- In terms of looking at data  
23 given, you know, it's something we almost read about  
24 in the paper every day issues of sea level rise, two  
25 things I would say.

1 Do we have indications that suggest a  
2 greater, a more rapid sea level rise although given in  
3 context I think when you say this is something you can  
4 watch, or, you know, it's not suddenly you're going to  
5 have tomorrow a 3-foot rise in sea level, it's  
6 something, it progresses over time, but do we have  
7 indications of an acceleration of sea level rise?

8 MS. SMITH: Well there certainly have been  
9 some people who have been reporting observations that  
10 indicate a higher rate of sea level rise, but most  
11 predications of higher sea level rise are still based  
12 on somebody's model analyzing the factors that are  
13 expected to lead to the rise.

14 COMMISSIONER BURNS: Okay.

15 MS. SMITH: And data interpretation on sea  
16 level rise is a lot more complicated than a person  
17 might immediately assume.

18 There are all sorts of factors that create  
19 noise in the data so it is very difficult to actually  
20 evaluate what is affecting sea level rise on a global  
21 scale or locally.

22 So this is something that is -- We're  
23 going to know more in the future, but at the moment  
24 the data, the observed data are what we have and the  
25 linear fit was the best way we can interpret the

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1 historical data.

2 COMMISSIONER BURNS: Did you want to add  
3 something, Mr. Giacinto?

4 MR. GIACINTO: Yes, I'd just like to add  
5 there have been -- Sea level rise is an evolving  
6 science and as such characterization of sea level rise  
7 literature by the federal government and also the  
8 inter-governmental panel on climate change are  
9 published every few years to review the state of the  
10 science and new information.

11 So to that end, NOAA recently published a  
12 national climate assessment in 2017 and their likely  
13 range of sea level rise to 2100 was one foot to 4.3  
14 feet.

15 COMMISSIONER BURNS: Say that again for  
16 me, please, one foot to --

17 MR. GIACINTO: 4.3 feet.

18 COMMISSIONER BURNS: 4.3 feet, okay.

19 MR. GIACINTO: To 2100, yes.

20 COMMISSIONER BURNS: And my final question  
21 related to that then is given what the staff has  
22 analyzed and the models that the Applicant has used  
23 and with the staff's conclusions am I correct in  
24 assuming that the design parameters used are  
25 conservative enough to account for that level of rise?

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1 MR. GIACINTO: Yes, it's very  
2 conservative. We have a PMH hurricane with an  
3 intensity that has never been seen before in the  
4 continental United States, a landfall.

5 The intensity is well beyond the Category  
6 5 threshold. We have a PMH that is approaching the  
7 boundaries of physics quite frankly for the Atlantic  
8 Ocean and we assume no weakening of the storm at  
9 landfall, which is typically the case for a large  
10 storm.

11 We added extreme high tides to the  
12 analysis. The Applicant had a simulation program that  
13 actually tends to over predict intense hurricanes,  
14 such as the PMH, and on top of that we added the 20  
15 percent margin and we added the sea level rise to that  
16 and all resulting in a storm surge that is over nine  
17 feet higher and 40 percent greater than the storm  
18 surge of record from Hurricane Andrew in Florida.

19 COMMISSIONER BURNS: Okay. Thank you very  
20 much. Thank you, Chairman.

21 CHAIRMAN SVINICKI: Well thank you again  
22 for your presentations. I will begin with a question  
23 for the Applicant.

24 Before I do that though I want to note  
25 that the Commission asked a number of pre-hearing

1 questions to both the staff and the Applicant and I  
2 did find that the responses were both thorough and  
3 very clear, not that they haven't been in other  
4 mandatory hearings, but I want to compliment both  
5 parties.

6 I thought that they were very illuminating  
7 and as a result I don't have questions on a number of  
8 very important areas, but I think that the record is  
9 very strong in those areas.

10 I did have a couple of items outside of  
11 that though. The first for the Applicant is the  
12 Applicant adopted an approach of a consolidated  
13 technical support center consolidated with the  
14 emergency operations facility that would service both  
15 the existing nuclear units at Turkey Point and the  
16 AP-1000 units if they were constructed.

17 Now there are technology differences of  
18 the AP-1000 with the current generation of operation  
19 reactors. What were the pluses and minuses that the  
20 Applicant considered in requesting that approach and  
21 why did you arrive at your request to have the  
22 consolidated center?

23 MR. FRANZONE: Okay. This is Steve  
24 Franzzone. Thank you, it's a good question. When you  
25 look the site the existing units have been there for

1 a while, their TSC is located inside the protected  
2 area.

3 When we looked at the new Units 6 and 7 we  
4 tried to not just look at Turkey Point 6 and 7 alone  
5 because our emergency plan actually we transitioned  
6 from an individual site emergency plan to the, I mean  
7 an individual unit to a site, and so that was one of  
8 the considerations when we looked at placing a tech  
9 support center.

10 We wanted to do it locally, centrally  
11 between the both units. We could actually take  
12 advantage really of new technology for the existing  
13 units since they would be operating at the same time  
14 period.

15 The other thing that we had, we wanted to  
16 do was FPL's experience at having, you know, a tech  
17 support center combined was -- I thought we had the  
18 experience that we thought having a tech support  
19 center for all four units would be more efficient in  
20 a lot of ways.

21 It can support an incident at both the 3  
22 and 4, the existing units, and then 6 and 7, so that  
23 wasn't a problem. Let me think. I think that  
24 generally answers the question.

25 CHAIRMAN SVINICKI: Okay, thank you. And

1 for the staff, there is this metric on population  
2 density that is considered, it is I think exists in  
3 NRC guidance, it's a density criterion of 500 people  
4 per square mile for the siting of nuclear power plants  
5 and this was somewhat of a complex issue for the  
6 staff.

7 I think that there were -- Well I should  
8 back up and say that it isn't really a hard  
9 requirement not to exceed the 500 person and it says  
10 if the proposed location "significantly exceeds 500  
11 people per square mile" and then it doesn't define  
12 significant so the staff has to use some expert  
13 judgement there as well.

14 But could the staff clarify at all what  
15 the source of 500 is and how did the staff approach  
16 that technical judgement about significantly exceeding  
17 500?

18 MR. NAZER: I am going to ask Rao Tammara  
19 here, to come up to the podium to --

20 CHAIRMAN SVINICKI: Oh. And, again, as  
21 you approach the podium would you state your full  
22 name, your organizational affiliation within NRC, and  
23 whether or not you have been sworn.

24 MR. TAMMARA: My name is Seshagiri Rao  
25 Tammara. I am with the DSEA, NRO. I am the lead



1 reviewer for the external hazards in population  
2 distribution.

3 CHAIRMAN SVINICKI: And you have been  
4 sworn as a witness? You have been sworn in as a --

5 MR. TAMMARA: Yes, I am sworn in, yes

6 CHAIRMAN SVINICKI: Yes, thank you.

7 MR. TAMMARA: According to the regulation  
8 100.21(h) the regulation says the nuclear unit  
9 preferably to be located at a low density area not  
10 really highly dense area.

11 In doing so there is another way, another  
12 step you can look at provided not in a dense area if  
13 safety environmental and other considerations can be  
14 feasible you can locate but the regulation did not  
15 specify a value that it should exceed other -- you  
16 know, within that point, but they left it that way so  
17 that preferably it should not be a very densely area.

18 But later on when the 4.7 guidance was  
19 provided the guidance was given preferably a nuclear  
20 unit should be located from the date of the initial  
21 approval within five years thereafter the people  
22 should be, the density should be within 500 people per  
23 square meter within the 20 miles from the reactor site  
24 in any radial distance -- average road and radial  
25 distance. That was the guidance.

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1           So but the guidance also says if this  
2 exceeds not well in excess of 500 you can demonstrate  
3 that the safety, environmental, and other  
4 considerations are favorable or outweigh the density  
5 criterion can be real -- or overlooked.

6           So that is the gist of the guidance which  
7 has given. So if the 500 is a preferred value for the  
8 review of the application, if it exceeds, not well in  
9 excess, still it can be pursued. That is the way the  
10 guidance is developed.

11           So when we look at the Turkey Point  
12 obviously it exceeded 500 within 20 miles, so then we  
13 projected what should -- you know, so we went a little  
14 bit more closely, we're looking at the zero to five  
15 miles, zero to ten miles, zero to 20 miles, and we  
16 looked at the density, estimated the density, so the  
17 density varied from 58 to 518, 718.

18           So then staff considered and determined  
19 200 above the preferred value is not well in excess,  
20 therefore -- and also in the connection they evaluated  
21 the sites on the safety, environmental, and other  
22 considerations.

23           In addition, this is only the guidance but  
24 the environmental planning and other ones are also  
25 being evaluated in other areas and they are updated

1 every five years, so these all went into the thinking  
2 and then the staff considered it is acceptable.

3 CHAIRMAN SVINICKI: Okay.

4 MR. TAMMARA: That is the basis for it.

5 CHAIRMAN SVINICKI: Okay. Thank you very  
6 much for that answer. And now I will turn to  
7 Commissioner Baran for any questions he might have and  
8 the time he wishes to consume.

9 COMMISSIONER BARAN: Thanks. I am going  
10 to consume more this time. I would like to follow up  
11 on Commissioner Burns's questions about the estimates  
12 of sea level rise used in the application and the  
13 safety evaluation.

14 If Units 6 and 7 were licensed and  
15 constructed they could potentially operate beyond the  
16 year 2100 so sea level rise is a relevant issue that  
17 could have safety implications.

18 In 2012 NOAA provided sea level rise  
19 scenarios for the National Climate Assessment, which  
20 is, of course, the federal government's authoritative  
21 report on the state of climate science compared every  
22 four years.

23 NOAA explained that in recent decades the  
24 dominant contributors to global sea level rise have  
25 been ocean warming and expansion and ice sheet loss.

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1 NOAA described four global sea level rise scenarios,  
2 lowest, intermediate low, intermediate high, and  
3 highest.

4 In the highest scenario the global sea  
5 level rose an average of 6.6 feet by 2100. In the  
6 lowest scenario the mean sea level rise was eight  
7 inches by 2100.

8 NOAA stated that there was a better than  
9 90 percent chance that global mean sea level rise  
10 would ultimately be bounded by these two scenarios,  
11 the lowest and highest scenario.

12 The lowest scenario, as was referred to I  
13 think a little bit earlier, is based on a linear  
14 extrapolation of the historical sea level rise rate  
15 derived from tide gauge records beginning in 1900.

16 NOAA explained that the intermediate low  
17 and the lowest scenario, so the two lowest scenarios,  
18 are "optimistic scenarios for future environmental  
19 change."

20 According to NOAA the highest scenario  
21 should be considered in situations where there is  
22 little tolerance for risk, for example new  
23 infrastructure with a long anticipated life cycle,  
24 such as a power plant, and the lowest scenario should  
25 be considered where there is a great tolerance for

1 risk.

2 As Joe mentioned earlier in January this  
3 year, 2017, NOAA updated sea level rise scenarios and  
4 increased the lowest scenario to one foot of sea level  
5 rise by 2100.

6 So to put this in context, this one foot  
7 sea level rise by 2100 reflects the low end of the  
8 range of sea level rise outcomes expected under the  
9 most optimistic carbon emission scenario in which net  
10 emissions drop to zero later this century.

11 For the purposes of calculating the design  
12 basis flood level FPL, as we have talked about, uses  
13 an estimated sea level rise of one foot and according  
14 to NOAA, again, one foot is what you would expect  
15 under the lowest, most optimistic scenario.

16 So I want to ask the staff given the state  
17 of the science why is a one foot assumption adequate?

18 MR. GIACINTO: Well sea level rise is a  
19 global phenomena and staff is confident that the  
20 Applicant's analysis is very conservative with an  
21 adequate safety margin.

22 When you look at -- Global sea level rise  
23 has implications in site-specific terms, but for the  
24 Applicant's analysis there is so many layers of  
25 conservatism built into the storm surge.

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1           We are, like I say we are at the  
2 boundaries of physics on how big a hurricane can get  
3 in terms of the Atlantic Ocean. And, also, I'd like  
4 to point out in the NOAA report these sea level rise  
5 scenarios are not going to, are not anticipated to  
6 diverge until after 2050.

7           So until that time they are going to track  
8 closely and what happens at 2050, you know, we'll see,  
9 but, again, sea level is an evolving science. The  
10 high estimates are based on the different scenarios  
11 for emissions and temperature and things like that and  
12 there is different models for those.

13           In terms of the 2012 report that has been  
14 superseded by the, obviously, the 2017 report, so I  
15 think the 2017 report uses that evolving science along  
16 the way to get a better estimate on sea level rise  
17 ranges, because they are ranges, they're not values.

18           COMMISSIONER BARAN: In my reading of the  
19 2017 report is that I guess you would characterize it  
20 overall as more pessimistic than the 2012 report,  
21 right, because the lowest scenario went from eight  
22 inches to a foot and some of the other scenarios kind  
23 of expanded a bit as well.

24           MR. GIACINTO: It's difficult to project  
25 sea level rise because it is noticeable on decadal

1 scales, so you really have to look at the measurements  
2 in terms of decades and you also have to look at, you  
3 know, obviously, the objective of the sea level rise  
4 studies and the science behind those predictions as  
5 well, so it's variable.

6 COMMISSIONER BARAN: And so when I look at  
7 Slide 7 of the staff's slides which has the storm  
8 surge components, I thought this was really useful,  
9 what I am trying to figure out, at least initially, so  
10 one element, the second from the bottom, the yellow  
11 element, is future sea level rise and that's a foot.

12 And as you mentioned there are a couple  
13 other areas here where there are conservatisms built  
14 in. I think in the response to pre-hearing questions  
15 FPL mentioned a couple of them, which is like a 10  
16 percent at around the high tide, which is at the  
17 bottom there, the green.

18 I guess that yielded 1.2 feet of margin.  
19 They mentioned I think this design plant grade at the  
20 top, which is another 1.2 feet of margin. You have  
21 mentioned the middle, the hurricane storm surge and  
22 the maximum probably hurricane there.

23 With respect, and understand this is just  
24 one component, if we look at the future sea level rise  
25 component of one foot that isn't conservative though,

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1 right? One foot isn't conservative if it is the low  
2 end of the lowest scenario that NOAA has that one  
3 element is not conservative I would say.

4 MR. GIACINTO: Well the value of using  
5 local tide gauges for sea level rise projections are  
6 that inherent in the measurements are local  
7 variations, such as vertical land movement.

8 We have sediments accumulating on the  
9 ocean floor creating mass loading which would depress,  
10 you know, the tide gauge because it is attached to the  
11 ground, or you can have erosion of land surfaces which  
12 would cause uplift and you also capture the localized  
13 variations in the ocean currents.

14 So the local tide gauges from the staff's  
15 conversations with subject matter experts on sea level  
16 rise is the best thing to use at the current time for  
17 sea level projections.

18 COMMISSIONER BARAN: Okay. In August of  
19 this year the Pacific Northwest National Laboratory  
20 prepared a study for NRC on the potential impacts of  
21 climate change on the southeastern United States.

22 It reported something that relates to one  
23 of the questions Commissioner Burns had which is that  
24 the rate of global mean sea level rise almost doubled  
25 between 1993 and 2007 compared to the average over the

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1 20th century.

2 According to PNNL with continued ocean  
3 thermal expansion and potentially more rapid melting  
4 of glaciers and ice sheets in the future the relative  
5 sea level along the southeastern U.S. coast is  
6 projected to rise by three to six feet by 2100 under  
7 an interagency intermediate one meter global mean sea  
8 level rise scenario.

9 So if three to six feet relative sea level  
10 rise across the southeastern U.S. coast comes from the  
11 one meter or three feet global mean sea level rise and  
12 that reflects that the relative sea level rise  
13 projections of the east coast, including the Atlantic  
14 close to Florida, are higher than the global mean in  
15 every scenario.

16 FPL mentioned in their pre-hearing  
17 question responses these other conservatisms and they  
18 added up to a margin of a total of 3.4 feet. Did the  
19 staff analyze the impacts of a three to six foot sea  
20 level rise on this site?

21 MR. GIACINTO: No, the staff did not  
22 analyze a three to six foot sea level rise. The  
23 Applicant's analysis was very conservative with the  
24 appropriate safety margin and it included sea level  
25 rise and it was actually within the range of likely

1 estimates for 2017 from the NOAA climate report.

2 And, again, you know, with a storm surge  
3 of over nine feet above and 40 percent greater than  
4 the historical storm surge of record staff feels it is  
5 sufficiently conservative to account for variations in  
6 sea level rise and also current estimates of likely  
7 sea level rise.

8 COMMISSIONER BARAN: Let me ask FPL the  
9 same question. You know, you have talked about the  
10 complete margin of 3.4 feet, although that doesn't  
11 include the probably maximum hurricane conservatism,  
12 did you analyze the impacts of a sea level rise beyond  
13 a 3.4 feet, such as six feet?

14 MR. FRANZONE: No. No, not as a specific  
15 example in the, you know, FSAR. However, you know,  
16 when you do look at it we look at the margin --

17 COMMISSIONER BARAN: Right.

18 MR. FRANZONE: -- and we knew that we had  
19 a significant margin. And then even so, it's a  
20 phenomena that doesn't occur overnight and so we have  
21 time to observe it and we can, and the existing  
22 regulatory regime and our corrective action program  
23 easily allows us to evaluate if it, if say the  
24 scenario of the one foot assumption that somehow  
25 becomes invalid or is shown to be not conservative,

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1 and we would enter that into our corrective action  
2 program and then take appropriate action at the time.

3 COMMISSIONER BARAN: In its 2017 report,  
4 the latest NOAA report, it explained "the projection  
5 results presented in several peer review publications  
6 provide evidence to support a physically plausible  
7 global mean sea level rise in the range two meters to  
8 2.7 meters," or six to eight feet, "and recent results  
9 regarding Antarctic ice sheet instability indicate  
10 that such outcomes may be more likely than previously  
11 thought."

12 So according to the climate experts at  
13 NOAA and working with NOAA a 6-foot sea level rise by  
14 2100 is a real possibility. I guess the question I  
15 have in terms of this response of, well, if it's a  
16 slow moving phenomena there is a lot of time, doesn't  
17 it make sense to prepare for that possibility now at  
18 the licensing stage?

19 I mean here we are, we're talking about  
20 potentially licensing a piece of infrastructure that  
21 could be there past 2100 shouldn't we factor this in  
22 now to our analysis rather than wait and see how  
23 things pan out in 40 or 50 years?

24 MR. GIACINTO: Well sea level rise, of  
25 course, is recognized over decadal scales from, for

1 example, the 1993 to 2007 estimate of doubling, that  
2 might be in that period but that doesn't mean it's  
3 going to double again.

4 It's a decadal pattern that you have to  
5 look at. In some cases sea level rise can go up and  
6 down. That's why we need to look at the decadal  
7 scales, on a decadal scale.

8 So it's a variable, it's an evolving  
9 science. Some of these estimates of ice sheet melts  
10 are highly variable. There is a lot of factors that  
11 goes into the estimate of sea level rise ranges and a  
12 lot of variables that go into that and that's why  
13 we're getting so many different ranges.

14 We have a thermal expansion of the ocean.  
15 The ocean basin itself could change volume, you could  
16 have uplift, it's a matter of the changing volumes and  
17 the concentration scenarios that are presented, the  
18 four that you mentioned.

19 So it is an evolving science. There are  
20 potential, it potentially could rise that high, but at  
21 this point in time we're not see it. It's a global  
22 phenomena so it probably would be more applicable as  
23 an operating fleet, maybe a generic communication to  
24 a generic issue, as a safety significant issue, or  
25 perhaps another avenue would be a 50.54(f) letter

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1 requesting information and direction for the  
2 licensees.

3 COMMISSIONER BARAN: What I am hearing  
4 from both FPL and the staff -- and if Mr. Franzone  
5 wants to jump in with something else, please do -- it  
6 sounds like when we look at these multiple components  
7 of storm surge the staff's view and FPL's view is  
8 there actually is a lot of conservatism built into  
9 that, there is a lot of margin.

10 It may not be reflected on this one  
11 element, but it sounds like what I am hearing is,  
12 well, even if one of these higher scenarios ended up  
13 coming to pass on sea level rise and we had,  
14 intermediate is actually three to six feet, but if we  
15 had six feet or eight feet by 2100 that there would  
16 still be enough conservatism coming from maximum  
17 probable hurricane and other things to make you feel  
18 comfortable today at the licensing stage, is that  
19 where you are at?

20 MR. FRANZONE: Yes, and I want to add one  
21 more thing, is that we actually looked at newer data  
22 as the result of an RAI from the NRC and we found that  
23 the actual, using the same linear trend over the next  
24 hundred years we actually ended up with like 0.69  
25 feet, 0.70 feet using the Key West station, so it was

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1 actually less of a sea raise.

2 Now that data went from I believe 1941 to  
3 2010 and so we covered that period. So I mean when,  
4 you know, for us as applicants we need to use the  
5 data. I mean that's really the best source of  
6 information for us and based on that we used, we  
7 project it, and so --

8 COMMISSIONER BARAN: And it sounds like  
9 from Ellen's presentation the increase in rate, the  
10 rate of increase that PNNL was reporting between 1993  
11 and 2007 being double the rate of increase between  
12 1900 and 1993, that's not really being reflected in  
13 the gauge closest to Turkey Point, you're not seeing  
14 that there.

15 MS. SMITH: The gauge closest to Turkey  
16 Point was the one at Miami Beach --

17 (Simultaneous speaking)

18 COMMISSIONER BARAN: Right, yes it stopped  
19 --

20 MS. SMITH: -- and it's not operated most  
21 recently. The experts in interpreting these data  
22 point out that data for a very short period can give  
23 extremely misleading results because of the multiple  
24 factors that affect sea level rise at any location or  
25 globally.

1           It's things like El Nino oscillation, La  
2           Nina, a similar oscillation in the Atlantic related to  
3           tides and large scale circulation. There is also a  
4           19-year cycle of the sun and the moon and all these  
5           things come together.

6           So for a short period, and you can be  
7           shown with historical sea level data that for short  
8           periods you can find very anomalous results that don't  
9           match the long return trends.

10           COMMISSIONER BARAN: So their view -- I  
11           should wrap this up, I think. So their view is that  
12           basically it's actually, you're going to get better  
13           projections going all the way from 1900 to present  
14           than to take the most recent period where you saw an  
15           increase in the rate of sea level rise?

16           MS. SMITH: It may or may not be better,  
17           but it's more consistent. It's difficult to discern  
18           a real trend with a very short time period and very  
19           short, 20 years is very short in this context.

20           COMMISSIONER BARAN: All right. Thank you  
21           very much.

22           CHAIRMAN SVINICKI: All right. Well I  
23           thank the panelists again for this, our Safety Panel.  
24           We will now break for lunch and we will reconvene at  
25           1:30 p.m. So we are adjourned until 1:30 p.m. Thank

1       you.

2                       (Whereupon, the above-entitled matter went  
3 off the record at 11:54 a.m. and resumed at 1:33 p.m.)

4               CHAIRMAN SVINICKI: Well, good afternoon,  
5 everyone. I call the hearing to order once again. So  
6 now we will hear from the environmental panel.

7               The parties will address the environmental  
8 review performed in connection with the combined  
9 license application, including relevant sections of  
10 the final environmental impact statement related to  
11 the following novel issues: cooling water sources,  
12 alternative sites, critical habitat, and consultations  
13 with the U.S. Fish and Wildlife Service and the  
14 National Marine Fisheries Service under the auspices  
15 of the Endangered Species Act.

16               I remind all of the witnesses that they  
17 remain under oath, and that the Commission is familiar  
18 with their prehearing filings. I would ask the  
19 panelists to please introduce themselves, and again,  
20 for this combined panel, we will begin with the FPL  
21 witnesses, so please introduce yourselves and then  
22 proceed with your portion of the environmental panel  
23 presentations.

24               MR. MAHER: Good afternoon, Commissioners.  
25 My name is Bill Maher with Florida Power and Light.



1 MR. JACOBS: Paul Jacobs, Florida Power  
2 and Light -

3 MR. ORTHEN: Richard Orthen.

4 (Simultaneous speaking)

5 MR. JACOBS: - engineer.

6 MR. ORTHEN: Richard Orthen, Florida Power  
7 and Light, licensing engineer.

8 MR. MAHER: We'll start with the  
9 presentation, slide two, please. As Mr. Franzone has  
10 mentioned earlier, Florida Power and Light has over 50  
11 years of environmental stewardship coupled with power  
12 generation at the Turkey Point site.

13 Turkey Point 6 and 7 utilizes an existing  
14 industrial facility next to an existing nuclear power  
15 plant using approximately 80 percent of the existing  
16 transmission corridors for a new nuclear power plant.

17 The construction roadway network that we  
18 are building in order to provide construction worker  
19 access to the site is being proposed to be removed  
20 after construction is completed in order to preserve  
21 the environment around the Turkey Point site.

22 In addition, as you have heard previously,  
23 Turkey Point is creating water reuse opportunity for  
24 both Miami-Dade county and for - with minimizing the  
25 environmental impact associated with that. So what

1 I'd like to do is turn it over to Mr. Paul Jacobs, and  
2 he'll continue with the presentation.

3 MR. JACOBS: Thank you. Good afternoon.  
4 During the early phase of the planning for Turkey  
5 Points Units 6 and 7, FP&L performed a detailed study  
6 to determine the optimal method of supplying cooling  
7 water makeup to the units.

8 A total of 14 potential water sources were  
9 identified. The study concluded that reclaimed water  
10 was the best alternative that was technically  
11 feasible, could be permitted, and was environmentally  
12 preferable. Slide three, please?

13 Miami-Dade and FPL worked together to  
14 develop a joint participation agreement for supplying  
15 reclaimed water to Units 6 and 7. Under this plan,  
16 Miami-Dade's South District Wastewater Treatment Plant  
17 would provide up to 90 million gallons a day to FPL  
18 for plant cooling water, makeup, and other plant uses.

19 The use of reclaimed water is beneficial  
20 to the county to help it meet its reuse requirement,  
21 and for FPL to have an adequate and reliable water  
22 supply with no impacts to surface water.

23 FPL will also construct a reclaimed water  
24 treatment facility on site to further treat the  
25 reclaimed water to optimize the water quality for

1 efficient plant operation. The figure displays the  
2 nine-mile route the reclaimed water pipeline will take  
3 from the South District Treatment Plant to the Turkey  
4 Point site. Slide four, please?

5 This figure is a schematic of a typical  
6 radial collector well installation. The radial  
7 collector well supply system will be available to the  
8 plant in the event that reclaimed water from the South  
9 District Plant is not available in sufficient quantity  
10 and quality.

11 As was pictured in the overview portion of  
12 the presentation, the radial collector well system  
13 caisson and pumping system will be located on the  
14 Turkey Point peninsula in an upland area and can be  
15 constructed without disturbance to Biscayne Bay.

16 Pictured on the left is a concrete caisson  
17 approximately 50 feet in diameter and 50 feet in  
18 depth. The figure shows one lateral, but each of the  
19 four installed caissons will have a number of laterals  
20 that extend radially outward under the bay.

21 The laterals shown as extending from the  
22 caisson will be drilled at a depth of between 30 and  
23 45 feet below the bay bottom where construction will  
24 not cause disturbance to the bay.

25 I'd like to turn this over to Mr. Orthen

1 who will now discuss the FPL augmented site selection  
2 process.

3 MR. ORTHEN: Yes, thank you, Paul. Slide  
4 five, please? Good afternoon. In our process for  
5 considering alternative sites, we used the NRC's  
6 environmental standard review and regulatory guidance,  
7 as well as the EPRI siting guide.

8 Our region of interest in this process was  
9 a geographic area we looked in to find potential and  
10 candidate sites for the project, that is the FPL  
11 service territory and areas closely adjacent to it.

12 This region was studied, or as I say,  
13 screened, using exclusionary avoidance criteria to  
14 eliminate areas that were unsuitable or significantly  
15 less suitable than other potential siting areas.  
16 Using this screening process, we found 16 candidate  
17 areas that we could use to identify potential sites to  
18 host the project.

19 FPL was able to identify 21 potential  
20 sites for the reactors in these candidate areas using  
21 mostly our corporate knowledge of the areas as well as  
22 a more detailed canvassing effort to pinpoint  
23 potential greenfield potential sites. This is why we  
24 call it an augmented analysis.

25 Carrying this selection process through to

1 the next step, we looked at the slate of 21 potential  
2 sites, screened each one to identify primary sites,  
3 and from that group, found the most suitable candidate  
4 sites. Slide six, please?

5 From the 21 potential sites, we found  
6 eight primary sites in the first screening cut, and  
7 five of those eight sites made it through to the  
8 second group as our group of final candidate sites.

9 We based our second cut screening on  
10 fundamental site suitability criteria such as required  
11 infrastructure, including transportation, railroad,  
12 road, and barge access, as well as any civil work  
13 necessary for site development.

14 Next, we went onto the final step in the  
15 selection process, comparing each of the five  
16 candidate sites on various issues and attributes, as  
17 well as factoring in the cost and environmental  
18 tradeoffs needed to develop each site.

19 At last, we arrived at the point where we  
20 could rank those candidate sites. Based on this  
21 ranking, we concluded there were no sites that were  
22 environmentally preferable to our proposed site down  
23 at Turkey Point. Slide seven, please?

24 Now I will to turn to talk about the  
25 Turkey Point site critical habitat for the American

1 crocodile, most notably the important work FPL carries  
2 out to improve wildlife sustainability there.

3 Crocodiles were first observed at the  
4 Turkey Point site in 1976, with active nesting  
5 observed two years later. At the time, the crocodiles  
6 had a very small population, but they have thrived in  
7 the cooling canals in the Turkey Point industrial  
8 wastewater facility.

9 The cooling canals are vital to the  
10 crocodiles' success because they contain an extensive  
11 system of canals and berms, and they support a variety  
12 of wildlife that are tolerant of the subtropical  
13 salient environment found there.

14 Critical habitat for the American  
15 crocodile has been established in south Florida and a  
16 small portion, less than one percent, exists at Turkey  
17 Point, mostly in the cooling canals, but also  
18 including the 218 acres of partially disturbed mud  
19 flats that is the site for Units 6 and 7.

20 FPL proudly manages these areas through  
21 its crocodile management program that features habitat  
22 enhancement on the banks of the cooling canals to  
23 improve the opportunities for nesting, active  
24 management of water to improve quality, and foraging  
25 opportunities, and monitoring reproductive success.

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1           These habitat management efforts, as well  
2           as other efforts in the larger critical habitat beyond  
3           Turkey Point, have been so effective that in 2007, the  
4           U.S. Fish and Wildlife Service was able to down list  
5           the crocodile species from federally endangered to  
6           threatened.

7           Now, regarding our consultation with the  
8           agencies, FPL began informal consultation with them in  
9           September 2007 when we formed our compatibility  
10          working group which included federal, state, and local  
11          regulatory agencies that we invited to offer their  
12          views on the ways the project could complement or  
13          enhance their goals and objectives for the areas  
14          affected by the project.

15          The Fish and Wildlife Service was an  
16          active participant in this process which met eight  
17          times between 2007 and 2009. FPL continued this  
18          collaboration by working closely with Fish and  
19          Wildlife Service staff throughout the project to  
20          examine potential impacts to listed species, methods  
21          for avoiding impacts, conservation measures to reduce  
22          impacts, and unavoidable impacts mitigation.

23          In its 2017 biological opinion of the  
24          project, the U.S. Fish and Wildlife Service concluded  
25          that disturbance from the project due to activities at

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1 the Units 6 and 7 sites may affect, but would not  
2 adversely affect the six ESA listed species. Please  
3 note the slide seven count should read six, not five.  
4 They further determined that the level anticipated  
5 take of these species would not likely jeopardize  
6 them.

7 The service described the crocodile  
8 habitat within the proposed Units 6 and 7 site as  
9 relatively poor quality. This can be attributed  
10 mainly to the fact that this area is dry during  
11 certain times of the year. Moreover, vegetation and  
12 aquatic prey species for the crocodile do not occur  
13 there, and observations by FPL indicate that it's not  
14 a place the crocs like to be in for any length of  
15 time.

16 Slide eight, please? With this view of  
17 our project setting, that will end my presentation.  
18 Thank you.

19 CHAIRMAN SVINICKI: I thank the applicant  
20 panelists for that presentation. I would now as the  
21 NRC staff panelists to please come and sit behind your  
22 name tents, and please introduce yourself and then  
23 proceed with the staff's presentations. Thank you.

24 MS. WILLIAMSON: Good afternoon. My name  
25 is Alicia Williamson and I'm the environmental project



1 manager for this project.

2 MR. HAQUE: Good afternoon. I'm Mohammed  
3 Haque, senior hydrologist with the NRO.

4 MR. KUGLER: My name is Andrew Kugler and  
5 I'm a senior project manager in the Office of New  
6 Reactors.

7 MR. DOUB: Good afternoon. I'm Peyton  
8 Doub, ecologist and wetland scientist with the Office  
9 of New Reactors.

10 MS. WILLIAMSON: Hello, my name is Alicia  
11 Williamson, and I'm the environmental project manager  
12 for the Turkey Point Units 6 and 7 environmental  
13 review. Today, the staff will be presenting  
14 information on three environmental topics. The first  
15 will be by NRC hydrologist, Mr. Mohammad Haque, who  
16 will talk about the proposed cooling water sources.

17 Next, we will have Mr. Andrew Kugler, NRC  
18 senior project manager, speak about the alternative  
19 sites review. Finally, we will close the  
20 environmental staff presentations with NRC ecologist,  
21 Mr. J. Peyton Doub, who will present the staff's  
22 findings regarding critical habitat for the threatened  
23 American crocodile and the Endangered Species Act  
24 consultation. Next slide, please?

25 MR. HAQUE: Thanks, Alicia. My name is

1 Mohammad Haque. I'm a senior hydrologist in the  
2 Office of New Reactors. I will be presenting  
3 information on the cooling water sources for the  
4 proposed Turkey Point Units 6 and 7.

5 The primary source of cooling water for  
6 the circulating water system will be reclaimed water,  
7 which is unique because only one other nuclear plant  
8 in the United States, the Palo Verde Nuclear  
9 Generating Station, uses reclaimed water for cooling.

10 The reclaimed water will be obtained from  
11 the Miami-Dade water and sewer department's South  
12 District Wastewater Treatment Plant, hereafter called  
13 the South District Plant.

14 Additionally, FPL includes in the design  
15 a backup water source for added power generation  
16 reliability in case the reclaimed water cannot meet  
17 the plant's needs for a period. The addition of this  
18 backup water source is unique to the proposed Turkey  
19 Point Units 6 and 7 because no other U.S. nuclear  
20 plant has a backup water source.

21 The proposed backup source of cooling  
22 water for the circulating water system for Turkey  
23 Point Units 6 and 7 would be saltwater obtained from  
24 beneath Biscayne Bay through four radial collector  
25 wells. The pumping period and amount of water

1 withdrawn from the wells would be limited by the  
2 Florida Department of Environmental Protection's  
3 Conditions of Certification to 60 days or less per  
4 year.

5 The circulating water system would be  
6 designed to utilize 100 percent of its required water  
7 supply from reclaimed water, saltwater, or a  
8 combination of the two sources. Next slide, please?

9 This slide presents a simplified  
10 illustration of the two proposed cooling water sources  
11 for the proposed Turkey Point Units 6 and 7 and  
12 disposal of the plant's effluent water. About 73  
13 million gallons per day of reclaimed water would be  
14 obtained from the South District Plant located about  
15 nine miles north of the Turkey Point site.

16 The water would be piped to FPL's  
17 reclaimed water treatment facility for further  
18 treatment. The treated reclaimed water would be  
19 stored in a makeup water reservoir from which water  
20 would be withdrawn as needed to provide cooling water  
21 to the cooling tower basins for each unit.

22 The backup source of cooling water is  
23 saltwater extracted from beneath Biscayne Bay to four  
24 radial collector wells. Each radial collector well  
25 would contain several lateral collector lines at

1 depths of 25 to 40 feet beneath the bay floor,  
2 extending out horizontally up to 900 feet. When used,  
3 the saltwater from radial wells would be pumped  
4 directly to the cooling tower basins as needed to  
5 provide cooling water.

6 The disposal of the effluent would be done  
7 by injection into the border zone of the lower Florida  
8 aquifer under the Florida Department of Environmental  
9 Protection's underground injection control program.  
10 The border zone is a deep-set aquifer over 3,000 feet  
11 below the surface at the site.

12 Water within the border zone is kept  
13 separate from the overlying brackish upper Florida  
14 aquifer by around 1,500 feet of low permeability zone.  
15 The low permeability zone is referred to as the middle  
16 confining unit of the Florida aquifer system. Next  
17 slide, please?

18 This slide shows a planned view of a  
19 typical radial collector well system as presented in  
20 figure 3-5 of the EIS. As shown in this diagram, each  
21 radial collector well would have several lateral  
22 collector lines extending horizontally beneath the  
23 Biscayne Bay. Next slide, please?

24 In the EIS, the review team's evaluation  
25 considered how surface water and groundwater resources

1 would be affected during the construction and  
2 operation of Turkey Point Units 6 and 7. The staff  
3 concluded that the impacts to surface and groundwater  
4 use and quality would be small during construction and  
5 operation. Because no surface water or groundwater is  
6 being withdrawn to be used as the primary water source  
7 for cooling, there is no impact on surface water or  
8 groundwater users.

9 The staff also concluded that impacts to  
10 surface and groundwater use and quality would be small  
11 during construction and operation when the backup  
12 source saltwater from the radial collector wells is  
13 used. This conclusion, as discussed in detail in the  
14 EIS, was based on part on the limited use of the  
15 radial wells.

16 The conclusion was also based on the  
17 understanding that only a small portion of water would  
18 come from the Biscayne aquifer, which staff determined  
19 based on effects on certain hydrological features as  
20 projected by FPL's modeling effort, a NRC-sponsored  
21 USGS modeling study, and an additional modeling  
22 analysis confirming the review team's understanding.

23 A detailed description of this analysis,  
24 including the modeling efforts, is provided in the EIS  
25 in sections 2.3, 4.2, 5.2, and appendix G.2.3. This

1 concludes my remarks. I will now turn the  
2 presentation over to Mr. Andy Kugler.

3 MR. KUGLER: Thank you, Mohammed. The  
4 consideration of alternative sites is a fundamental  
5 part of the staff's review of a new reactor  
6 application.

7 When it compares sites, the staff  
8 typically uses the same type of cooling water source,  
9 such as surface water, at the proposed and alternative  
10 sites to avoid a potential bias in the comparison.  
11 This is consistent with the guidance in the  
12 Environmental Standard Review Plan.

13 However, the guidance allows for the use  
14 of a different type of cooling water source at the  
15 alternative sites if the type of source used at the  
16 proposed site cannot be used. That is the case for  
17 the Turkey Point combined license application.

18 None of the alternative sites would have  
19 had access to an adequate source of reclaimed water,  
20 and the staff did not identify other viable sites that  
21 could have access to enough reclaimed water.  
22 Therefore, the alternative sites would have to get  
23 water from some other source. Next slide, please?

24 The location of the alternative sites and  
25 the proposed sites are shown on this slide. The St.

1 Lucie alternative site is on the east coast while the  
2 other three alternative sites are clustered around  
3 Lake Okeechobee and its associated rivers. Next  
4 slide, please?

5 For the St. Lucie alternative site, water  
6 would come from the Atlantic Ocean through the  
7 existing intake for the currently operating units at  
8 that site. The situation for the three inland  
9 alternative sites, Glades, Okeechobee, and Martin, is  
10 more complex because surface water in that region is  
11 tightly managed.

12 FPL had initially proposed the use of  
13 surface water to cool the plant at these sites, but  
14 based on discussions with the South Florida Water  
15 Management District, it became clear that obtaining  
16 sufficient surface water to cool the plants was  
17 unlikely.

18 Therefore, FPL modified its approach  
19 proposing to use a combination of surface water and  
20 groundwater at these alternative sites. FPL proposed  
21 to use excess surface water whenever it was available  
22 and to store excess surface water in a 3,000 acre  
23 reservoir.

24 When no excess surface water was available  
25 and the water in the reservoir had been consumed, the

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1 plant would use groundwater pumped from a deep saline  
2 aquifer.

3 FPL also proposed the use of a  
4 desalination plant to reduce the salt content of water  
5 being pumped out of the aquifer. This step was  
6 proposed to protect nearby vegetation from drift from  
7 the cooling towers. Drift refers to water droplets  
8 carried out of the cooling tower with the water vapor.  
9 Drift carries with it particulates such as salts.  
10 Next slide, please?

11 Because the applicants' proposed approach  
12 for the three inland sites was unusual, the staff  
13 considered whether a further modification of this  
14 approach would lead to reduced environmental impacts.  
15 First, the staff looked at whether impacts could be  
16 reduced by eliminating the reservoir and relying on  
17 groundwater whenever excess surface water was not  
18 available.

19 In addition, it was not clear that the  
20 desalination plant was warranted to protect nearby  
21 vegetation because the amount of drift escaping from  
22 a modern cooling tower and reaching nearby vegetation  
23 is already small. As such, the staff did not include  
24 a desalination plant in its evaluation.

25 Therefore, the staff's evaluation of the



1 impacts of the inland alternative sites was based on  
2 cooling the plant with excess surface water whenever  
3 it was available and using saline groundwater at other  
4 times. Next slide, please?

5 Using the approach that it had developed,  
6 the staff compared the impacts of building and  
7 operating the nuclear units at the alternative sites  
8 to those at the proposed site. Based on predicted  
9 environmental impacts at the proposed site and the  
10 alternative sites, the staff concluded that none of  
11 the alternative sites was environmentally preferable  
12 to the proposed site.

13 In addition, in the EIS, the staff  
14 acknowledged there was uncertainty regarding how the  
15 cooling water system at the inland sites could be  
16 implemented. No user has ever requested a permit to  
17 use water in these quantities from the deep aquifer  
18 FPL proposed to use. This would be a first of a kind  
19 application.

20 Because of this uncertainty, the staff  
21 qualitatively evaluated how the impacts would be  
22 different if the 3,000 acre reservoir was included.  
23 Including the reservoir would increase the impacts on  
24 terrestrial ecology and land use, and in a minor way,  
25 would also increase the impacts on aquatic ecology and

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1 surface water use. Impacts on other resources would  
2 likely not change appreciably.

3 This concludes my remarks. I will now  
4 turn the presentation over to Mr. Peyton Doub.

5 MR. DOUB: Thank you, Andy. Accessing the  
6 potential -

7 PARTICIPANT: I think your mic is off.

8 MR. DOUB: Accessing the potential for  
9 effects to threatened and endangered species and their  
10 habitats is a key component of the staff's  
11 environmental review of a new reactor application.  
12 Under the Endangered Species Act, habitats may be  
13 designated as critical, meaning they are essential to  
14 support species protected under the act.

15 The designation of critical habitat does  
16 not necessarily restrict development, but does require  
17 proponents of development in designated areas to  
18 examine the protection of important characteristics of  
19 the habitat.

20 The Turkey Point application is novel  
21 since it proposes to build new reactors in an area  
22 designated as critical habitat, in this case for the  
23 threatened American crocodile. No other COL  
24 application to date has involved building new  
25 facilities in areas designated under the Endangered

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1 Species Act as critical habitat.

2 On June 23, 2017, the U.S. Fish and  
3 Wildlife Service issued a biological opinion that  
4 among other considerations concurred with the staff's  
5 conclusions that construction and operation will not  
6 adversely affect designated critical habitat for the  
7 American crocodile. Next slide, please?

8 The entire proposed Turkey Point Units 6  
9 and 7 plant area and most of the nearby industrial  
10 waste facility are situated within designated critical  
11 habitat for the American crocodile. Potential impacts  
12 to critical habitat include the permanent loss of  
13 approximately 270 acres to accommodate the proposed  
14 new reactors and associated infrastructure.

15 Additionally, approximately 211 acres of  
16 additional critical habitat would be affected by  
17 relocation of the soils and other solid material to  
18 three disposal areas on upland berms of the industrial  
19 waste facility.

20 The review team's analysis concluded that  
21 the affected area constitutes only about 0.09 percent  
22 of the total terrestrial crocodile critical habitat  
23 available were only about 270 out of 293,000 acres in  
24 south Florida as depicted on this map.

25 Past monitoring and nesting surveys

1 conducted by FPL suggests that the proposed plant area  
2 in the northeast portion of the industrial waste  
3 facility is generally considered to be low quality  
4 crocodile habitat that is not actively used by  
5 crocodiles.

6 The applicants specifically selected the  
7 three proposed muck storage areas in the industrial  
8 waste facility because of their lack of suitable  
9 nesting substrate for crocodiles and because they  
10 represent only a very small percentage of berm habitat  
11 available for crocodiles in the industrial waste  
12 facility.

13 Higher quality foraging and nesting  
14 habitat occur south and west of the affected areas.  
15 The Fish and Wildlife Service considers nesting and  
16 foraging qualities to be important features for  
17 critical crocodile habitat.

18 Because the designated critical habitat in  
19 the power block and muck storage areas is considered  
20 to be poor quality for nesting and foraging for the  
21 crocodile, the Service in their biological opinion  
22 agreed with the staff's conclusions that although  
23 there may be adverse effects to the American  
24 crocodile, there would be an overall minimal impact to  
25 the species. Next slide, please?

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1           The applicant already implements ongoing  
2           active crocodile monitoring and work restrictions on  
3           the site as part of compliance with an existing  
4           biological opinion for Turkey Point Units 3 and 4.  
5           These measures include speed limits and other  
6           protective measures related to vehicular incidents,  
7           habitat management, nesting surveys, and crocodile  
8           relocation.

9           These existing measures would be  
10          complemented by additional measures established as  
11          terms and conditions in the new biological opinion  
12          specifically issued by the Fish and Wildlife Service  
13          for Units 6 and 7.

14          As stated in the biological opinion, FPL  
15          would implement several protective measures for the  
16          crocodile including education of construction workers  
17          regarding crocodile habitats, behaviors, and reporting  
18          any contact with nests or individuals, installation of  
19          exclusion fencing to prevent migration to the power  
20          block area from the northern portion of the industrial  
21          waste facility, and daily pedestrian surveys  
22          immediately prior to and during land clearing and fill  
23          placement within the power block area, and during much  
24          hauling along associated roadways. Other measures  
25          outlined in the biological opinion such as enhancing

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1 other nearby wetland habitat may also indirectly  
2 benefit the crocodile.

3 The Fish and Wildlife Service concluded  
4 that the proposed project can be expected to result in  
5 the incidental take of crocodiles in the form of harm  
6 from habitat loss and possible injuries or mortalities  
7 from vehicle collisions.

8 Based on the increase in road traffic  
9 during construction and the use of fencing to minimize  
10 risk to crocodiles at road crossings, the Service  
11 estimated incidental injury and mortality along roads  
12 to be one crocodile every five years or a total of two  
13 crocodiles over the duration of the estimated ten-year  
14 construction phase. During operation, the Service  
15 estimated injury and mortality along the roadways to  
16 be one crocodile every ten years over the operational  
17 life of the project.

18 Therefore, although Turkey Point Units 6  
19 and 7 would be constructed on designated critical  
20 habitat, the Fish and Wildlife Service confirmed that  
21 the construction and operation of the new units would  
22 not jeopardize the survival of the American crocodile  
23 population, nor would the project result in adverse  
24 modification of designated critical habitat to the  
25 extent that it detrimentally affects the overall

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1 crocodile population. Next slide, please?

2 The American crocodile is but one of  
3 several threatened or endangered species that the  
4 staff considered in its environmental review for  
5 Turkey Point Units 6 and 7.

6 The staff prepared and submitted separate  
7 biological assessments to the U.S. Fish and Wildlife  
8 Service and the National Marine Fisheries Service  
9 addressing potential effects of the project on  
10 threatened and endangered mammals, birds, reptiles,  
11 fish, insects, and plants known to occur or  
12 potentially occur in the affected area.

13 The National Marine Fisheries Service  
14 concurred with the staff that the project would have  
15 no effect, or may affect, but was not likely to  
16 adversely affect the marine and anadromous fish, sea  
17 turtles, and marine mammals under its purview.

18 The Fish and Wildlife Service determined  
19 in its biological opinion that the project may  
20 adversely affect the American crocodile, eastern  
21 indigo snake, everglade snail kite, Florida panther,  
22 rufa red knot, and wood stork.

23 The Fish and Wildlife Service issued NRC  
24 an incidental take statement establishing incidental  
25 take limits for each of these six species measured in

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1 numbers of individuals affected and/or areas of  
2 habitat disturbed. To comply with the terms and  
3 conditions of the biological opinion, the applicant  
4 must implement specific protective and conservation  
5 measures.

6 The draft environmental protection plan  
7 prepared by the staff incorporates many of these terms  
8 and conditions, and the U.S. Army Corps of Engineers  
9 has agreed to incorporate the remainder as conditions  
10 to a future Department of the Army permit for the  
11 project. Now I return you to Alicia Williamson.

12 MS. WILLIAMSON: Thank you, Peyton. The  
13 staff thanks the Commission for this opportunity to  
14 present and it's ready to take any questions. Thank  
15 you.

16 CHAIRMAN SVINICKI: Thank you for those  
17 presentations, and similar to the safety panel, I  
18 would ask that given that you have the other witnesses  
19 sitting behind you, if you would move slightly off to  
20 the sides, that would be appreciated. Thank you. And  
21 so for the questioning of this environmental panel, I  
22 will lead off today.

23 So for the applicant, let me begin.  
24 Regarding the reliance on the reclaimed water system  
25 which has been described, I think, by both the

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1 applicant witnesses and the staff, I imagine that that  
2 process required FPL to engage with local and state  
3 regulatory agencies.

4 Could you please describe at a high level  
5 the engagement that you had with these other  
6 authorities regarding siting and construction of the  
7 on-site treatment facility and the system that  
8 connects the existing wastewater treatment plant with  
9 those on-site facilities? And what are the principal  
10 interest areas of those local and state authorities  
11 with which you needed to engage?

12 MR. MAHER: Yes, Commissioner, this is  
13 Bill Maher. We engaged with Miami-Dade County early  
14 on in the project as you have heard, and we have come  
15 up with a joint participation agreement which outlines  
16 at a very high level the water attributes that we  
17 would be looking for once we were to build Turkey  
18 Point Units 6 and 7.

19 With respect to the location of the  
20 reclaimed water treatment facility, as you heard, we  
21 had relocated that as a result of some county  
22 interactions in order to minimize environmental  
23 impacts, so that illustrates some of the engagement  
24 that we had with the county and city officials.

25 CHAIRMAN SVINICKI: Okay, thank you. And

1 for the staff, typically I ask this type of question,  
2 and I know that there's a description in the record of  
3 the process that the staff used for identifying and  
4 evaluating potential new and significant information  
5 for the environmental analysis, but could one of the  
6 NRC staff panelists just give a description of how you  
7 went about doing that, of identifying and then  
8 evaluating any potential new and significant  
9 information given the long pendency of the staff's  
10 review?

11 MS. WILLIAMSON: For this particular  
12 application, we did utilize the staff's guidance. We  
13 were on the lookout for new and significant  
14 information. Although we did not formally initiate  
15 that process, I think it calls for sending the  
16 applicant a letter and telling them to keep us  
17 apprised of information because of the -

18 We always thought that the hearing was  
19 imminent or impending, so we never officially sent  
20 that letter, but did keep apprised of that particular  
21 process by talking with, a continuing dialogue with  
22 our other federal partners and state partners  
23 throughout the various times after the EIS was  
24 published.

25 Additionally, there's a strong level of

1 public interest for this particular project, so we did  
2 receive some calls or emails from members of the  
3 public as well, but mainly through our dialogue with  
4 our various federal, state, and local partners.

5 CHAIRMAN SVINICKI: As a result of that  
6 process, was there any information that met the  
7 staff's threshold for being new and also significant,  
8 and in any way modifying the staff's previous  
9 environmental conclusions?

10 MS. WILLIAMSON: No, there was nothing  
11 that met the new and significant criteria.

12 CHAIRMAN SVINICKI: Okay, thank you. With  
13 that, I will recognize Commissioner Baran.

14 COMMISSIONER BARAN: Thanks. I'd like to  
15 begin by asking about the site selection process that  
16 led to selecting the Turkey Point site as the location  
17 for the proposed units. I'll start with some  
18 questions for FPL.

19 If I understand it from the final EIS and  
20 from your presentation on this panel, the site  
21 selection process identified 21 potential sites. FPL  
22 then applied the screening criteria and identified the  
23 top eight ranked sites which did not include Turkey  
24 Point.

25 However, because it was an existing

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1 nuclear power plant site, Turkey Point was included on  
2 an expanded list of ten potential sites that remained  
3 in consideration along with the St. Lucie site. Is  
4 that right?

5 MR. ORTHEN: That's correct.

6 COMMISSIONER BARAN: And when these ten  
7 remaining sites entered the next phase of the  
8 selection process, FPL used 34 weighted criteria to  
9 evaluate them, and based on that evaluation, Turkey  
10 Point emerged as the number one preferred site. Is  
11 that right?

12 MR. ORTHEN: That was part of the import  
13 of that process, yes, but it was ranked highest in the  
14 technical evaluation and it graded more favorably in  
15 eight of ten, 12 considerations of risk and strategic  
16 measures.

17 COMMISSIONER BARAN: Okay, and I see on  
18 your slide five, it walked through this -

19 MR. ORTHEN: Right.

20 COMMISSIONER BARAN: - a little bit on  
21 slide six. Can you walk us through how did Turkey  
22 Point end up finishing first in the second phase after  
23 failing to make the top eight in the first phase?  
24 What was driving that outcome?

25 MR. ORTHEN: I'd like to ask Kyle Turner

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1 if he could please speak to that.

2 MR. TURNER: Sure.

3 CHAIRMAN SVINICKI: And as you approach  
4 the podium, if you could please again identify  
5 yourself, your title or organizational affiliation,  
6 and confirm that you've been sworn as a witness?

7 MR. TURNER: My name is Kyle Turner. I'm  
8 a principal with McCallum-Turner, Incorporated. We  
9 were a contractor to FPL, and I have not been sworn  
10 in.

11 CHAIRMAN SVINICKI: Oh, okay, well, then  
12 I will ask our general counsel here to, okay. You  
13 have identified yourself, so I would ask that you  
14 raise your right hand and I will read the oath. Do  
15 you swear or affirm that the testimony you will  
16 provide in this proceeding is the truth, the whole  
17 truth, and nothing but the truth?

18 MR. TURNER: I do.

19 CHAIRMAN SVINICKI: Thank you very much.  
20 And if there is no objection to this witness, I will  
21 let you proceed to provide a response.

22 MR. TURNER: To expand a little bit on the  
23 process, the first down select, I'll call it, from 21  
24 sites to ten was made on the basis of what we call  
25 screening criteria. They're derived from those in the

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1 EPRI siting guide, and they're very generalized.

2 They're intended to give us a very quick  
3 and dirty picture of the relative suitability of all  
4 of the sites then under consideration. The purpose of  
5 that is to arrive at a smaller number of sites that we  
6 can then spend a larger set of resources in examining  
7 in more detail.

8 Those criteria are - the set of criteria  
9 that we call screening criteria are typically  
10 organized and crafted in order to examine greenfield  
11 sites. They don't really have in them anything that  
12 allows you to reflect the goodness or badness of an  
13 existing site.

14 So the fact that in the second phase where  
15 we used a much more detailed set of 34 criteria, that  
16 Turkey Point rose much higher in the ranking, is  
17 neither really should be surprising, nor is it unique.  
18 There have been other site selection studies we've  
19 done where a similar thing happened in regards to an  
20 existing plant site.

21 COMMISSIONER BARAN: And were there - when  
22 I look at the slide six and it has the scores there of  
23 the ten and Turkey Point is the highest by a fair bit,  
24 were there any particular factors you could point to  
25 there as driving the relative high score of Turkey

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1 Point?

2 MR. TURNER: Well, I can answer that very  
3 generally, but those scores are very much a composite  
4 of a weighting and rating scheme, and it's very  
5 difficult to draw out of that a central theme.

6 COMMISSIONER BARAN: Okay.

7 MR. TURNER: Because Turkey Point, as  
8 other sites, would rate better or worse than others  
9 depending on what criterion one might be examining, so  
10 the result there truly is a composite one, and the  
11 aggregate Turkey Point came out better for multiple  
12 reasons.

13 If I had to, off the cuff now, give you a  
14 suspicion of what probably drove that, it would be  
15 that it's an existing site. It had very good ratings  
16 in regards to new disturbance, in regards to proximity  
17 to existing infrastructure and those kinds of things.

18 COMMISSIONER BARAN: Okay, thanks. That's  
19 helpful. Let me ask the NRC staff. In response to  
20 prehearing questions, the staff acknowledged that the  
21 Turkey Point site was handled differently than the  
22 alternative sites, but stated that NRC guidance  
23 provides for this because it's an existing nuclear  
24 power plant site.

25 Is the guidance in the standard review

1 plan how the Turkey Point site made it through the  
2 first round of the site selection process? Does it  
3 automatically get through the first round because it's  
4 an existing power plant site?

5 MR. KUGLER: I believe the way the  
6 applicant wrote their environment report, that they  
7 did include both Turkey Point and St. Lucie as  
8 existing sites because of the exception that's  
9 discussed in the environmental standard review plan  
10 for an existing site.

11 COMMISSIONER BARAN: So that's what gets  
12 them through phase one?

13 MR. KUGLER: Yes, it would get them  
14 through phase one essentially regardless of their  
15 rating. Really that exception is intended by the  
16 staff to just be for the proposed site. In other  
17 words, the way the process is set up, an applicant can  
18 just choose a site.

19 Just pick it, put it aside, then go  
20 through a process to identify and evaluate alternative  
21 sites, come down a group of alternatives, and then  
22 compare each alternative site to the proposed site and  
23 determine if they are environmentally preferable.

24 It wasn't really intended to necessarily  
25 include all nuclear sites within the region. That was



1 the approach that FPL took. It did not harm the  
2 process because they still had a good set of  
3 alternative sites for us to do the comparison.

4 COMMISSIONER BARAN: The site selection  
5 guidance establishes exclusionary criteria to be  
6 applied at the beginning of the site selection  
7 process. To be a candidate site, a site has to meet  
8 these minimum criteria. If a site can't meet all of  
9 the criteria, that would preclude siting a nuclear  
10 power plant at that location.

11 Some of the exclusionary criteria relate  
12 to national parks, critical habitat for endangered or  
13 threatened species, and population density. Was the  
14 Turkey Point site required to meet the exclusionary  
15 criteria?

16 MR. KUGLER: It would not be because it  
17 was chosen through the exception. So basically you  
18 take and you set it aside so it doesn't go through  
19 that process.

20 COMMISSIONER BARAN: Okay, so that's part  
21 of that phase one it moves past -

22 MR. KUGLER: Correct.

23 COMMISSIONER BARAN: - because it's an  
24 existing site?

25 MR. KUGLER: Correct.

1 COMMISSIONER BARAN: If Turkey Point  
2 wasn't an existing nuclear power plant site and the  
3 exclusionary criteria were applied to the site, would  
4 the exclusionary criteria have been met?

5 MR. KUGLER: Well, this is a hypothetical,  
6 but I don't believe it would have based on the  
7 critical habitat at least because there is critical  
8 habitat on the site. Population density, I'm not sure  
9 if it would have. It is over 500 at this point, so I  
10 think it -

11 COMMISSIONER BARAN: I think the  
12 exclusionary criteria actually had the population  
13 density cut off at 300 -

14 MR. KUGLER: 300?

15 COMMISSIONER BARAN: - per square mile  
16 with a 20-mile radius, and the actual amount was 656.  
17 I don't know if FPL wants to chime in on this. If  
18 Turkey Point wasn't an existing nuclear power plant  
19 site and the exclusionary criteria were applied to the  
20 site, would the criteria have been met?

21 MR. ORTHEN: I would have to take that  
22 back and think about it at this point. I really have  
23 not considered that fully.

24 COMMISSIONER BARAN: For anything that  
25 wasn't an existing site, if you exceeded - if you did

1 have portions of the site that lied within mapped  
2 American crocodile critical habitat or you exceeded  
3 the population density by a factor of two, would that  
4 have eliminated such a site from consideration for a  
5 nonexisting power plant site?

6 MR. KUGLER: Well, again, this portion of  
7 the process is actually run by the applicant. It  
8 would probably make more sense if they responded to  
9 that portion.

10 COMMISSIONER BARAN: I have a thought on  
11 that.

12 MR. ORTHEN: Could you repeat that?

13 COMMISSIONER BARAN: Well, what I'm trying  
14 to understand is in part if we were talking about a  
15 site that was not an existing power plant site, and it  
16 lied within mapped critical habitat, and it more than  
17 doubled the population density cutoff, that 20-mile  
18 radius, would any site that wasn't an existing power  
19 plant site, would they have been excluded, eliminated  
20 based on those criteria?

21 MR. ORTHEN: It would be a possibility,  
22 yes, but again, I'd have to defer to Kyle for that.

23 MR. MAHER: Yes, this is Bill Maher. So  
24 if you look at - if Turkey Point was not a nuclear  
25 site, if you look at siting a power plant down there,

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1 Florida, as you know, is a peninsula, and the majority  
2 of the population zones at least are situated around  
3 the coast.

4 On the inland sites, as Mr. Kugler has  
5 already informed you, there are water restrictions,  
6 both ground and surface water restrictions, also  
7 inland sites are mostly agricultural in nature.  
8 Within Florida, as we wrote for our purpose and need  
9 on this particular project, it was to serve baseline  
10 - or provide base load generation for the Miami load  
11 center.

12 And if you look at where Turkey Point is  
13 in relation to that Miami load center, it provides a  
14 balance around that load center. So if it was not a  
15 nuclear power site, you would have to go through that  
16 weighting criteria that Kyle had talked about  
17 previously to see, given those changed circumstances,  
18 if you would still be able to provide a balanced load  
19 around that load center for a new plant.

20 COMMISSIONER BARAN: Okay, the National  
21 Park Service was a cooperating agency on the Turkey  
22 Point final EIS. The Park Service is involved because  
23 the Turkey Point site is immediately adjacent to  
24 Biscayne National Park, and Everglades National Park  
25 is located seven miles to the west of the facility.

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1 In a December 2016 letter to NRC, the Park  
2 Service stated, "NPS continues to have serious  
3 concerns regarding the adequacy and accuracy of the  
4 final EIS." The Park Service expressed its view that,  
5 "This project poses serious direct and cumulative  
6 impacts to National Park Service resources."

7 NPS went on to say, "It does not seem to  
8 be in the public interest to expand a power plant  
9 adjacent to Biscayne National Park and near Everglades  
10 National Park." Did the staff evaluate these  
11 concerns, and if so, what did you conclude?

12 MS. WILLIAMSON: This is Alicia  
13 Williamson. Yes, we did evaluate the Park Service's  
14 concerns. As it was talked in one of the earlier  
15 panels, they were a cooperating agency on the EIS, so  
16 they did have - they worked with us as partners as we  
17 built the EIS.

18 I think that some of the, I guess I'll say  
19 differences of opinion, and why they may still have  
20 concerns stems from our various - they're more of a  
21 conservation agency while we are a regulatory agency.

22 In terms of examples of some of the things  
23 that we did do, specifically as a result of their  
24 comments on the DEIS, we actually went back and  
25 conducted an additional water modeling analysis as a

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1 result of their concerns that came out of their DEIS  
2 comments.

3 Additionally, we also had many meetings  
4 with them, in person as well as on telecom, sometimes  
5 weekly, sometimes biweekly just depending on what  
6 phase of the review we were in, to discuss their  
7 concerns, but they were intimately involved with the  
8 production of the EIS.

9 COMMISSIONER BARAN: On an earlier panel,  
10 the staff referred to the National Park Service as  
11 having special expertise in this area. Isn't the  
12 National Park Service best positioned to assess the  
13 impacts on Biscayne National Park and Everglades  
14 National Park?

15 MS. WILLIAMSON: Yes, they did provide us  
16 input. They do have a direct knowledge that we were  
17 able to draw upon and use within our analysis within  
18 the EIS.

19 COMMISSIONER BARAN: And were they  
20 ultimately satisfied with the EIS analysis?

21 MS. WILLIAMSON: According to their  
22 December letter, they did still express concerns.

23 COMMISSIONER BARAN: Okay, so there wasn't  
24 anything after that in which they came back and said  
25 they were satisfied?

1 MS. WILLIAMSON: No.

2 COMMISSIONER BARAN: Okay, and then in  
3 another December 2016 comment to letter to the NRC,  
4 the EPA stated that it also, "has several  
5 environmental concerns that were not adequately  
6 addressed in the final EIS."

7 EPA indicated that its overriding  
8 environmental concerns stem from the fact that the  
9 existing facility is currently impacting an  
10 underground source of drinking water and that the  
11 plant expansion could, "potentially complicate or  
12 exacerbate existing environmental impact issues." Did  
13 the staff evaluate those concerns, and if so, what did  
14 you conclude?

15 MS. WILLIAMSON: Yes, the staff did also.  
16 We also worked with the Environmental Protection  
17 Agency Region IV in Atlanta. We met with them many  
18 times also over the course of the review and took  
19 their comments directly, particularly regarding the  
20 USDW.

21 For more specifics, I might want to ask  
22 one of the staff members from the audience to come and  
23 give us a little bit more detail on those EPA comments  
24 and some of the activities we conducted with EPA.

25 CHAIRMAN SVINICKI: And again, if you

1 would state your name, your organizational  
2 affiliation, and indicate whether or not you've been  
3 sworn as a witness?

4 MR. BARNHURST: Sure, my name is Daniel  
5 Barnhurst. I'm a hydrogeologist with NRO and I have  
6 been sworn in.

7 CHAIRMAN SVINICKI: Thank you.

8 MR. BARNHURST: And so as Ms. Williamson  
9 indicated, the concerns that were brought up from the  
10 EPA related to potential impact to water resources.  
11 Each of those concerns actually came to us in the form  
12 of comments and in person as we met with them  
13 throughout the process, and those are things that we  
14 evaluated in the EIS and documented in section 5-2 and  
15 7-2.

16 And then as Ms. Williamson also indicated,  
17 there was additional modeling that was performed  
18 between the DEIS and the FEIS stage, and if you look  
19 at the FEIS, you can see change bars in the column  
20 indicating new text that was added between the DEIS  
21 and the FEIS. Much of that was added because of - in  
22 order to be responsive to the National Park Service  
23 and the EPA's concerns.

24 And so in the water section for instance,  
25 she indicated there was additional modeling that was



1 performed. That modeling was done to evaluate the  
2 Units 3 and 4, the issues that were occurring at the  
3 plant at that time with the hypersaline, the cooling  
4 canal system, the hypersaline plume that was moving  
5 into Biscayne from beneath the plant.

6 COMMISSIONER BARAN: Was EPA ultimately  
7 satisfied with that modeling and the final EIS?

8 MR. BARNHURST: I think their comment  
9 letter indicates that they still have concern. I do  
10 feel, you know, from a technical aspect, that we did  
11 fully evaluate that and we determined that the impact  
12 from the existing plant, or, excuse me, the proposed  
13 plants, 6 and 7, the impact that would occur, the  
14 nexus there between Units 6 and 7 and the site would  
15 be mainly the operation of radial collector wells  
16 which, again, would be limited.

17 And so as we evaluated the entire site and  
18 the changes in the baseline, that it occurred because  
19 of the hypersaline plume and some of the other issues  
20 there, mitigation measures that were proposed. As we  
21 evaluated that in the new model, we determined that  
22 those impacts would occur. They would be there  
23 regardless of whether or not Units 6 and 7 were built  
24 and that operation of the radial collector wells would  
25 not impact the water resources there.

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1 COMMISSIONER BARAN: I'm kind of out of  
2 time, but is it fair to say that in the end, the NRC  
3 staff ultimately disagreed with the EPA and the  
4 National Park Service on this?

5 MS. WILLIAMSON: I would say that it is a  
6 difference of opinion, yes.

7 COMMISSIONER BARAN: Thank you.

8 CHAIRMAN SVINICKI: Thank you.  
9 Commissioner Burns, please proceed.

10 COMMISSIONER BURNS: Yes, one question I  
11 have, I think we've had, and I think Ms. Williamson  
12 may have alluded to it, is the question about whether  
13 we have looked or have identified any potential new  
14 and significant information that might require  
15 supplementation of the FEIS.

16 And I think in the response to question  
17 58, staff indicated the only information considered  
18 was new information regarding a draft settlement  
19 between FP&L and the city of Miami that would lead to  
20 underground siting or underground extension of  
21 transmission lines.

22 We had a lot of discussion this morning  
23 with respect to the recent hurricane information, and  
24 I take it, and to some extent I am inferring from the  
25 testimony we received this morning, but I also would

1 like to hear from this panel and the environmental  
2 experts whether or not you considered any of the  
3 recent information from the aspects of the hurricanes  
4 that were recently experienced as potentially new and  
5 significant information in that area? Has the staff  
6 taken that into consideration?

7 MS. WILLIAMSON: We did not specifically  
8 take into account the recent series of hurricanes  
9 within our new and significant process, although we  
10 did examine and look at the potential of hurricanes as  
11 part of the environmental impact assessment.

12 COMMISSIONER BURNS: Okay, the other -  
13 another aspect I'd be interested in, in prehearing  
14 question 47, the Commission asked about potential  
15 license conditions discussed in a letter resulting  
16 from the consultation with the National Marine  
17 Fisheries Service.

18 In the response, it stated none of - the  
19 staff said none of the three items noted in the  
20 question would be addressed in the COLs if they were  
21 granted, but they did not say other than - it did not  
22 really explain why other than a note that the staff  
23 expected the Department of the Army permits would  
24 include these items. Is that how you would expect  
25 that would come out?

1 MR. DOUB: Yes, what we did with both the  
2 concurrence letter from the National Marine Fisheries  
3 Service and the incidental take statement from the  
4 Fish and Wildlife Service, we looked at the various  
5 requirements, identified each.

6 Some of them pertained to survey and  
7 reporting actions, and those are being included in our  
8 environmental protection plan which will actually be  
9 part of the license conditions, and others pertained  
10 to conservation measures that don't strictly fall  
11 under NRC's regulatory authority.

12 For those, the U.S. Army Corps of  
13 Engineers specifically agreed to include them as  
14 conditions to their Department of the Army permit that  
15 they will issue under the Clean Water Act.

16 COMMISSIONER BURNS: Is that because we  
17 would consider them preconstruction activities?

18 MR. DOUB: No, it's more what we have  
19 authority to enforce.

20 COMMISSIONER BURNS: Okay.

21 MR. DOUB: And if you need more details on  
22 that, I might refer you to a lawyer.

23 COMMISSIONER BURNS: Not this one. I  
24 don't want to argue with myself. Anyway, no, I  
25 appreciate, all kidding aside, I appreciate that

1 because I think what you note is that there is more  
2 than one regulatory agency or oversight body involved  
3 in the permitting of projects, you know, nuclear power  
4 plants as well as many other projects, so this is  
5 something where we've taken, as I understand your  
6 answer, we look at this as something within the  
7 purview of the Corps?

8 MR. KUGLER: Yes, sir.

9 COMMISSIONER BURNS: Okay, thank you.  
10 Thank you, Chairman.

11 CHAIRMAN SVINICKI: All right, well, I'd  
12 like to thank the panelists for the environmental  
13 panels, and if you will take your seats, I would ask  
14 the closing statement participants by the applicant  
15 and the NRC staff to please come up and take places at  
16 the table. We'll just take a brief moment here to  
17 reset for that purpose.

18 So as the staff take their seats, I will  
19 now offer each party the opportunity to make a closing  
20 statement, and we will begin with the applicant, FPL.  
21 Please proceed.

22 MR. MAHER: First, thank you,  
23 Commissioners for the time and effort that you put  
24 forth in preparing for and conducting this hearing.  
25 We appreciate your insights and questions, and ensure

1 that any follow-up information that you may want is  
2 addressed.

3 I would also like to recognize the work  
4 done by the NRC staff. I believe that this hearing  
5 has fully demonstrated the exhaustive review done by  
6 the staff and validates the staff's safety and  
7 environmental findings with about 120,000 hours of  
8 review by the NRC staff and contractors, or about 57  
9 man-years worth of work.

10 We certainly agree with the conclusions  
11 that the AP 1000 is safe, the environmental  
12 considerations have been addressed, and the Commission  
13 has the information necessary to make the required  
14 findings for issuance of the Turkey Point COL.

15 I also want to recognize the  
16 professionalism and thoroughness of our FPL team in  
17 addressing the information needs and emergent issues  
18 required to complete the COLA review.

19 FPL, Bechtel, Westinghouse, Rizzo, and the  
20 rest of the Turkey Point 6 and 7 COLA team invested  
21 several hundred thousand man-hours to prepare the COL  
22 application and to complete the COLA review.

23 Despite the significant and unique  
24 challenges that we and others have faced in completing  
25 the COLA review, FPL fully supports the standard

1 design approach. We have benefitted from the lead  
2 plant applications, ongoing construction activities,  
3 and believe that our experience will also benefit  
4 subsequent applicants.

5 It should be no surprise that with a new  
6 design that there are emergent issues that must be  
7 addressed. We believe that the benefits of a  
8 certified and standard design will not be fully  
9 realized until completion of the first of a kind  
10 construction currently in progress.

11 Our work to address the emergent industry  
12 issues and AP 1000's specific issues has not reduced  
13 our confidence in the safety of the AP 1000 design and  
14 the significant value of passive safety systems.

15 Obtaining this Turkey Point COL is key to  
16 FPL's ability to meet generation and resource  
17 requirements. Our planning identifies base load  
18 generation needs that support the addition of the  
19 Turkey Point plant.

20 Having a COL minimizes construction risk  
21 and provides us the ability to implement 2200  
22 megawatts of nuclear generation five to seven years  
23 faster than would otherwise be possible. These are  
24 significant strategic considerations in making a final  
25 decision on whether to move forward with a

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1       multibillion dollar mega-project.

2               The company will make a final decision on  
3       new nuclear generation in Florida in the future based  
4       on, among other factors, energy needs, project costs,  
5       carbon regulation, natural gas prices, existing or  
6       future legislative provisions for cost recovery, and  
7       the requirements of the NRC's combined operating  
8       license.

9               Commissioners, thank you again for your  
10       efforts. We welcome any further questions you may  
11       have regarding the Turkey Point 6 and 7 combined  
12       license application.

13              CHAIRMAN SVINICKI: Thank you very much.  
14       I now invite the NRC staff to make its closing  
15       statement.

16              MS. ORDAZ: Thank you, Chairman. We thank  
17       you for the opportunity to speak today. In the  
18       staff's paper to the Commission pertaining to this  
19       mandatory hearing, the staff's final safety evaluation  
20       report, and the final environmental impact statement,  
21       and in our presentations to you during this hearing,  
22       we have provided an adequate basis for making the  
23       necessary finding set forth in 10 CFR 52.97 and 10 CFR  
24       51.107 to support the issuance of the combined  
25       licenses for Turkey Points Units 6 and 7.

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1 In this hearing, we've described why the  
2 staff's review of the Turkey Point Units 6 and 7  
3 combined license application has been both thorough  
4 and complete. The review was appropriately focused by  
5 the finality afforded to issues within the scope of  
6 the AP 1000 design certification.

7 The staff has demonstrated the  
8 thoroughness of our review in part through its  
9 reliance on staff guidance and interactions with the  
10 ACRS. The ACRS agrees with the staff's conclusion  
11 that the combined licenses for Turkey Point Units 6  
12 and 7 should be issued.

13 Today, we highlighted certain aspects of  
14 our safety and environmental reviews. During the  
15 staff's safety panel, we explained the staff's  
16 evaluation of storm surge and sea level rise and deep  
17 well injection for liquid radioactive waste disposal.

18 With regards to the low population density  
19 criterion discussed this morning, we would like to  
20 clarify for the record that it should have been 500  
21 people per square mile as opposed to 500 people per  
22 square meter.

23 PARTICIPANT: Yeah.

24 MS. ORDAZ: During the staff's  
25 environmental panel, we discussed cooling water

1 sources, alternative sites, critical habitat in  
2 consultation with the U.S. Fish and Wildlife Service  
3 and the National Marine Fisheries Service. We also  
4 highlighted our process for compliance with the NRC's  
5 National Environmental Policy Act, regulations  
6 specified in 10 CFR Part 51, and other applicable  
7 environmental statutes, and appropriate interactions  
8 with other government agencies and the public.

9 We are similarly confident that through  
10 the ITAAC process, the construction reactor oversight  
11 process, inspections of construction activities, and  
12 oversight of the transition from construction to  
13 operation, we will be able to confirm that the plant  
14 has been constructed and will operate in conformance  
15 with the licenses, the Atomic Energy Act, and the  
16 Commission's regulations.

17 The applicant understands the necessity of  
18 complying with the requirements, and also understands  
19 what needs to be done if any noncompliance is  
20 discovered including determining the safety  
21 significance, determining operability, determining the  
22 extent of condition, and taking prompt corrective  
23 action to restore compliance.

24 In those instances in which we relied on  
25 commitments, we have done so in accordance with the

1 Commission's commitment policies and practices. We  
2 have verified that there is an established process by  
3 which the licensee maintains commitments and  
4 implements changes, and we of course oversee those  
5 changes if any are made. The staff appreciates the  
6 opportunity to present to the Commission today the  
7 results of our thorough and complete review.

8 And before I conclude my final remarks, I  
9 want to take a brief moment to reflect on our progress  
10 at implementing Part 52. This marks the eighth  
11 mandatory hearing and the last for a combined license  
12 application for a large light water reactor. We have  
13 learned much since the initial hearings for Vogtle and  
14 Summer, and have revised our internal procedures to  
15 reflect those lessons learned.

16 Because many of us here today may not be  
17 present for the next combined license mandatory  
18 hearing, we have undertaken efforts to  
19 institutionalize those best practices and internal  
20 staff documents, and are examining how best to retain  
21 those practices as the NRO and NRR merge in the near  
22 future. There's a specific working group under the  
23 merger efforts focused on KM activities.

24 I want to thank this moment to thank the  
25 current Commission and the past Commissioners for

1 their active engagement in the licensing process.  
2 Your questions have encouraged the staff to better  
3 explain its basis supporting licensing decisions and  
4 to be better able to articulate those bases in a  
5 public and transparent manner.

6 And finally, I want to publicly commend  
7 the tremendous staff from NRO and all of our  
8 supporting business lines who provided information  
9 today in this hearing and in past hearings. These  
10 individuals worked tirelessly every day to resolve the  
11 technical issues in support of the NRO mission. This  
12 concludes my remarks. Thank you, Chairman.

13 CHAIRMAN SVINICKI: Thank you very much,  
14 Vonna. I thank both the applicant and the staff for  
15 their closing statements. Before we proceed to  
16 Commissioners' closing remarks, I'd like to ask my  
17 fellow Commissioners if they have any questions  
18 associated with the closing statements by the parties  
19 or otherwise? Okay, seeing shaking of heads, I will  
20 now recognize Commissioner Baran for any closing  
21 remarks he'd like to make.

22 COMMISSIONER BARAN: I just want to thank  
23 the NRC staff and all of today's participants for your  
24 hard work throughout the review of this application  
25 and for your thorough preparation for today's hearing.

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1 We really appreciate it. Thank you.

2 CHAIRMAN SVINICKI: Thank you.  
3 Commissioner Burns?

4 COMMISSIONER BURNS: I'll echo that, the  
5 same appreciation to the staff and the applicant for  
6 their preparation for today's hearing, and the  
7 testimony, as well as the answers to the questions  
8 that we've posed them.

9 I also want to acknowledge with respect to  
10 the NRC, the participation of sister agencies and  
11 organizations such as Oak Ridge National Laboratory,  
12 the Army Corps of Engineers, as well as the National  
13 Park Service, Fish and Wildlife Service, and the EPA.  
14 These are important, as I noted in my last question  
15 there. There are a lot of folks who are potentially  
16 involved to inform our decision making, so I want to  
17 express my appreciation to them as well as to the NRC  
18 staff. Thank you.

19 CHAIRMAN SVINICKI: Thank you. Before I  
20 close with some closing procedural matters, let me  
21 give my closing remarks as a member of the Commission  
22 and not as the Chairman presiding.

23 Vonna, I appreciate your remarks about the  
24 somewhat important milestone that we encounter here  
25 today for the Nuclear Regulatory Commission. Having

1       been here for the first of these mandatory hearings  
2       that were conducted in the modern era, and Frank is  
3       nodding his head, that felt very historic in that  
4       moment as well, and although there continues to be new  
5       reactors licensing work before the agency, it is true,  
6       and we should acknowledge that today's is the last COL  
7       mandatory hearing of those that we have contemplated.

8               The staff of NRO under leaders over the  
9       last, I would say, four or five years, have been  
10      pushing very, very hard, pushing the capable team of  
11      folks that you have in the New Reactors Office to get  
12      to this milestone today.

13             So as NRO and NRR prepare for a future new  
14      organizational structure where work on new reactors  
15      will continue to go on, but in a different  
16      organizational structure, I think that today is a  
17      significant milestone, so I commend you, and it's been  
18      a very long journey, and it's not just those of you  
19      sitting at the table here, but all of the folks here  
20      today, and the witnesses, and experts who contributed  
21      to previous reviews as well.

22             I also commend the applicant on a very  
23      vigorous and thorough defense of the application. You  
24      all have been engaged in a very long endeavor as well,  
25      and articulating it as 57 man-years of work makes - I

1 don't know. It makes me fatigued. I don't know about  
2 anybody else in this room. I'm tired just hearing  
3 that. That sounds like a really, really significant  
4 effort which indeed it was.

5 Also I want to acknowledge of course, as  
6 a Commission we can't successfully conduct these  
7 mandatory hearings without the able support of the  
8 Office of the Secretary, the Office of Commission  
9 Appellate Adjudication, and the Office of General  
10 Counsel, and all of those elements of the Office of  
11 Administration that support us, and all of the  
12 administrative support that each of us has in the work  
13 we do here day to day, so I thank them for that.

14 And I will now conclude with the important  
15 procedural matters for the parties who aren't off the  
16 hook yet, so in closing and for the information of the  
17 parties, the deadline for responses to any  
18 post-hearing questions will be January 9, 2018 unless  
19 the Commission directs otherwise.

20 The secretary plans to issue an order with  
21 post-hearing questions, if any, by December 19, 2017.  
22 The deadline for transcript corrections will be  
23 January 9. The secretary plans to issue an order  
24 requesting proposed transcript corrections by December  
25 18.

1           As I mentioned this morning in my opening,  
2           the Commission expects to issue a final decision  
3           promptly with due regard to the complexity of the  
4           issues. With that, the hearing is adjourned. Thank  
5           you.

6                       (Whereupon, the above-entitled matter went  
7           off the record at 2:43 p.m.)



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
FLORIDA POWER & LIGHT COMPANY ) Docket Nos. M-52-040 and 52-041-COL  
(Juno Beach, Florida) )  
 )  
(Turkey Point, Units 6 & 7) )

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Setting Deadline for Proposed Transcript Corrections)** have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Brian Newell \_\_\_\_\_]  
Office of the Secretary of the Commission

Dated at Rockville, Maryland,  
this 18<sup>th</sup> day of December, 2017.