FPL-003
November 7, 2017

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Commission

In the Matter of	)	
	)	
Florida Power & Light Company	)	Docket Nos. 52-040-COL
	)	52-041-COL
Turkey Point Units 6 and 7	)	
(Combined License Application)	)	

FLORIDA POWER & LIGHT COMPANY'S RESPONSES TO PRE-HEARING QUESTIONS

In accordance with the Notice of Hearing[1] and the Nuclear Regulatory Commission's (Commission) Order (Transmitting Pre-Hearing Questions) (Sep. 1, 2017), Florida Power & Light Company ("FPL") submits the following responses to each of the questions posed to it by the Commission.

Question 2: The FSER and combined license application provide a construction cost estimate range of $13.700 billion to $19.994 billion for two units. Recent statements by the V.C. Summer Units 2 and 3 licensees indicate that the cost estimate range to construct two AP1000 reactors is $22 billion to $23 billion.

a. Explain whether the construction cost estimate range provided in the application and cited in the FSER—$13.700 billion to $19.994 billion for two units—is still appropriate to use.

The benefit-cost analysis in Chapter 10 of the FEIS estimates that the cost of building two AP1000 reactors at the site is $12.8 to $18.7 billion.

b. How do these new cost estimates affect the benefit-cost analysis in Chapter 10?

Response: a. The cost estimate ranges provided at various points throughout the combined license application ("COLA") process were the then-current total project cost estimates for the project. The overnight capital cost basis for the project has remained unchanged from inception.

[1] *Florida Power and Light Company; Turkey Point Units 6 and 7, Combined license application; revised notice of hearing*, 82 Fed. Reg. 47,044 (Oct. 10, 2017).

However, the total project cost estimate has been revised as the project schedule has changed. The total project cost estimate includes time dependent factors such as escalation and interest during construction. The project cost estimate range has historically bracketed the cost estimates for the Vogtle and Summer projects.

The $13.700 billion to $19.994 billion estimate in Part 1 of the COLA, Revision 8 and the Final Safety Evaluation Report ("FSER") was the then-current cost estimate range in 2015, and assumed in-service dates of 2027 and 2028 for Units 6 & 7, respectively. The current cost estimate range, as provided in the 2017 Nuclear Cost Recovery proceeding before the Florida Public Service Commission, is $14.692 billion to $21.874 billion assuming in-service dates of 2031 and 2032 for Units 6 & 7, respectively. Again, these increases are not related to the underlying project cost but are related to the time dependent factors identified above.

It should be noted that the values attributed to the V.C. Summer licensees ($22 to $23 billion) are not "new cost estimates." Instead, these are estimates of total project cost to complete the V.C. Summer project, based on its current condition. They cannot, and do not constitute a cost estimate for the Turkey Point Units 6 & 7 project. This cost estimate includes significant first wave contract, construction, and regulatory delays that would not necessarily impact a second wave project. FPL has stated that it intends to observe the first wave of AP1000 construction intending to gain lessons learned so that it would be able to initiate construction that will mitigate the impacts observed in first wave projects. Thus, the estimate in the Part 1 of the COLA and the FSER remains appropriate.

b. The estimated range of $12.8 to $18.7 billion in the Final Environmental Impact Statement ("FEIS") was provided in 2012, assuming the earliest practicable in-service dates of 2022 and 2023, for Units 6 & 7, respectively. When revised to reflect the actual project spend, escalation

and 2031 and 2032 in-service dates, the range becomes the most current $14.692 billion to $21.874 billion discussed above.

The estimated cost range identified in the FEIS remains appropriate because FPL's most current cost estimates are still based on the same overnight capital cost estimate. The higher values from FPL's more recent cost estimate ranges and from the V.C. Summer experience do not warrant supplementation of the FEIS because they do not represent new and significant information that would materially alter the conclusions in the FEIS. The FEIS already acknowledges that "the longer it takes to build the plant, the higher would be the interest expenses on borrowed construction funds." FEIS at 10-24. As described above, FPL's cost estimate range is based on the same underlying cost estimate and has only been updated to account for time dependent factors. Moreover, the V.C. Summer estimates are not an estimate of the cost to complete a project from initiation and do not reflect cost savings from FPL's lessons learned efforts. Nor would the updated cost estimates affect the NRC's qualitative cost-benefit evaluation in the FEIS. As the NRC Staff concluded in the FEIS, "[t]he internal costs to construct additional units appear to be substantial; however, FPL's decision to pursue this expansion implies that it has concluded that the internal benefits of the proposed facility (production of 16,400,000 to 17,900,000 MWh/yr for the 40-year life of the plant and 2,200 MW of baseload capacity) outweigh the internal costs." FEIS at 10-27.

Question 4: The Turkey Point site exceeds the RG 4.7 criterion for population density of 500 persons/square mile within 20 miles of the site.

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Staff and Applicant: The low population density criterion states that within about five years of plant site approval, the population density should not exceed 500 persons per square mile. Based on FPL's projection, this criterion is exceeded from 5 to 20 miles by about one-third.

f. Explain in more detail whether FPL and/or the Staff considered whether additional actions or compensatory measures were necessary in FPL's emergency plan due to the increased population density.

Response: No additional actions or compensatory measures were deemed necessary in FPL's emergency plan because of the population density from 5 to 20 miles, for the following reasons. Consistent with the guidance in Regulatory Guide ("RG") 4.7, the population density is not considered well in excess of the 500 persons per square mile value. Further, as discussed in Final Safety Analysis Report ("FSAR") Section 2.1.3.6, and FSER Sections 2.1.3.4 and 2.1.3.6:

- Turkey Point meets all regulatory requirements and guidance for the exclusion area, low population zone, distance to the nearest population center, and for emergency planning.
- The population density did not pose a significant impediment to the development of emergency plans. The Emergency Plan and associated Evacuation Time Estimate ("ETE") account for consequences of radiological emergencies required by 10 C.F.R. § 50.47 and 10 C.F.R. Part 50, Appendix E, and FPL demonstrated acceptable measures for public radiological safety when assessing accidents at the Turkey Point site, including compliance with the radiation dose requirements in 10 C.F.R. § 52.79(a)(1)(vi).
- When identifying Turkey Point as the preferred alternative over other alternative sites with lower nearby population densities, the principal considerations influencing the FPL selection of the Turkey Point site included several unique safety, economic, reliability, and environmental attribute advantages that would not be realized if the plant was developed elsewhere. The analysis of alternative sites paid particular attention to alternative sites having lower population density.

Emergency plans are also required to be continually maintained and updated, including accounting for changes in population characteristics in the region of a nuclear plant, in accordance with 10 C.F.R. Part 50, Appendix E, §§ IV (5), (6), and (7) as summarized below:

- Nuclear power reactor licenses shall estimate emergency planning zone ("EPZ") permanent resident population changes once a year, using the most recent U.S. Census Bureau annual resident population;
- If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase.

- After an applicant for a combined license under part 52 of this chapter receives its license, the licensee shall conduct at least one review of any changes in the population of its EPZ at least 365 days prior to its scheduled fuel load.

Question 5: In Sections 2.3.1.4.3 and 3.3 of the FSER the Staff evaluated whether FPL adequately addressed severe weather conditions and wind and tornado loading. The highest recorded 3-second gust wind speed in the Turkey Point Units 6 and 7 area resulted from Hurricane Andrew in 1992. FPL updated the combined license application to include a footnote noting 167 miles per hour (mph) as the site historic maximum speed. However, the Staff accepted the use of 161 mph as the site characteristic operating basis wind speed, which should be considered a severe environmental load that could infrequently be encountered during the plant life, and therefore, can be expected to be exceeded.

"Nuclear power plants must be designed so that they remain in a safe condition under extreme meteorological events . . . that could *reasonably be predicted to occur at the site."* RG 1.221 at 2 (emphasis added). Due to its location alongside the Atlantic Ocean, the state of Florida is extremely susceptible to hurricanes. In 2005 alone, the region was hit by 3 record-breaking Category 5 hurricanes that peaked at sustained winds of 175- 185 mph. Hurricanes of this magnitude could reasonably affect the proposed nuclear power plants. Did FPL or the Staff conduct confirmatory calculations to demonstrate that exceeding winds of this magnitude will not cause adverse effects on the safety-related structures, systems, and components?

Response: There is no need to conduct confirmatory calculations to demonstrate that winds exceeding the 161 mph operating basis wind speed will not cause adverse effects on the safety-related structures, systems, and components, because the AP1000 Nuclear Island and Seismic Category II structures are designed for a maximum reported tornado wind speed of 300 mph, as discussed below.

Nuclear plants are designed against two design basis wind speeds. The first is referred to as the operating basis wind speed, which represents a severe environmental load that could be encountered infrequently during the plant life and is established based on an exceedance frequency of 10^{-2} per year. Because the plant could remain operational, this load is treated the same as other operating loads and combined with normal loads in the design of safety-related concrete structures. The second design point is an extreme wind with a 10^{-7} per year exceedance frequency, representing an extreme environmental load that is credible but highly improbable.

This wind is typically the design basis tornado, unless hurricane winds with a 10^{-7} per year exceedance frequency are greater. The loads from this extreme (10^{-7} per year exceedance frequency) wind speed are considered in combination with extreme environmental loads to ensure that the plant can withstand these loads and safely shut down following such an event.

In accordance with NRC guidance, the operating basis wind speed for Turkey Point was calculated in accordance with American Society of Civil Engineers ("ASCE"), "Minimum Design Loads for Buildings and Other Structures," ASCE 7-05, resulting in an operating basis 3-second gust wind speed of 161 mph with a 100-year return period. Because this is the operating basis wind speed, it does not represent the maximum historic or projected wind speed. The plant design has considered variation in wind speeds, including the historical maximum wind speed of 204 mph by considering appropriate load combinations, load increase factors, and allowable stress increases.

The nominal 3-second gust that can be expected to occur with a return period of 10^{-7} years at the site is 260 mph from RG 1.221. The AP1000 Design Control Document ("DCD") site parameter tornado wind speed is 300 mph, and therefore bounds the extreme (10^{-7} per year exceedance frequency) wind speed and far exceeds the historical maximum reported sustained 1-minute wind speed for the Turkey Point Units 6 & 7 site of 167 mph with an associated 3-second gust wind speed of 204 mph, or the peak hurricane winds that have been observed at other locations in the region. The AP1000 Nuclear Island and seismic Category II structures are designed for a maximum reported wind speed of 300 mph, providing sufficient margin for the structures protecting safety-related features. Tornado wind pressures bound hurricane wind pressures in the plant Nuclear Island design.

Question 6: The application states that the 50-year return period 3-second wind gust is 150 miles per hour (mph) and used a scaling factor of 1.07, consistent with ASCE/SCI Standard 7-05, Table C6-7, to determine the 100-year return period 3-second wind gust of 161 mph. However, FPL's response to RAI 5908, Question 02.03.01-2 states that the highest estimated historical 3-second wind gust speed was estimated to be 204 mph during Hurricane Andrew in 1992. FSER § 2.3.1.4.3 states:

> The staff accepts the applicant's response to RAI 5908, Question 02.03.01-2 (ML11276A100) and the continued use of 161 mph as the site characteristic operating basis wind speed because the AP1000 operating basis wind speed is based on the 100-year return period, not the historic maximum wind.

Explain in further detail why it is acceptable to use the 100-year return period of 161 mph and not the site specific historic maximum wind encountered in 1992, for structures, systems and components for the proposed Turkey Point Units 6 and 7.

Response: As discussed in the response to Question 5, the operating design wind speed was established under applicable NRC guidance, codes, and the methodology used in the AP1000 DCD based on an exceedance frequency of 10^{-2} per year, and applied in combination with normal loads to establish the loads that could be applied repeatedly without interrupting operation or requiring further analysis. It does not represent the site specific historic maximum wind. The ability of Turkey Point Units 6 and 7 to withstand the extreme winds (with an exceedance frequency of 10^{-7} per year encompassing the historic maximum wind) is established by the AP1000 DCD site parameter tornado wind speed of 300 mph, which the AP1000 Nuclear Island and seismic Category II structures are designed to withstand.

Question 7: In the FSER climate change discussion (§ 2.3.1.4.7), the Staff referenced the U.S. Global Change Research Program's (USGCRP) 2009 "Global Climate Change Impacts in the United States." How would FPL's application and the Staff's review be affected (if at all) by the most recent 2014 USGCRP National Climate Assessment? Would there be any impact on the findings in the FSER?

Response: The 2014 USGCRP Climate Change Impacts in the United States report provides comparable climate change findings for the Southeast region (which includes the Florida coastline where the Turkey Point Units 6 and 7 site is located) as those outlined in the 2009 USGCRP Global Climate Change Impacts in the United States report.

For example, the 2014 USGCRP "Projected Temperature Change," Figure 2.8, shows a projected increase in temperature of less than 3°F for a lower emissions scenario and up to 6°F for a higher emissions scenario in South Florida for the later part of this century (2071-2099). The 2009 USGCRP report's figure on page 29, shows a projected increase in temperature of 4°F towards the end of the century (2080-2099) for South Florida for the lower emissions scenario and an approximately 6 - 7° F increase in temperature towards the end of the century for the higher emissions scenario.

The FSER 2.3.1.4.7 states "model projections of future precipitation generally indicate the southern areas of the United States will become drier" and is based on the findings in the 2009 USGCRP report. The figure on page 31 of the 2009 USGCRP report, "Projected Change in North American Precipitation by 2080-2099," shows an overall projected decrease in precipitation in South Florida (approximately -5% to -25%) for the winter, spring and summer seasons. South Florida shows an approximate 0 to 10% projected increase in precipitation during the fall season. The "Projected Precipitation Change by Season," Figure 2.14, of the 2014 USGCRP report shows an overall projected decrease in precipitation of approximately 0 to -30% for the winter, spring and summer seasons. South Florida shows an approximate 0 to 10% projected increase in precipitation during the fall season for 2071-2099.

The 2014 USGCRP report indicates the intensity, frequency, and duration of North Atlantic hurricanes and the frequency of Category 4 and 5 hurricanes have increased since the early 1980s. In addition, severe storms including the intensity and frequency of tornadoes, hail, and damaging thunderstorm winds are uncertain and are being studied intensively. Similarly, the 2009 USGCRP report states, as referenced in FSER 2.3.1.4.7, that the power and frequency of Atlantic hurricanes has increased in recent decades. The 2009 report states there is no clear trend

in the frequency or strength of tornadoes since the 1950s for the United States and the distribution by intensity for the strongest 10% of hail and wind reports has not changed much and does not provide evidence of an observed increase in the severity of such events.

Use of the 2014 USGCRP National Climate Assessment would have no impact on the conclusions or analyses presented in the Turkey Point Units 6 & 7 COLA or the findings in FSER Section 2.3.1.4.7. This is because:

- Historical data is used to characterize regional climatology in accordance with NRC guidance in NUREG-0800, Section 2.3.1;
- The climate change findings in the 2009 USGCRP report were used by the NRC to assess FPL's evaluation of climate change in FSAR Section 2.3.1.7; and

The climate change findings in both the 2009 and 2014 USGCRP reports are comparable.

Question 8: In view of the departures in Maximum Safety Wet Bulb (Noncoincident) Air Temperature, did the Staff and FPL consider the impact of the projected increase in daytime and nighttime air temperatures, as reported in the 2014 USGCRP National Climate Assessment? If not, how would FPL's analysis and the Staff's review be affected by the Assessment?

Response: FPL did not consider the 2014 USGCRP National Climate Assessment when determining the Maximum Safety Wet Bulb (Noncoincident) Air Temperature for two reasons: the report did not exist at the time the calculations were performed, and FPL instead used data from a local climatic station to comply with NUREG-0800. FPL's analysis would not be affected by the 2014 USGCRP assessment for the reasons described below.

The maximum safety wet bulb (noncoincident) temperature, as defined in FSER Section 2.3.1.4.5, represents a maximum wet-bulb temperature that exists within a set of hourly data for the duration of 2 hours or more. The site parameter value provided in the AP1000 DCD Tier 1, Table 5.0-1 and Tier 2, Table 2-1 for the maximum wet bulb (noncoincident) is 86.1°F. The corresponding Turkey Point Units 6 & 7 site characteristic value is 87.4°F as reported in both FSAR Section 2.3.1.5 and FSER Sections 2.0.4 and 2.3.1.4.5. As such, FPL requested an

exemption from 10 C.F.R. Part 52, Appendix D, Section IV.A.2.d, in accordance with 10 C.F.R. §§ 52.7 and 10 C.F.R. § 52.93 and a departure from AP1000 DCD Table 2-1. The analysis of the maximum safety wet bulb (noncoincident) air temperature is discussed in the COLA, Part 7, Departures and Exemption Requests. The results of the analysis show that the higher maximum safety wet bulb (noncoincident) air temperature will not affect any safety-related systems, structures, or components ("SSCs"), their functional capabilities or analysis methods as presented in the DCD.

As provided in the AP1000 DCD, Tier 2, Table 2-1, the maximum and minimum safety values are based on historical data and exclude peaks of less than 2 hours duration. As such, the maximum safety wet bulb (noncoincident) temperature value presented in FSAR Section 2.3.1.5 and FSER Section 2.3.1 was calculated as a 100-year return estimate of 2-hour duration. This is consistent with the guidance in Rev. 3 of NUREG-0800, Section 2.3.1, and Rev. 0 of RG 1.206 which state that the applicant should provide regional meteorological conditions for the plant's design and operating basis, including the 100-year maximum noncoincident wet bulb temperature, for use in establishing heat loads for the design of normal plant heat sink systems, post-accident containment heat removal systems, and plant heating, ventilating, and air conditioning systems. The acceptance criteria for NUREG-0800 further specifies that the ambient temperature and humidity statistics should be derived from data recorded at nearby representative climatic stations and states that estimates for 100-year return period extreme temperature values should be determined as a function of annual extreme temperature values.

In calculating the 100-year return maximum safety wet bulb (noncoincident) temperature for the Turkey Point Units 6 & 7 site, the maximum wet bulb temperatures corresponding to a 100-year return period were derived through linear regression using annual maximum wet bulb

temperatures recorded, including daytime and nighttime temperatures, over a 30-year period from 1976 to 2005 at Homestead Air Force Base. Therefore, a pattern of increase over time was captured using a linear regression analysis method. (For example, over this same 30-year record period, the 0 percent exceedance historical maximum noncoincident wet bulb temperature was 84.8°F which is 2.6 degrees less than the calculated 100-year return value of 87.4°F and 1.3 degrees less than the AP1000 DCD site parameter value.)

Thus, when determining ambient temperature values, such as the 100-year return maximum safety wet bulb (noncoincident), historical data recorded at nearby representative climatic stations were used. With respect to evaluating the impact of the projected increase in daytime and nighttime air temperatures on FPL's analysis, the FSER provides the following evaluation and conclusion regarding the average annual temperatures of the Southeast presented in the USGCRP report released in 2009:

> The USGCRP report found that the average annual temperature of the Southeast (which includes the Florida coastline where the Turkey Point Units 6 and 7 site is located) did not change significantly over the past century as a whole, but the annual average temperature has risen about 2°F since 1970 with the greatest seasonal increase in temperature occurring during the winter months. Climate models predict continued warming in all seasons across the Southeast and an increase in the rate of warming through the end of the 21st century. Average temperatures in the Southeast are projected to rise by 2—5°F by the end of the 2050's, depending on assumptions regarding global greenhouse gas emissions.

In comparison, the USGCRP report released in 2014 does not substantially differ with respect to temperature rise from the 2009 USGCRP report referenced in the FSER. The 2014 USGCRP report provides the following with respect to temperature increase:

> U.S. average temperature has increased by 1.3°F to 1.9°F since 1895, and most of this increase has occurred since 1970…All U.S. regions have experienced warming in recent decades, but the extent of the warming has not been uniform. In general, temperatures are rising more quickly in the north…People living in the Southeast have experienced some of the smallest temperature increases over the period. Temperatures are projected to rise another 2°F to 4°F in most areas of the

> United States over the next few decades…By the end of this century, a roughly 3°F to 5°F rise is projected under a lower emissions scenario…and a 5°F to 10°F rise for a higher emissions scenario assuming continued increases in emissions, predominantly from fossil fuel combustion.

Further, as depicted in Figure 2.8, "Projected Temperature Change," of the 2014 USGCRP report, the projected change in average surface air temperature in the later part of this century (2071-2099) relative to the later part of the last century (1970-1999) depicts the area where the Turkey Point Units 6 & 7 site is located as one of the regions that has the lowest temperature change (less than 3°F rise under the lower emissions scenario and about 5-6°F rise under the higher emission scenario) in the continental U.S.

Given the NUREG-0800 acceptance criteria specifying that the ambient temperature and humidity statistics should be derived from historical data to estimate a 100-year return period (as determined for the Turkey Point Units 6 & 7 plant) and that the 2009 USGCRP assessment with respect to temperature increase does not substantially differ from the 2014 USGCRP assessment, FPL's analysis would not be affected by the 2014 USGCRP assessment.

Question 9: The FSER states that flooding from Biscayne Bay during severe storms, such as the Probable Maximum Precipitation storm event, would be the most severe and controlling event among all flooding scenarios.

Explain how the Staff and FPL reviewed and evaluated the assumption that the flooding from Biscayne Bay during severe storms would be the most severe and controlling event.

Response: Major hydrological features surrounding the Turkey Point Units 6 & 7 site and plant interface with site hydrology are described in FSAR Section 2.4.1. Because Biscayne Bay is located adjacent to the Atlantic Ocean and separated by the narrow Elliot Key barrier island, according to RG 1.59 and Section 2.4.5 of NUREG-0800, the Units 6 & 7 site is defined as a coastal site. As explained in FSAR Sections 2.4.1 and 2.4.2, there are no major rivers, streams, dams or reservoirs located near the Units 6 & 7 site although man-made canals are present near

the site. Therefore, as FSAR Section 2.4.1 states, the hydrology near Units 6 & 7 is mainly governed by Biscayne Bay.

The most severe flooding events (up to 1992) in Miami-Dade County, as reported by the Federal Emergency Management Agency ("FEMA") in the 1994 flood insurance study for Miami-Dade County, Florida and incorporated areas, are summarized in FSAR Table 2.4.2-201. As shown in the table, all the recorded peak water levels are associated with tropical storm or hurricane events in the Atlantic Ocean. An evaluation of storm surges in FSAR Section 2.4.5 also indicates that the probable maximum hurricane and associated probable maximum storm surge ("PMSS") in Biscayne Bay constitutes the design basis flood elevation at the Units 6 & 7 site. FSAR Section 2.4.6 provides information that the probable maximum tsunami water level would be lower than the PMSS water level at the site.

FSAR Section 2.4.3 explains that a storm event with the rainfall magnitude of the probable maximum precipitation ("PMP") would likely be associated with a tropical storm or hurricane event and would accompany a storm surge in the Biscayne Bay. The National Oceanic and Atmospheric Administration ("NOAA") Hydrometeorological Report No. 51, Section 3.2.5 indicates that PMP estimates in Florida were developed by adjusting rainfall events associated with tropical storms for a looping track, a known occurrence with tropical storms along the Atlantic Ocean and Gulf of Mexico coasts where rainfall is concentrated over a specific area. Because the probable maximum flood in streams or canals due to the PMP storm event would be associated with a tropical storm or hurricane, the resulting high storm tide in Biscayne Bay would control the flood elevation in the streams and canals at the Biscayne Bay shoreline.

In summary, because the Units 6 & 7 site is a coastal site located on the shore of Biscayne Bay, the design basis flood elevation at the site is controlled by the flooding from Biscayne Bay.

Question 10: FPL used guidance in NOAA NWS Report 23 (NOAA, 1979) as the basis for defining the combination of parameters of the wind field for the Probable Maximum Hurricane (PMH) at the location of Turkey Point Units 6 and 7. The PMH parameter values provided by NOAA NWS 23 are based on data from historical hurricanes from 1851 to 1977.

a. Did the Staff and FPL consider information on hurricanes and storm surge obtained in the period since the NOAA NWS 23 data were collected (1977-present)?

b. If not, how could such information affect the values or ranges of the PMH parameters used in the analysis?

Response: As summarized in FSAR Section 2.4.5, the PMH parameters for the Atlantic coast near Turkey Point Units 6 & 7 are obtained from the NOAA Technical Report NWS 23 (FSAR Section 2.4.5 Reference 201). The PMH parameter values were established based on data from historical hurricanes from 1851 to 1977 and were presented for multiple locations along the Gulf of Mexico and Atlantic Ocean coastlines.

a. Yes, FPL also considered information on hurricanes and storm surges in the period since 1977 up to and including 2006 in evaluating PMH parameters. The list of historical hurricanes, Category 1 and stronger, from 1851 to 2006 is presented in FSAR Table 2.4.5-202. The data include 94 hurricanes between 1851 and 1977 and 18 hurricanes between 1978 and 2006. As described below, although data in the period from 1977 to 2006 were considered, the new data generally followed historical trends and therefore no changes to PMH parameters obtained from NWS 23 were identified.

A summary of the applicability of NWS 23 in defining the PMH parameters near the site is presented in FSAR Section 2.4.5.1, which mentions that the effect of long-term climate variability on hurricanes is an area of active research and that processes with different time scales could affect hurricane intensities differently. Between 1977 and 2006, several intense hurricanes had made landfall on the Gulf of Mexico and Atlantic coasts. Research on the effects of El Niño/Southern Oscillation indicated that while El Niño conditions tend to suppress

hurricane formation in the Atlantic basin, La Niña conditions tend to favor hurricane development (FSAR Section 2.4.5 Reference 202). Additionally, research has been performed into the relationship between the Atlantic Multi-decadal Oscillation ("AMO") and hurricane intensity (FSAR Section 2.4.5 Reference 202). AMO is the variation of long-duration sea surface temperature in the northern Atlantic Ocean with cool and warm phases that may last for 20 to 40 years. The research shows that hurricane activities increase during the warm phases of the AMO compared to hurricane activities during the AMO cool phases. Hurricane data between 1977 and 2006 indicate that Atlantic hurricane seasons have been significantly more active since 1995. However, hurricane activities during the earlier years, such as from 1945 to 1970, were apparently as active as in the period between 1995 and 2006 (FSAR Section 2.4.5 References 202 and 203).

As summarized in FSAR Section 2.4.5 and presented in NOAA Technical Memorandum NWS TPC-5 (FSAR Section 2.4.5 Reference 203), during the 35-year period between 1971 and 2006, the conterminous U.S. was affected by the landfall of three Category 4 or stronger hurricanes: Hurricane Charley (2004), Hurricane Andrew (1992), and Hurricane Hugo (1989). Based on the analysis of hurricane data from 1851 to 2006, the NOAA Technical Memorandum NWS TPC-5 summarized that, on the average, the U.S. is affected by a Category 4 or stronger hurricane approximately once every 7 years, thereby suggesting that there have been fewer exceptionally strong hurricane landfalls during this period (1971-2006). Using the average landfall of Category 4 or stronger hurricanes of approximately once every 7 years, the expected number of hurricanes during the period from 1971 to 2006 (35 years) would be approximately five (FSAR Section 2.4.5 Reference 203).

FSAR Section 2.4.5 concludes that because NOAA Technical Report NWS 23 includes the last active hurricane period from 1945 to 1970 (and any such earlier periods from 1851) in the analysis, it is reasonable to assume that the PMH parameters derived are sufficiently conservative even in the considerations of future climate variability.

b. Not applicable. FPL did consider information from 1977 to 2006.

Question 11: The Staff and FPL concluded that the selected PMH meteorological parameters are conservative on the basis that the central pressure at landfall of the recommended PMH is lower than that for any storm included in the U.S. historical record documented by Blake et al. (2007), and the wind speed is higher than for any storm in the record. Storm surge is also a function of the storm size. Observations and modeling have shown that a storm of lower intensity but larger size can generate a higher surge (e.g., Resio and Westerink, 2008). Describe how storm size was considered in the judgment that the selected PMH meteorological parameters are conservative.

Response: The sensitivities of selected PMH parameters on storm surge elevations are evaluated by varying the parameters in the Sea, Lake, and Overland Surges from Hurricanes ("SLOSH") model simulations. Table 2.4.5-201 of the FSAR shows the selected PMH parameter values, which are obtained from NOAA Technical Report NWS 23 (FSAR Section 2.4.5 Reference 201). A summary of such sensitivity analyses is presented in the FSAR Section 2.4.5.2.2.3. As explained in FSAR Section 2.4.5.2.2.3, a total of 53 SLOSH model runs were performed to investigate the effects of the PMH forward speed, size, direction, and track distance from Units 6 & 7 on the storm surge elevation. The size of the PMH is defined as the radius of maximum wind ("RMW"), the distance from the center (eye) of the hurricane to the location of the maximum wind speed. For all simulations, the hurricane pressure deficit, Δp, the difference between hurricane central and peripheral pressures, is kept constant at the Δp of the PMH. The Δp is the most important parameter for hurricane wind field, and therefore storm surge generation, and NWS 23 provides only one value of Δp for the PMH at a location.

In the first set of SLOSH model simulations, three PMH sizes (RMW) were considered along with the varying forward speed and direction, as explained in FSAR Section 2.4.5.2.2.3. The results of the simulations are shown in FSAR Figure 2.4.5-205, which indicates that the surge elevation increases with increasing PMH size at the upper bound forward speed.

This behavior was further investigated, as described in FSAR Section 2.4.5.2.2.3, by varying the PMH size beyond the upper bound RMW specified as 20 nautical miles (23 miles) for the Units 6 & 7 site (Table 2.4.5-201). For this second set of SLOSH model simulations, the PMH direction is assumed to be approaching at 270 degrees from the north and the hurricane track is assumed to be at a distance equal to the PMH RMW from Units 6 & 7. The resulting surge elevations are presented on FSAR Figure 2.4.5-207. For the selected set of parameters, Figure 2.4.5-207 shows that the surge elevation would be the maximum when the PMH size is 30 nautical miles (34.5 miles). Under these assumptions, the maximum surge elevation is approximately 2.6 percent higher than the surge elevation from the PMH upper bound RMW. Hurricane surge elevation decreases beyond the 30-nautical mile (34.5-mile) size of the PMH.

As discussed in FSAR Section 2.4.5.2.2.3, for hurricanes with sizes larger than the PMH upper bound size, the Δp should not be kept the same as that of the PMH. The Δp should be smaller and the hurricane would generate lower storm surge elevations. For example, Figure 2.5 of NWS 23 (FSAR Section 2.4.5 Reference 201) shows that PMH RMW increases with latitude, with the highest PMH RMW of 38 nautical miles (44 miles) at Eastport, Maine. However, Figure 2.3 of NWS 23 shows that the PMH Δp decreases with latitude with Eastport, Maine having the PMH Δp of 2.7 in. Hg (smaller than the PMH Δp of 4.0 in. Hg near the FPL site). NWS 23 (FSAR Section 2.4.5 Reference 201) defines the PMH as a fully developed, steady state hurricane whose RMW for any coastal location is less than the RMW of the standard project

hurricane ("SPH"), which is a less intense hurricane than the PMH. Near the Units 6 & 7 site, the SPH has an upper bound RMW of about 29 nautical miles (33 miles), higher than the PMH upper bound RMW of 20 nautical miles (23 miles). However, the Δp for the SPH is 2.6 in Hg which is lower than the PMH Δp of 4.0 in. Hg. This suggests that, for hurricane sizes larger than the PMH upper bound RMW given in NWS 23 (FSAR Section 2.4.5 Reference 201), the Δp would be smaller. Because the SLOSH simulation with the RMW of 30 nautical miles (34.5 miles) did not consider any reduction in Δp, the simulated storm surge elevation for this condition likely was unrealistically high.

Additionally, determination of the PMSS considers the PMH, which has the highest intensity possible at a location. Therefore, the PMSS would bound the storm surges from any combination of hurricanes with lower intensities and larger size.

Thus, by artificially keeping Δp constant, the projected impact of hurricane size on storm surge elevation shown in Figure 2.4.5-207 overestimates the surge elevation for hurricane sizes larger than the NWS 23 upper bound of 20 nautical miles (23 miles). Because of this conservatism, and because a 20-percent increase in surge elevation was added to account for model uncertainties, which is much greater than the 2.6 percent increase in surge elevation calculated for the larger radius of maximum wind, no additional adjustment in surge height was deemed necessary to account for the potential effect of a larger radius.

Question 12: Did the Staff and FPL consider the cumulative impact of storm events during the life of the units, including the cumulative effect of land subsidence associated with the weight of the proposed facilities in conjunction with a strong hurricane surge? If not, why not?

Response: The safety-related structures will be founded on 19 ft of concrete fill and surrounded by an "island-type" structural fill bounded by retaining walls. The finish grade in the vicinity of

the safety-related structures on the "island" will be El 25.5 feet North American Vertical Datum of 1988 ("ft NAVD 88"). The material comprising the structural fill will be limestone crushed and processed to eliminate excessive fine grained material. The ground surface will slope slightly downward from the safety-related structures to the retaining wall top elevation of El. 21.5 ft NAVD 88 on the eastern side (FSAR Section 2.4.5.3.2). The retaining walls, as shown in FSAR Figure 2.5.4-221, will be at least 500 ft away from the safety-related structures.

As discussed in FSAR Section 2.4.5.3.3, the probable maximum storm surge water level is at El. 24.8 ft NAVD 88, 0.7 ft below the finish grade for safety-related structures.

Consolidation of the structural fill and settlement of the structures comprising Turkey Point Units 6 & 7 have been analyzed in the design. Based on this analysis, as presented in FSAR Section 2.5.4.10.3, significant settlement of the ground surface around the plant is highly unlikely due to the nature of the crushed limestone fill. Nevertheless, site grade around the plant and across the "island" will be restored to finish grade levels (El. 25.5 ft) at the end of construction, if necessary, compensating for any settlement that may have occurred as a result of the plant load.

Establishment of finish grade level at El. 25.5 ft, which is higher than the probable maximum storm surge, eliminates risks associated with direct wave erosional impacts on structures, and potential damage due to impacts from wave-borne debris. Moreover, the impact of waves (or wave-borne debris) will be resisted by the retaining wall surrounding the "island." Given the significant distance of the retaining wall from safety- related structures (at least 500 ft, as noted above) and the projected slope from the safety- related structures to the retaining wall, wave energy, sediment erosion or deposition, and transport of debris will be negligible at safety-related structures (FSAR Section 2.4.5.5).

Cumulative impacts of multiple storm events (i.e., multiple maximum storm surges) have been considered in the design from the perspective of the following issues:

- The effect of multiple storm surges, specifically postulated temporary changes in the groundwater level, both upward and downward.

- The movement of fine grained soil particles, generally referred to as "fines," due to postulated temporary fluctuations of the groundwater level, both upward and downward, from multiple storm surges. The movement of fines in this manner can result in the subsidence of shallow foundations that are most often associated with commercial and residential structures publicized in the media.

Regarding the first issue, changes in the groundwater level on a sustained basis alter (a) the effect of buoyancy on soil particles and (b) the buoyancy or "uplift" pressure acting on the base of a foundation when the foundation basemat is below the normal static water level. Both are temporary phenomena and occur regularly with changes in tide level, for example. While neither can be completely ignored, experience at conventional and nuclear power plants indicates that there is no discernible impact on surface structures with properly designed foundations.

Regarding the second issue, i.e., the movement of fines that causes subsidence, the limestone rock that will be crushed for use as structural fill will be processed to have a grain size distribution that is well graded and sized to prevent the movement of fines. This is a common practice followed for the design of structural fills. Consequently, the elimination of the movement of fines due to multiple surge events is taken into account in the design of Units 6 and 7.

Question 13: To account for sea-level rise over the life of the plant, FPL added a nominal long-term sea-level adjustment of 1 ft. to the estimates of 10-percent high tide level and initial rise. FPL considered this adjustment conservative because it bounds the largest linear trends in sea levels observed at several tide gauges in the south Florida region.

The Staff noted that climate modeling studies have estimated accelerated rates of sea level rise in excess of FPL's trend analysis of historical records. Nevertheless, the Staff accepted FPL's use of linear trend analysis using historical observations.

In its September 16, 2016 letter, the Advisory Committee on Reactor Safeguards (ACRS) also noted the possibility of accelerated sea level rise due to climate change. The ACRS accepted the use of linear trend analysis using historical observations because any accelerated rise due to climate change would be gradual and could be addressed by adaptation. However, the ACRS noted its expectation "that the Turkey Point Units 6 and 7 licensing basis will be explicit concerning the assumed sea level rise of one foot, and that the licensee will remain aware of recorded sea level rise so as to recognize the potential exceedance during the plant life." ACRS Letter at 3.

Do the FSER or the draft combined licenses for Turkey Point Units 6 and 7 address such monitoring? If so, how? If not, explain how FPL plans to address the potential for accelerated sea level rise.

Response: The FSER and draft COL for Turkey Point Units 6 and 7 do not address monitoring for accelerated sea level rise. Following the accident at Fukushima Dai-ichi, the NRC's Near Term Task Force ("NTTF") initially envisioned a requirement for licensees to monitor and periodically confirm external hazards. However, the NRC ultimately concluded that such requirements were not necessary and that its existing regulatory framework would be sufficient to monitor such hazards. Thus, this issue will be included in the framework described by the NRC Staff in SECY-16-0144 and approved by the Commission in SRM-16-0144 on May 3, 2017.

Initially, NTTF Recommendation 2.2 suggested that the NRC rulemaking to require licensees to confirm seismic and flooding hazards every 10 years (SECY-11-0093). In SECY-15-0137, Enclosure 2 the NRC Staff stated,

> The NRC staff has made significant progress on the Tier 1 seismic and flooding reevaluations. These reviews have provided the staff with important insight on the need for a rule to require licensees to periodically confirm their external hazards. It is the staff's view that the NRC's current regulatory framework is sufficient to effectively consider the implications of new external hazard information on plant safety. While the staff's assessment did not identify the need for a new rule, the staff has determined that enhancing its current processes would improve the

staff's efficiency in identifying and assessing new information related to external hazards.

The NRC Staff further explained the steps it was going to take to assess new external hazard information and enhance its processes for reviewing the information.

In Enclosure 2 of SECY-16-0144 dated December 29, 2016, the Staff described the details of the proposed framework that expands upon the concepts described in SECY-15-0137 and provides a graded approach that allows NRC to proactively seek, evaluate, and respond to new hazard information. The SECY-16-0144 process will involve an ongoing assessment of natural hazards information through the enhancement of internal processes. It will establish a more routine, proactive, and systematic program for identifying and evaluating new information related to natural hazards.

As explained in SECY-15-0137, the NRC's regulatory framework pro7vides for licensee review of new hazard information and, as necessary, consideration and resolution of new information in a variety of ways, including the formal corrective action programs under 10 C.F.R. Part 50, Appendix B, Criterion XVI, "Corrective Action," and operability determinations as described in NRC Regulatory Issue Summary 2005-20, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, 'Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions.'" In the event sea level rise exceeds the one foot estimate accounted for in the licensing basis for Units 6 & 7, FPL would utilize these established plant procedures to either reevaluate the flood hazard or implement corrective action.

Question 14: The Staff has received feedback from external stakeholders recommending that it use higher estimates of regional sea level rise than the 1 ft. (0.3m) estimate used in the application. SECY-16-0136 at 22. NOAA guidance recommends consideration of its highest estimate scenario for global sea level rise (6.6 ft. (2.0m)) when planning new infrastructure with a long anticipated life cycle such as a power plant. NOAA Guidance at 12.

a. Did the Staff or FPL utilize the information referenced in NOAA's December 2012 guidance?

b. Explain how (if at all) using NOAA's highest estimates for global sea level rise would affect the analyses performed by FPL and the design of Turkey Point Units 6 and 7, and whether or not doing so would be appropriate under the NRC's current guidance.

Response: As summarized in the FSAR Section 2.4.5, the design basis flood ("DBF") elevation at Turkey Point Units 6 & 7 is governed by the PMSS due to a PMH approaching the Units 6 & 7 site from the Atlantic Ocean. The DBF elevation is evaluated following NRC regulations and guidance (e.g., 10 C.F.R. Part 50, Appendix A, General Design Criteria 2, RG 1.59, NUREG-0800 Section 2.4.5 and Interim Staff Guidance JLD-ISG-2012-06) and considers various components contributing to the PMSS elevation. Concerning the safety of the plant against flooding, the approach adopted in the evaluation was to ensure that, overall, sufficient conservatism is applied to the DBF elevation, while each of the PMSS components is conservatively estimated following appropriate NRC guidance.

a. FPL used the local data that was input for the NOAA Guidance of 2012 (Global Sea Level Rise Scenarios for the United States National Climate Assessment, NOAA Technical Report OAR CPO-1, December 2012), but FPL did not use information taken from the guidance on global sea level rise. The NOAA Guidance used tide gage data for the entire U.S. coast in developing the report. The assessment of the antecedent sea water level for the Units 6 & 7 site, as summarized in FSAR Section 2.4.5, utilized the same tide gage observations from NOAA in the south Florida region. The assessment of the antecedent water level in FSAR Section 2.4.5 did not utilize any other set of input information from the NOAA Guidance.

b. Because global and regional sea level rise projections incorporate significant uncertainties, the NRC cautions that projection approaches, such as those applied by NOAA, should not be used as site-specific projections as discussed in SECY-16-0136. Interim Staff Guidance, JLD-ISG-2012-06, recommends that long-term sea level rise for the plant design life should be estimated from observed data at a tidal station, which include both global or regional sea level rise and vertical land movement. Assessments of global sea level rise, such as those used in the NOAA Guidance of 2012 can be utilized as part of hierarchical hazard assessment ("HHA") and to analyze sensitivity of PMSS elevation to the variation of different component parameters, rather than use them in design basis flood elevation estimates.

The analysis presented in FSAR Section 2.4.5 followed applicable NRC regulations and guidance in utilizing site-specific observation data and adopting sufficient margin to account for the limited length of data records. FPL believes that the conservatism applied to the PMSS estimates, as discussed below, and the margins included are sufficiently conservative to account for any uncertainties in the PMSS estimate including that of long-term sea level rise.

The PMSS resulting from a PMH event is estimated following a deterministic approach where the PMH parameters were selected from the NOAA Technical Report NWS 23 (FSAR Section 2.4.5 Reference 201). Following the guidance in NUREG-0800 Section 2.4.5, the analysis conservatively used a combination of the PMH parameters that resulted in the highest storm surge level at the Units 6 & 7 site. The PMH is considered as 'steady state' where the hurricane pressure deficit, wind speed, size, approach angle and forward speed do not change as the hurricane travels from deep water and makes landfall; although historical hurricane data suggest a weakening of the hurricane prior to and after landfall.

RG 1.59 recommends that the 10 percent exceedance high spring tide, which is the high tide level equaled or exceeded by 10 percent of the maximum monthly tides over a continuous 21-year period, is used as part of the antecedent water level determination. If this 10 percent exceedance high tide is estimated from tidal predictions, a separate estimate of initial rise (or sea level anomaly prior to the arrival of the storm surge) is required. If the water level is estimated from observed data, a separate addition of initial rise is not necessary. As discussed in FSAR Section 2.4.5, the 10 percent exceedance high spring tide is estimated to be 2.6 ft NAVD 88 based on tidal predictions and an initial rise. This estimated water level, which is used in the PMSS determination, is approximately 1.2 feet higher than the maximum 10 percent exceedance high spring tide of 1.43 ft NAVD 88 obtained from observed data in the region.

The storm surge levels at the Units 6 & 7 site are simulated by the NOAA SLOSH model. The simulated maximum storm surge level was adjusted by an additional 20 percent of surge height. The 20 percent adjustment is based on the uncertainty of SLOSH model predictions reported in NOAA Technical Report NWS 48, "SLOSH: Sea, Lake, and Overland Surges from Hurricanes" (FSAR Section 2.4.5 Reference 205). FSAR Figure 2.4.5-211 presents a comparison of observed data with predicted storm surge heights. This figure, which is adopted from NWS 48 (FSAR Section 2.4.5 Reference 205), shows that the SLOSH model mostly over predicts the storm surge height for large storm surges. The 20 percent adjustment of surge height of 2.9 feet, therefore, contains an additional margin to the PMSS estimate.

The PMH storm surge is combined with coincidental wind-wave actions to obtain the PMSS elevation. The wave runup on the plant finish grade elevation is conservatively estimated assuming that the waves approaching the site would be limited by maximum storm surge water depth and would be at breaking wave height when impacting the retaining wall surrounding the

site. This assumption conservatively precludes wave dissipation that likely would reduce wave height prior to reaching the retaining wall.

In addition to the conservatively estimated design basis PMSS elevation of 24.8 ft NAVD 88, the plant grade elevation for Turkey Point Units 6 & 7 was selected as 26.0 ft NAVD 88 providing an additional margin of 1.2 feet.

The above margins are provided in addition to the nominal one-foot sea level rise for the plant design objective of 60 years, which is conservatively estimated from observed tide gage data near the site. It is not feasible to quantitatively estimate a margin for each of the PMSS components, for example, while the most adverse combination of the PMH parameters provide a conservative estimate of the PMSS, it is not possible to estimate the margin such a combination would provide. Nonetheless, a combined lower bound allowance for long-term sea level rise for the plant design objective of 60 years can be estimated by combining the margins on the 10 percent exceedance high spring tide (1.2 feet), the provided nominal sea level rise (1.0 foot), and the margin at plant grade elevation (1.2 feet). The combined allowance available therefore would be more than 3.4 feet, which can accommodate uncertainties in the long-term sea level rise.

If NOAA's highest estimates for global sea level rise were used in the FSAR Section 2.4.5 analyses establishing design basis flooding for the 60-year period, the DBF elevation would likely increase necessitating additional protection, but as discussed above, use of the highest NOAA estimates would be inappropriate and unnecessary.

In conclusion, FPL followed the recommendations from the NRC guidance in performing the deterministic analyses of the PMSS, applied sufficient conservatism and provided margins for all components of the PMSS, including long-term sea level rise. Given the uncertainties in

estimating parameters for the process description of long-term sea level rise, as presented in NOAA Guidance, it is not appropriate to use the NOAA Guidance to estimate long-term sea level rise for the Units 6 and 7 site. In the event sea level rise exceeds the one-foot estimate accounted for in the licensing basis for Units 6 & 7, FPL would either reevaluate the flood hazard or implement corrective action, as described in the response to Commission Pre-Hearing Question 13.

Question 15: Miami-Dade County Zoning Resolution No. Z-56- 07, Condition No. 21, provides, in part, that "the design and elevation of FPL project features such as but not limited to roadways and other fill pads shall be based on the planned higher water levels in this area as well as sea level rise pursuant to CM-9H of the Miami-Dade CDMP [Comprehensive Development Master Plan]." In turn, CM-9H provides that "[r]ise in sea level projected by the federal government, and refined by the Southeast Florida Regional Climate Change Compact, shall be taken into consideration in all future decisions regarding the design, location, and development of infrastructure and public facilities in the County." Comprehensive Development Master Plan: Adopted Components, VII. Coastal Management Element, at VII-15 (http://www.miamidade.gov/planning/library/reports/ planning-documents/cdmp/coastal-management.pdf).

Miami-Dade County noted that FPL has agreed to consider Southeast Florida Regional Climate Change Compact data and reports for its planning purposes for Units 6 and 7.

a. Staff and Applicant: How was Miami-Dade County Zoning Resolution No. Z-56-07, and specifically Condition No. 21, considered in the combined license application and Staff review, respectively?

b. Applicant: Discuss how FPL is considering the data and reports of the Southeast Florida Regional Climate Change Compact. Also discuss any actions FPL intends to take based on, or consistent with, the Compact's data and reports. How, if at all, does this effort impact the combined license application?

Response: a. Miami-Dade County Zoning Resolution No. Z-56- 07, Condition No. 21, was not addressed in the combined license application and Staff review, because site elevation of safety-related structures is within the exclusive regulatory authority of the NRC. Elevation of safety related structures was evaluated following applicable NRC standards and guidance that long term sea-level rise for the expected life of the nuclear power plant should be derived from the trend in site or regional tide gage station data, as discussed in the response to Question 14.

With respect to associated facilities such as roadways and fill pads, Miami-Dade County Zoning Resolution No. Z-56- 07, Condition No. 21, together with CM-9H of the Miami-Dade County Comprehensive Development Master Plan, provide that FPL should consider sea level rise projections prepared by the federal government and the Southeast Florida Regional Climate Change Compact. Consideration of sea level rise for associated facilities, such as roadways and fill pads, will be included in the final, detailed designs. FPL will make any necessary design adjustments based on water level information available and the appropriate building requirements when the final detailed design work is performed. This level of design detail regarding the associated facilities was not included in the combined license application.

b. Consideration of sea level rise for associated facilities, such as roadways and fill pads, will be included in the final, detailed designs. As part of the Site Certification Application process, FPL entered into a stipulation with the South Florida Regional Planning Council in which FPL agreed to consider Compact data and reports for its planning purposes as the project progresses toward final approval, construction and operations. FPL will make any necessary design adjustments based on water level information available and the appropriate building requirements at the time when the final detailed design work is performed. This effort will not impact the combined license application.

Question 16: The NRC received comments from the Cities of Miami and South Miami, Miami-Dade County, and Florida Senator José Javier Rodríguez about the potential consequences of sea level rise during the license term if sea level rise is greater than the levels assumed in the application.

a. Discuss the likelihood of a radiological incident requiring evacuation occurring coincident with a local flooding event at Turkey Point.

b. How (if at all) would sea level rise during the license term that is greater or more accelerated than assumed by FPL impact emergency planning (e.g., road accessibility)?

c. Have the Staff and FPL considered whether any design assumptions are vulnerable to a sea level rise greater or more accelerated than the rate assumed by FPL in its application? If so, discuss those assumptions and how potential impacts would be ameliorated or otherwise addressed.

d. Applicant: What process does FPL plan to use to ensure the safety of Units 6 and 7 if sea level rise exceeds the assumptions used in the application during the license term?

* * *

Response: a. The likelihood of a radiological incident requiring evacuation coincident with a local flooding event at Turkey Point is very remote, for the following reasons:

- The flooding design basis for Units 6 and 7 applied sufficient conservatism and margin as discussed in the response to question 14, and therefore is unlikely to be exceeded.
- The passive cooling of the AP1000 units will maintain core cooling for 72 hours even if a flooding event were to result in loss of AC power or cooling water.
- The FLEX measures provide additional capability to respond to and mitigate a beyond design basis flood.
- As discussed in the response to Question 13, the NRC's regulatory framework provides for licensee review of new external hazard information, including corrective action if sea level rise were to exceed the assumptions on which the flooding design basis of the new units is based.
- A radiological incident requiring evacuation coincident with a flooding event is remote in that the plant would shut down in advance if a hurricane approaches the plant.

b. Extreme conditions, including flooding, are considered in periodic evacuation time estimates, and are used to make appropriate adjustments to emergency plans (such as changes in evacuation routes) or recommendations during a radiological emergency (such as sheltering in place). Because evacuation time estimates must be updated periodically, pursuant 10 C.F.R. § 50.47(b)(10), and any sea level rise would occur gradually, updated evacuation time estimates can consider changes in potential flooding condition, and to the extent necessary, emergency plans would be adjusted to maintain their effectiveness as required by 10 C.F.R. § 50.54(q)(2).

c. As discussed in the response to question 14b, the analysis presented in FSAR Section 2.4.5 followed applicable NRC regulations and guidance in utilizing site-specific observation data and adopting sufficient margin to account for the limited length of data records, resulting in a design

basis PMSS elevation of 24.8 ft NAVD 88. The design plant grade elevation for Turkey Point Units 6 & 7 was selected as 26.0 ft NAVD 88 providing an additional margin of 1.2 feet allowing for additional time to take action.

d. In the event sea level rise exceeds the one foot sea level rise assumed in the application for Units 6 & 7, FPL would utilize the framework outlined in SECY-15-0137, that provides for licensee review of new hazard information in a variety of ways. In the event sea level rise exceeds the one foot estimate accounted for in the licensing basis for Units 6 & 7, FPL would utilize established plant procedures and regulatory guidance to either implement corrective action or reevaluate the flood hazard utilizing the plant corrective action program established under 10 C.F.R. Part 50, Appendix B, Criterion XVI, "Corrective Action," and/or operability determinations as described in NRC Regulatory Issue Summary 2005-20, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, 'Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions.'" For example, existing plant grade level doors could be replaced with watertight doors.

Question 17: Section 20.1 of the FSER states that following an initial 72-hour coping period, support is necessary to continue passive system cooling and that, in some cases, the support will be provided by installed ancillary equipment (RTNSS equipment). The FSER states that the installed ancillary equipment is capable of supporting passive system cooling for 3 to 7 days after the event.

Describe whether the ancillary (RTNSS) equipment referred to in Section 20 of the FSER will be contained in structures that are protected from all natural hazards for the licensing and design basis of Turkey Point Units 6 and 7. If not, provide an explanation as to why this equipment does not need to be protected from such external events.

Is the onsite equipment for mitigating the effects of 10 C.F.R. § 50.54(hh)(2) stored in structures designed to withstand all natural hazards for Turkey Point Units 6 and 7? If not, provide an explanation as to why this equipment does not need to be protected from such external events.

Response:

Ancillary Equipment

In SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs," the NRC set forth policy regarding those systems in passive light water reactors that are designated nonsafety-related, but may have a significant role in accident and consequence mitigation.

Westinghouse resolved the RTNSS policy issue for the AP1000 Design Certification through its submittal of WCAP-15985. The NRC documented its review and approval of the RTNSS policy issue for the AP1000 in Chapter 22 of NUREG-1793. The information presented here in response to the question is taken largely from WCAP-15985.

The nonsafety-related active systems in the AP1000 plant provide defense-in-depth functions and supplement the capability of the safety-related passive systems. The NRC and industry have defined a process to evaluate the importance of the nonsafety-related systems and for maintaining appropriate regulatory oversight, as necessary. This process of identifying regulatory oversight on nonsafety-related systems is referred to as RTNSS.

Standard Review Plan ("SRP") Section 19.3 indicates that non-safety related SSCs required for between 72 hours and 7 days after a design basis event ("DBE") (referred to as RTNSS-B) must be designed for a safe shutdown earthquake ("SSE"), for hurricane and tornado winds and missiles, and for flooding to ensure their availability. From SRP Section19.3:

- "Reviewers responsible for review of … RTNSS "B" SSCs …will reach a finding regarding the ability of RTNSS "B" SSCs to withstand seismic events as severe as the design basis [SSE]."
- "The staff will verify that the applicant has met the following acceptance criteria: (1) RTNSS "B" SSCs have been analyzed and designed to withstand the effects of high

winds produced in hurricanes and tornadoes, including the effects of sustained winds, gusts, and associated wind-borne missiles…"

- "The staff will verify that the applicant has met the following acceptance criterion: RTNSS "B" SSCs and supporting equipment will be protected from floods…"

In order to provide margin for events that may challenge the ability to secure offsite transportable equipment within 72 hours, certain nonsafety-related onsite equipment should be available. The needed available RTNSS "B" SSCs and the missions for this equipment are discussed below:

- Ancillary diesel generator and ancillary diesel generator fuel oil storage tank - The ancillary diesel generators provide power to support post-72 hour operation following at-power and shutdown events. The ancillary diesel generators provide power for post-accident monitoring, the Passive Containment Cooling System ("PCS") water makeup (recirculation pumps), Main Control Room ("MCR") cooling (MCR ancillary fans), and instrumentation room cooling (instrumentation room ancillary fans). A description of the ancillary diesel generators is included in DCD Section 8.3.1. The AP1000 Design Reliability Assurance Program includes the ancillary diesel generators in DCD Table 17.4-1. ITAACs are provided in Section 2.6.1.

  The ancillary diesel generator and ancillary diesel generator fuel oil storage tank should be available following seismic, flooding, and high wind events. Therefore, the supports for this equipment are Seismic Category II as shown in DCD Table 3.2-3. In addition, this equipment is located in a portion of the Annex Building that is a Seismic Category II structure. Features of this structure that protect the function of this equipment are designed and analyzed for Category 5 hurricanes, including the effects of sustained winds, maximum gusts, and associated wind-borne missiles (DCD Section 8.3.1). Additionally, these SSCs are located above the 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events, and is above the PMP for the site (DCD Sections 2.4 and 3.4).

- PCS recirculation pump and ancillary PCS water storage tank - The PCS recirculation pumps provide the capability to transfer water from the PCS ancillary water storage tank to the PCS water storage tank and the spent fuel pool ("SFP") to support post-72-hour operation of passive safety-related SSCs. This water transfer capability is required when the decay heat of the core is sufficient to require PCS water evaporative cooling. The safety-related PCS water storage tank and the spent fuel pit provide at least 72 hours of

water supply. The ancillary water storage tank provides additional water to support PCS and SFP operation from 3 days to 7 days.

Makeup to the PCS water supply and SFP post-72 hours is provided by the PCS recirculation pumps taking suction from the PCS ancillary water storage tank. A description of this arrangement is provided in DCD Sections 6.2.2 and 9.1.3. Inspections, tests, analyses, and acceptance criteria ("ITAACs") are provided in DCD Tier 1 Sections 2.2.2 and 2.3.7.

The PCS recirculation pump and ancillary PCS water storage tank should be available following seismic, flooding, and high wind events. Therefore, the supports for this equipment are Seismic Category II as shown in DCD Table 3.2-3. The PCS recirculation pump is located within the Auxiliary Building, which is a Seismic Category I structure. In addition, the ancillary water storage tank (which is located outdoors) is designed and analyzed for Seismic Category II criteria and for Category 5 hurricanes, including the effects of sustained winds, maximum gusts, and associated wind-borne missiles (DCD Section 6.2.2). Additionally, these SSCs are located above the 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events, and is above the PMP for the site (DCD Sections 2.4 and 3.4).

- Main control room ancillary fan - The MCR ancillary room fans provide cooling of the MCR to support post-72 hour MCR habitability during all modes of plant operation. MCR cooling post-72 hours is provided by opening doors and using the MCR ancillary fans. A description of this cooling capability is provided in DCD Section 9.4.1. ITAACs are provided in DCD Section 2.7.1.

  The MCR ancillary fan should be available following seismic, flooding, and high wind events. Therefore, the supports for this equipment are Seismic Category II as shown in DCD Table 3.2-3. In addition, this equipment is located in the auxiliary building, which is a Seismic Category I structure. This provides more than adequate protection for Seismic Category II criteria and for Category 5 hurricanes, including the effects of sustained winds, maximum gusts, and associated wind-borne missiles (DCD Section 9.4.1). Additionally, these SSCs are located above the 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events, and is above the PMP for the site (DCD Sections 2.4 and 3.4).

- Instrumentation room ancillary fan - The instrumentation room fans provide cooling of the Class 1E instrumentation rooms to support post-72 hour post-accident monitoring during all modes of plant operation.

  Instrumentation room cooling post-72 hours is provided by opening doors and using the instrumentation room ancillary fans. A description of this cooling capability is provided in DCD Section 9.4.1. ITAACs are provided in DCD Section 2.7.1.

> The instrumentation room ancillary fan should be available following seismic, flooding, and high wind events. Therefore, the supports for this equipment are Seismic Category II as shown in DCD Table 3.2-3. In addition, this equipment is located in the auxiliary building, which is a Seismic Category I structure. This provides more than adequate protection for Seismic Category II criteria and for Category 5 hurricanes, including the effects of sustained winds, maximum gusts, and associated wind-borne missiles (DCD Section 9.4.1). Additionally, these SSCs are located above the 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events, and is above the PMP for the site (DCD Sections 2.4 and 3.4).

The above listed RTNSS "B" SSCs are located above the design plant elevation 26 ft NAVD 88, the AP1000 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events evaluated, and is above the PMSS elevation of 24.8 ft NAVD 88, the DBF for the site.

Loss of Large Area ("LOLA") Mitigation

The onsite equipment required to comply with 10 C.F.R. § 50.54(hh)(2) for the AP1000 PWR is detailed in APP-GW-GLC-010, which is the demonstration of the AP1000 PWR's compliance with Nuclear Energy Institute ("NEI") 06-12.

If the Nuclear Island (i.e. the Shield Building and the Auxiliary Building) are unaffected by the LOLA event, there would be no challenge to core cooling. These structures are Seismic Category I (DCD Section 3.7.2) and provide adequate protection against Category 5 hurricanes, including the effects of sustained winds, maximum gusts, and associated windborne missiles (DCD Section 3.3). Additionally, these SSCs are located above the 100'-0" elevation of the plant, which precludes impact from all design basis external flooding events, and is above the probable maximum precipitation (PMP) for the site (DCD Sections 2.4 and 3.4).

The AP1000 design provides the capability to maintain the plant in a safe condition using only the passive systems located in the Nuclear Island structures. The passive safety systems do not

require AC electrical power, cooling water or fuel from onsite or offsite sources. If the Nuclear Island is affected by a LOLA event, appropriate defenses are available to maintain core cooling. These primary and backup means are contained within the Nuclear Island with appropriate separation as necessary.

Question 18: In FSER § 11.2.4 and in RAI 6985, Question 11.02- 6, the Staff stated that there is a need to ensure that NRC and Florida Department of Environmental Protection requirements, when issued, do not conflict or impose duplicative requirements, such as for radiological monitoring, periodic inspections and testing in confirming the mechanical integrity of the injection and monitoring wells, and requirements for well abandonment and closure at the end of their operational cycles or in the event of well failures and migration of radioactive materials into the Upper Floridan Aquifer. The Staff also noted the potential need for the inclusion of specific license conditions on the design features of injection and monitoring wells whose construction would not be completed before the issuance of the combined licenses.

* * *

Staff and Applicant:

d. Are additional radiological monitoring and recordkeeping necessary to ensure that cumulative radionuclide concentrations are not exceeded over the lifetime of the plant?

e. Will FPL implement the NEI ground water protection initiative as detailed in NEI-07-07, "Industry Ground Water Protection Initiative – Final Guidance Document," for Turkey Point Units 6 and 7, and will that guidance be applicable to the deep well injection system?

Response: d. As indicated in FSAR Section 11.2.1.2.5.1, the activity concentration of the liquid effluent will be controlled to ensure compliance with the effluent concentration limits ("ECLs") of 10 C.F.R. Part 20, Appendix B. This will be accomplished by maintaining a flow rate at the blowdown sump discharge that provides sufficient dilution to meet the ECLs. With liquid effluent anticipated to be released in batches, the required dilution factor will be calculated and applied before any release. Given this commitment to dilution flow commensurate with the amount of activity released, there will be no accumulation of activity over time at the discharge point and the associated concentration will not increase over plant life. Although the total activity in the Boulder Zone will increase over time, the Boulder Zone is an open system in

which injected radionuclides are subject to transport, mixing, and radioactive decay. As such, underground concentrations cannot exceed those at the discharge point, thereby ensuring compliance with the ECLs at all points downstream of the underground injection point.

The nearest member of the public that could be exposed to liquid effluent from Turkey Point Units 6 and 7 is a private land parcel located 2.2 miles away. FSAR Table 11.2-203 shows the peak activity concentrations at a well at this location based on 61 years of continual effluent injection from the two units into the groundwater. Not only are the well concentrations within the 10 C.F.R. Part 20 ECLs, but the resulting doses, as shown in FSAR Table 11.2-209, meet the design objectives of 10 C.F.R. Part 50, Appendix I.

As the concentrations and doses meet regulatory limits over the life of the plant, no additional radiological monitoring and recordkeeping are necessary.

e. FPL has committed to implementing a groundwater monitoring program that is consistent with RG 4.21 and the NEI groundwater protection initiative, as discussed in FSAR Section 2.4.12.4, and is applicable to the deep well injection system. This program consists of geochemical sampling and analysis of the Biscayne and Floridan aquifers, as well as operational accident monitoring in downgradient observation wells. To meet the Florida Department of Environmental Protection ("FDEP") requirements for an underground injection control permit, sampling will be performed in the site water supply wells, selected observation wells, and dual-zone monitoring wells, with the findings provided in monthly reports. In order to detect any vertical migration of injected fluids into the overlying Upper Floridan and Biscayne aquifers, the dual-zone monitor wells will be located less than 150 feet from the injection wells, with the upper zone monitors just above or at the base of the underground source of drinking water ("USDW") and the lower zone monitors below the base of the USDW and just above the primary

confining unit. It is also expected that mechanical integrity tests of the injection wells will be performed every five years. Furthermore, safeguards such as emergency cleanup procedures will be implemented to minimize potential adverse impacts to groundwater.

Question 20:

a. Provide any updates or changes to the Staff's list of authorizations, permits, and certifications since the publication of the FEIS. Include an update on the status of the State's Conditions of Certification, as SECY-16-0136 noted that a Florida state court's April 20, 2016, decision, in which it ruled that the Florida Siting Board should have considered whether to require FPL to bury a portion of the transmission lines and that the record was inadequate to support certain mitigation measures associated with transmission lines in the East Everglades, has become final.

b. SECY-16-0136 further states that the Staff "has considered these circumstances and determined that even if the Conditions of Certification are revisited on remand, it remains reasonable to expect that Conditions of Certification similar to or no less effective than those originally issued will be in place before construction and operation of the proposed units begins." Explain this assumption in more detail, and describe the Staff's basis for continuing to rely on the imposition of these conditions in evaluating environmental impacts.

Response: a. FEIS Table H-1 provides a list of permits and authorizations required for Units 6 & 7. Relevant changes and updates include the following:

- The U.S. Army Corps of Engineers has issued the section 408 permit for the non-transmission line linear facilities (*e.g.* reclaimed water pipeline) portion of the project. FPL expects to submit its section 408 application for the transmission line portion of the project in the fall of 2017.
- The current FAA obstruction permits for the Units 6 & 7 containment buildings have been extended until 2018.
- Table H-1 also includes several permits that are held by FPL for the existing Turkey Point units that will also apply to Units 6 & 7 and that have been updated, amended, or renewed as necessary to support current operations (*e.g.* Industrial Waste Annual Operations Permit, Marine Facilities Annual Operations Permit).

As to the State's Conditions of Certification ("COCs"), on May 19, 2014, the FDEP issued a Final Order approving the issuance of COCs (PA 03-45A3) to FPL for Turkey Point Units 6 & 7 under the Power Plant Siting Act, ss. 403.501-.518, Florida Statutes. Subsequently, the portion of the Final Order that certified the transmission line corridors was appealed to a state appellate

court, partially reversed, and remanded to the Florida Siting Board. *Miami-Dade County. v. Florida Power & Light Co.*, 208 So. 3d 111 (Fla. 3d Dist. Ct. App. 2016). The state appellate court did not reverse the Florida Siting Board's Final Order of Certification for the Project in its entirety. The Court reversed and remanded the certification as to the East Preferred transmission corridor ("EPC") and the West Preferred transmission corridor ("WPC") "because the Siting Board failed to apply the City of Miami's applicable land development regulations, the Siting Board erroneously thought it did not have the power to require FPL to install the lines underground at FPL's expense, and the Siting Board erred in interpreting the County's East Everglades Ordinance as a zoning regulation, rather than an environmental one." The decision does not affect the certification for the plant and non-transmission line portions of the Turkey Point Units 6 & 7 project or the West Consensus Corridor ("WCC"), and therefore, does not impact those certifications. Because the NRC does not license the siting, construction, and operation of transmission lines, all aspects of the project subject to NRC jurisdiction remain certified by the State of Florida. *See* 10 C.F.R. § 51.4; 72 Fed. Reg. 57,416 (Oct. 9, 2007) (limiting the definition of "construction" to those activities that fall within the NRC's regulatory authority).

b. The COCs for the EPC and WPC were reversed and remanded following an appeal by local government parties opposing the certification of the EPC and WPC transmission lines. FPL has agreed to the existing COCs as issued by the Siting Board in 2014. For the reasons explained above, FPL does not anticipate that the Siting Board will address the plant and non-transmission line or WCC Conditions on remand. However, with respect to the EPC and WPC, if revised on remand, FPL does not anticipate that the COCs imposed by the Siting Board in 2014 will become less restrictive as the Siting Board considers additional local government requirements

and underground construction. In other words, if revised on remand, any changes to the Conditions would likely only serve to further reduce any potential impacts of the transmission lines. Therefore, it is appropriate for the NRC to continue to rely on the COCs imposed in 2014 when evaluating potential environmental impacts.

Question 21: Under the Florida State Conditions of Certification, use of the Radial Collector Wells (RCWs) would be limited to a maximum of 60 days per year. The U.S. Geological Survey (USGS) examined a 90-day pumping scenario for the RCWs.

a. Staff and Applicant: Does either the Staff or FPL envision using the RCWs for 90 days?

* * *

Response: a. The FDEP, COCs, Section B-Specific Condition, VI-South Florida Water Management District ("SFWMD"), C-Water Supply, 2-Secondary Source, b.i (3), states "Licensee shall be authorized to operate the RCW system up to sixty (60) days and withdraw a maximum volume of 7,465 MG in any consecutive twelve (12) month period [equivalent to sixty (60) days at full capacity of 124.416 millions of gallons per day]."

FPL does not anticipate the operation of the RCWs for a period of 60 days in any consecutive twelve (12) month period withdrawal.

In the unlikely event that the 60 day RCW operational period may need to be exceeded for plant operational considerations, COC Section B, VI, C, 3.b, Emergency Withdrawals, allows exceeding the authorized withdrawals with prior approval from the SFWMD for less than 90 days in duration without modification of the COCs.

Question 26: FPL has committed to undertake wetland mitigation projects, including the Northwest Restoration Project, which entails rehabilitating the vegetation on 238 acres, three years of monitoring, and preservation of the acreage under a conservation easement, and the SW 320th Street Restoration Project. Describe the SW 320th Street Restoration Project, including FPL commitments with respect to: activities, duration of activities, and long-term preservation of land.

Response: As part of the Florida Power Plant Siting Act process and the Clean Water Act Section 404 permitting process, FPL has committed to several mitigation projects. The SW 320th Street Restoration Site, which is approximately 4 miles northwest of Units 6 & 7, involves wetland enhancement and preservation encompassing 574 acres located on the north and south of the C-103 Canal and extending east toward SFWMD-owned parcels adjacent to the L-31E Canal and the Biscayne National Park ("BNP").[2]

Restoration and enhancement will be achieved through the removal of exotic species of vegetation, removal of ditches to restore natural topography and enhance hydrology, supplemental planting of desirable native wetland vegetation, and preservation through a conservation easement. Monitoring will be conducted to demonstrate compliance with success criteria (nuisance/exotic species ≤5% of the total vegetative cover of the parcel; desirable wetland species ≥95% cover). Final success determination shall not be made less than two years from the completion of the initial mitigation measures and until the success criteria have been continuously met for a period of at least one growing season without intervention in the removal of undesirable vegetation.

[2] A portion (less than 150 acres) of this site may be transferred to SFWMD as part of an unrelated mitigation project. If this transfer occurs, FPL would modify the mitigation plans it submitted to the US Army Corps of Engineers and the Florida Department of Environmental Protection to fully account for the necessary mitigation to satisfy state and federal wetland mitigation requirements using the compensatory mitigation accounting procedures described in the FEIS.

Following completion of wetland restoration, lands within the SW 320th Street Restoration Site are proposed to be transferred to the public trust, under the management of the SFWMD, BNP, MDC, FDEP or other qualified entity, to further regional wetland conservation efforts within the Biscayne Bay Coastal Wetlands ("BBCW") area. The juxtaposition of the SW 320th Street Restoration Site adjacent to lands previously conveyed from FPL to SFWMD adjacent to the L-31E Canal and the BNP will result in a significant increase in the overall acreage of conservation lands within the BBCW area. These lands will be restored, preserved, and protected from future development in the area.

Question 28: The Staff concluded that "the overall impacts of building activities on the economy in the socioeconomic impact area would be SMALL for the 50 mi region and the economic impact area, with the exception of a MODERATE, adverse impact on traffic in the Homestead and Florida City area, based upon FPL's identified mitigation strategies. The review team determined there would be a LARGE, adverse impact on traffic if the identified mitigation strategies were not implemented." FEIS at 4-119.

How does FPL plan to address the identified mitigation measures to minimize and mitigate the impacts on traffic?

Response: Measures to minimize impacts on traffic include a number of road improvements to accommodate the increased traffic expected during construction and operations. Based on the results of the traffic study conducted in 2009, FPL will construct additional lanes and intersection improvements, as well as incorporate new signalization or police control to maintain a minimum level of service designation of D, corresponding to flow at 90% capacity. Additional measures to mitigate impacts on traffic include staggering the timing of the construction workforce and outage workforce arrival/departure, adjusting the construction schedule to avoid congestion during events at the Homestead-Miami Speedway, and use of off-site parking currently utilized during outages, with van service and carpooling to transport workers to the construction site.

Question 29: Discuss the potential for cumulative impacts relating to saltwater intrusion and the hypersaline plume underneath the Turkey Point site, as a result of the use of radial collector wells for Units 6 and 7 in addition to the existing use of the cooling canals for Units 3 and 4.

Response: Saltwater intrusion in southeast Florida is a consequence of a wide range of natural and anthropogenic factors resulting in the development of a landward hydraulic gradient in the saline portion of the surficial aquifer. Causes include natural saltwater intrusion from Biscayne Bay, compounded by historic water management decisions that maintained artificially low groundwater periods to support agriculture and development activities in the region over the past century. Operation of the RCWs will not contribute to this effect based on groundwater modeling conducted by the USGS as summarized in Section G.3.2.2, Appendix G of the FEIS. Model results predict a potentiometric surface with a slight depression along the coast near Turkey Point that surrounds the RCWs and extends laterally for several hundred meters. During the operation of the RCW system, the prevailing landward hydraulic gradient in the immediate vicinity of the Turkey Point peninsula will be reversed by the localized infiltration into the RCW caissons, reducing the potential for saltwater intrusion at this location.

The RCWs withdraw infiltrating marine water from a limited drawdown area surrounding the geographic peninsula identified as Turkey Point at a depth of approximately 25 to 40 feet below the bottom of Biscayne Bay. The groundwater modeling results shows limited interaction to the west of the RCWs, and it is conservatively estimated that about 2.2% of the water entering the RCW caissons comes from landward sources, when operating, as described below. As a further conservative step, use of the RCWs is limited by the FDEP COCs, Section B-Specific Condition, VI- SFWMD, C-Water Supply, 2-Secondary Source, b.i (3), which limits operation of the RCWs to up to 60 days in any consecutive 12-month period.

The location of the RCWs plays an important role in how they might affect saltwater intrusion

and the hypersaline plume when they are placed into operation. As shown in Figure 2CC-242 in FSAR Section 2.4.12, Appendix 2CC, the RCWs are located on the Turkey Point peninsula, on the northeast and seaward side of both the Turkey Point Units 6 and 7 site and the Industrial Wastewater Facility ("IWF"). Because of their location, the majority (97.8%) of water supplying the RCWs originates from underneath Biscayne Bay, while a small fraction (2.2%) originates from inland sources, predominantly the IWF, based on groundwater modeling results reported in FSAR Section 2.4.12, Appendix 2CC. This suggests that RCWs exert a small influence on the groundwater underlying the Turkey Point site. Nevertheless, RCWs, when operated, would tend to arrest saltwater intrusion in the landward direction and induce transport of the hypersaline plume in the seaward direction with the net effect being a freshening (improvement) of the groundwater underlying the Turkey Point site. Groundwater modeling studies commissioned by the NRC and conducted by the USGS provide confirmatory evidence of this conclusion, with their model predicting salinity decreases in the vicinity of the Turkey Point site, as illustrated in FEIS Figure G-6. FEIS Section G.3.2.2 indicates that the predicted change, with the inclusion of RCW pumping, likely results from the withdrawal of a portion of the hypersaline plume from the groundwater system.

Another consideration in assessing the cumulative impacts relating to saltwater intrusion and the hypersaline plume is the addition of water to the IWF for freshening as initially required by the Administrative Order issued by the FDEP in 2014 and subsequently in the FDEP's 2016 Consent Order. As discussed in FEIS Section 7.2.2.2, this would increase the water-surface elevation in the IWF and increase piezometric heads in the groundwater beneath the IWF. Thus, any eastward groundwater movement from inland would tend to be diverted to the north around the north end of the IWF and to the south away from the south end of the IWF. The fraction of the

water that enters the RCW laterals from sources other than Biscayne Bay would likely increase. The increased fraction would be increasingly from the IWF-induced inflow. Because the target for the freshening is an average annual concentration of 34 psu (similar to Biscayne Bay water) and because the RCW derive a small fraction of their water from the IWF, the change in salinity in the water recovered in the RCW is not expected to change noticeably. Results of modeling studies reported in FEIS Section G.3.2.3, which account for the addition of water to the IWF for freshening, predict minor localized alterations in salinity distribution due to RCW operation; these results suggest that the operation of the RCWs is unlikely to interfere with any of the mitigation measures proposed to address the conditions in the IWF or the underlying Biscayne aquifer.

Operation of the RCWs is not expected to affect the salinity of Biscayne Bay. Section G.3.2.3 of the FEIS indicates that while numerical model analysis predicts a slight movement of some hypersaline water as a result of the operation of the RCWs, there is no plausible upward impelling force that would result in hypersalinity moving into the Bay as a result of RCW operation.

Based on their intermittent use and location, the cumulative impacts of RCW operation relating to saltwater intrusion and the hypersaline plume underlying the Turkey Point site are expected to be small. Any impacts realized are expected to result in a freshening of the groundwater and an improvement in groundwater quality based on modeling studies described in the FEIS as cited above. In addition, there is no mechanism that would cause hypersalinity to move into Biscayne Bay as a result of RCW operation.

Question 30: FPL's primary source of cooling water for the proposed Turkey Point Units 6 and 7 would be reclaimed water from the Miami-Dade Water and Sewer Department South District Wastewater Treatment Plant. In comments to the Commission, the City of South Miami states that "Miami-Dade County has recognized the high likelihood of completely reconstructing the county's waste water systems in 30 years."

a. Have the Staff and FPL considered the possible impacts of reconstruction of the Miami-Dade waste water system on the ability to use the system as a source of cooling water during the license term?

b. If reconstruction of the system were to occur, how would it impact construction and/or operation of the proposed new units?

Response: a. The reclaimed wastewater that is provided to Turkey Point Units 6 and 7 comes from the Miami-Dade Water and Sewer Department ("MDWASD") South District Plant. If Miami-Dade County were to completely reconstruct its wastewater system, the Water and Sewer Department would still have to operate a replacement facility for the duration of the reconstruction to continue to process the County's wastewater. A Joint Participation Agreement between FPL and Miami-Dade County executed in July 2010 set forth FPL's and MDWASD's intention to enter into a reclaimed Water Service Agreement for FPL's access up to 90 million gallons per day. This contractual relationship, coupled with MDWASD's ongoing need to dispose of wastewater during any future reconstruction activities, would ensure continuous supply. Therefore, reclaimed water should remain available to Units 6 & 7.

b. During construction of Units 6 & 7 there would be no impact since the water is not required for construction activities.

During operation, reconstruction is not expected to impact the performance of Turkey Point Units 6 & 7 as FPL anticipates no significant interruption in the supply of wastewater to the plant. MDWASD will still need to dispose of its wastewater, regardless of reconstruction, and FPL anticipates that alternative capacity will be in place to handle the continuous flow of wastewater. For instance, force main repairs and replacements can be scheduled in a manner that

would allow for the continued serviceability of the system as a whole. In the event of a limited interruption in supply, saltwater can be used instead from the Turkey Point radial collector wells.

Question 32: In its comments, NPS states that "FPL applied different criteria to screening the non-Turkey Point sites than it used to screen the existing Turkey Point site," and that the presence of an existing, operating nuclear power plant at the site contributed to the favorable ranking of the Turkey Point site. NPS Comments on FEIS and FSER at 3. NPS asserts that the siting analysis overlooked the impact of supporting infrastructure and failed to consider a number of other factors. *Id.*

a. In terms of site selection and alternative site analysis, was consideration given to the current operation of Turkey Point Units 3 and 4 and the hypersaline plume underneath the cooling canal system? If so, discuss. If not, why not?

b. How did the siting analysis consider the impacts of supporting infrastructure, such as FPL's proposed Western Transmission Corridor, and other factors identified on page 3 of the NPS Comments on the FEIS and FSER?

Response: The same criteria were applied to selection, evaluation and screening of all sites considered in the site selection process. Turkey Point and St. Lucie were carried forward for detailed analysis as primary sites (FEIS at 9.3.1), because they are existing nuclear power plant sites within the ROI. No different criteria were used to evaluate Turkey Point or St. Lucie.

a. Consideration of the current operation of Turkey Point Units 3 and 4 was taken into account in the siting process in two ways:

1. Advantages of existing nuclear power plant sites were taken into account in comparing Turkey Point with other sites under consideration, and

2. Cumulative impacts of the existing units and the proposed Turkey Point Units 6 & 7 were taken into account in the environmental comparison of proposed and alternative sites (FEIS Sections 7.0 and 9.3.6).

The hypersaline plume underneath the existing cooling canal system was not taken into account in the alternative site selection process identifying the candidate sites and proposed site, because the cooling water supply system proposed for Units 6 & 7 was not perceived to impact the plume and therefore the plume was not relevant to evaluating the relative suitability of the sites under consideration. The potential interaction of the RCW operation and hypersaline plume was

carefully analyzed in the Environmental Report ("ER") and FEIS, which confirmed the absence of a significant cumulative impact; and the final comparison of the proposed action and the alternative sites took into account cumulative effects, including the assessment of cumulative effects in Chapter 7 of the FEIS, as reflected in Section 9.3.6 and Table 9-28 of the FEIS.

b. Support infrastructure, including access for cooling water, transmission, rail, road and barge access was taken into account in the 34 weighted screening criteria used to identify candidate sites (FEIS Section 9.3.1.4) and in the environmental comparison of proposed and alternative sites (FEIS Section 9.3.6).

Question 34: The Staff concludes that none of the viable alternatives is environmentally preferable to building a new baseload nuclear power generation plant at the Turkey Point site. As noted by the NPS, however, and as discussed in the FEIS, the Turkey Point site was given credit in the analysis for being an existing site. The FEIS notes that when screening for potential sites, Turkey Point ranked below the top eight sites according to the screening criteria. FEIS at 9-39 to 9-40. Explain in more detail how credit for being an existing site was factored into the Alternative Siting Analysis.

As part of that discussion, explain how FPL's exclusionary criteria were or were not applied to the Turkey Point site. FEIS at 9-35. For example, the FEIS states that one of the exclusionary criteria is for the presence of critical habitat, yet the Turkey Point site has critical habitat for the American crocodile.

Response: The only step in the site selection process where the potential advantages of Turkey Point as an existing nuclear power plant site were considered was the decision to carry it forward for more detailed analysis, following evaluation of potential sites using the 9 weighted screening criteria (FEIS at 9-39). This is consistent with Section 9.3 of the ESRP, which recognizes the potential value of including existing nuclear power plant sites that were "previously found acceptable on the basis of a National Environmental Policy Act (NEPA) review, or have [been] demonstrated to be environmentally acceptable on the basis of operating experience, or allocated to an applicant by a state government from a list of state approved power plant sites." Turkey Point subsequently ranked highest in the 34-criterion evaluation used in selection of candidate

sites (FEIS Section 9.3.1.4) and in criteria used for selection of the proposed site (FEIS Section 9.3.1.5). The determination that there is no environmentally preferable alternative (FEIS Section 9.3.6) was based on a detailed comparison of environmental impacts associated with development of two new nuclear power units at the proposed and alternative sites, taking into account current site conditions. No "credit for being an existing site" was applied in this analysis.

Exclusionary criteria were applied on an areal basis across the entire Region of Interest ("ROI") (FEIS Section 9.3.1.2), using mapped information available from the U.S. Fish & Wildlife service. This screening was conducted across the entire ROI, without regard to the location of existing sites. Although some portions of the Turkey Point site lie within mapped American crocodile habitat, the site was not excluded because it is a previously disturbed site and is controlled by an existing crocodile monitoring plan being managed by FPL (FEIS at 2-148).

Question 35: FPL appears to have excluded candidate sites that were near census blocks where population density was greater than 300 persons/mi^2 and critical habitat for threatened or endangered species. FEIS at 9-35. If the 300 persons/mi^2 and critical habitat criteria were not used, does any available information suggest that another candidate site would be obviously superior to the Turkey Point site?

Response: As stated at ER Table 9.3-1, areas within census blocks with population density >300 persons per square mile were excluded from further consideration in the regional screening process. Areas near such census blocks were not excluded. No available information suggests that sites within areas excluded for either or both population density and critical habitat would be obviously superior to the Turkey Point site.

Question 36: What actions would be required under the Farmland Protection Policy Act if FPL did decide to proceed with a site in the vicinity of "unique farmland"?

Response: No actions would be required under the Farmland Protection Policy Act ("FPPA"). The FPPA does not authorize the Federal Government in any way to regulate the use of private or non-Federal land, or in any way affect the property rights of owners of such land. 7 U.S.C. § 4208(a). In addition, as the NRC has previously acknowledged, while the NRC considers the importance of soils in its environmental impact statements, the FPPA does not apply to the NRC licensing of nuclear power plants located on private or non-Federal lands. *See* NUREG-1437, Rev. 1, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Vol. 2 at A-50. Under the implementing regulations of the U.S. Department of Agriculture, which has primary responsibility for implementation of the Federal policy with respect to farmland, the term "Federal Program" [subject to the requirements of the FPPA] does not include Federal permitting, licensing, or rate approval for activities on private or non-Federal lands. 7 C.F.R. § 658.2(c)(1)(i).

Question 37: The EIS states that for the Martin site "FPL acknowledged that its solar facility used available lands and that additional new land would have to be acquired in order to develop the new units." How much additional land would FPL need to acquire? Would these additional lands share similar characteristics to the land at the Martin site?

Response: A minimum of approximately 2800 acres would have to be acquired at the Martin site. ER Section 9.3.3, Page 9.3-21 states:

> "With respect to the 11,300-acre Martin site, which is owned by FPL, the existing 6500-acre reservoir would not be available for two new nuclear units, and a new 3000-acre reservoir would need to be constructed, such that total onsite land requirements at the Martin site would be similar to that required at the two greenfield sites (approximately 3360 acres). Taking into account existing uses on the Martin site – including the existing power plant, cooling pond, the recently constructed solar thermal plant, and other protected areas that are unavailable for development, the amount of remaining land available for development is approximately 568 acres. As a result, FPL would need to acquire approximately 2800 acres of land to develop two nuclear units at this site."

Additional land that would be acquired at the Martin site would be similar to the undisturbed portions of the existing site. (Much of the land at the Martin site has been previously disturbed.) As ER Section 9.3.3.2.1 states: "...agricultural area to be acquired for reservoir construction, consisting primarily of citrus groves..."

Question 38: Pages 9-96 and 9-141 of the FEIS state that the "Martin site is an 11,300 ac area," but page 9-125 suggests that the site is actually "22,300 ac." Clarify this discrepancy.

Response: This appears to be a typographical error; the correct size for the Martin site is approximately 11,300 acres; the ER refers to Martin as an 11,300 acre site in several places, e.g., at ER Sections 9.3.3, 9.3.3.2, and 9.3.3.2.6.6.

Question 39: Although FPL "proposed building an additional 3000 ac cooling-water storage reservoir" for the Glades, Martin, and Okeechobee sites, the Staff determined that "cooling water could be obtained from groundwater beneath [these sites] and that the cooling-water storage reservoir was unnecessary." FEIS at 9-64, 9-118, 9-167. Does FPL agree? The groundwater is generally not used because it is brackish. What challenges would FPL face in using such groundwater during operation?

Response: Any site chosen for the construction of nuclear power plants would need to have a reliable source of cooling water. Due to restrictions on new uses of surface water associated with Lake Okeechobee and the surface waters connected to Lake Okeechobee, FPL identified alternative cooling water supply scenarios for its inland alternative sites in a series of responses to NRC Staff requests for additional information in 2013. In describing these scenarios, FPL explained that cooling water could be obtained from multiple groundwater sources, but a storage reservoir would be necessary to facilitate a reliable cooling water source of appropriate quality and quantity for baseload generation, including backup for drought conditions. FPL engaged in meetings and discussions with the SFWMD, and identified several water supply scenarios, relying upon combinations of groundwater from two aquifers, surface water cropping during the wet season, storage reservoirs, and re-allocation of existing agricultural water use permits.

There are periods (during wet seasons) when large quantities of water are released from Lake Okeechobee to maintain regulated levels. This greater volume of water flowing through the surface water system can alter the salinity and chemical balance of some ecosystems and habitats receiving this water. This released water is ultimately lost to the Atlantic Ocean or the Gulf of Mexico. Cropping excess surface waters during wet periods can provide the project with needed cooling water while helping to avert estuarine ecosystem and habitat instabilities brought about by an otherwise unnatural and excessive flow of water. Because wet season high-flows only occur during a fraction of the year (estimated annual average duration of 2 months), capture and storage of these waters would require a large storage reservoir. For this reason, the conceptual plant layouts prepared for the inland alternative sites have included a reservoir approximately 3,000 acres in size and FPL maintains that the reservoirs would be appropriate to ensure water source reliability.

Ultimately, FPL identified a scenario that utilizes maximal surface water cropping with a reservoir as well as the use of groundwater from the Avon Park Producing Zone ("APPZ") within the Floridan aquifer as a backup source. The APPZ is a highly productive aquifer but it is not heavily utilized due to its higher TDS concentrations (approximately 10,000 mg/L). Contrary to coastal sites, inland sites that utilize water with high TDS can have adverse impacts to surrounding water quality and vegetative communities resulting from cooling tower drift, necessitating reverse osmosis ("RO") or other treatment prior to use. Treatment of the APPZ source water would be expected to result in reduced adverse cooling tower drift effects on sensitive plant and animal communities in the area surrounding each inland site. This RO facility would need to be one of the largest such facilities in the state.

As the FEIS acknowledged on page 9-43, there is significant uncertainty in relying solely on

water from the APPZ. For this reason, FPL concluded that such a source should be coupled with a surface water cropping system supplemented by a reservoir.

Question 41: For the Glades and Okeechobee sites FPL proposes to build 3,000 ac cooling reservoirs, but both of these sites are listed as 3,000 ac in size. FEIS at 9-44, 9-148. Would FPL need to acquire additional land for these sites if they were selected?

Response: As reflected in the ER, FPL used a site size of 3360 acres in the site selection and evaluation of these sites. ER Section 9.3.3 states: "Based on conceptual site layouts developed for each alterative site, FPL estimated that approximately 3360 acres of land acquisition would be required at both the Glades and Okeechobee greenfield sites for the onsite plant components (facility and cooling water storage reservoir)." ER at 9.3-21. FPL would not need to acquire acreage beyond the 3,360 acres used in the ER evaluations for the Glades and Okeechobee sites. The references to 3,000 acres in the FEIS at 9-44 and 9-148 appear to be approximate values.

Question 47: In its letter to the Staff regarding consultation pursuant to Section 7 of the Endangered Species Act, the National Marine Fisheries Service (NMFS) assumed the project would be carried out under certain conditions. With respect to the following three issues, discuss the license conditions or other mechanisms (for example, inclusion of a condition in a different federal permit) that require FPL to adhere to these assumptions:

a. Implementation of NMFS's Sea Turtle and Smalltooth Sawfish Construction Guidelines.

b. Use of turbidity curtains during dredging to contain any dredging related suspended sediments and prevent water quality degradation.

c. Use of a ramp-up start procedure when pile driving that will allow adequate time for animals to leave the project area and so minimize injurious noise impacts.

Response: FPL anticipates that the US Army Corps of Engineers Section 404 permit will include conditions requiring compliance with each of these identified protective measures in accordance with Section 7 of the Endangered Species Act.

Question 49: The FWS had asked the Staff to provide updated information on the effect of the deposition of reclaimed water drift on American crocodile habitat. The Staff concluded that adverse effects on species near the industrial wastewater facility (cooling canals), such as the American crocodile, are "highly unlikely." But the Staff acknowledged that the toxicological benchmarks it used are based on single chemical exposures, often in laboratory- controlled conditions, and that "[t]here is a growing research area in combinatorial exposure effects of contaminants by measuring adverse outcome pathways, or effects-directed analysis. Even so, a general acknowledgement that real-world conditions where exposures to hundreds of natural and anthropogenic compounds occur under varying water-quality conditions, even in known contaminated areas, will require reliance on observable outcomes through monitoring."

Applicant: How does FPL intend to monitor the chemical or contaminant concentrations in wildlife during the license term?

* * *

Response: Owing to the extremely small concentrations of emerging substances of concern in the reclaimed water received from the Miami-Dade County Wastewater Treatment Plant, and even smaller amounts to which wildlife may be exposed due to additional secondary treatment at the FPL reclaimed water treatment facility prior to use and degradation in the environment following deposition, the risk to wildlife will be negligible. The June 23, 2017 U.S. FWS Biological Opinion does not recommend measurement of chemical or contaminant concentrations in wildlife and FPL does not plan to monitor wildlife for chemical or contaminant concentrations. However, monitoring of reclaimed water will be conducted to identify potential constituents in cooling tower drift as required by COCs imposed through the Florida Power Plant Siting Act process. For instance, SFWMD COC B.VI.C.1(b) requires Primary Source (Reclaimed Water) Reporting of water quality and volume. Similarly, Miami-Dade County COC B.VII.M.2 also requires monitoring of the quality and quantity of reclaimed water provided by Miami-Dade County and documentation including but not limited to laboratory analysis and any other monitoring data.

Question 54: Conditions 1-3 and 7-8 in 2.3 of the EPP provide specific actions for the licensee to take if threatened or endangered species are discovered. However, conditions 3-6 do not provide any specific actions to be taken if wood storks are discovered. Explain what steps, if any, FPL is expected to take upon discovering wood storks.

Response: Wood storks are known to occur in the vicinity of the proposed west transmission lines; potential impacts will be minimized through installation of flight diverters and perch discouragers during construction and adherence to the avian protection plan during operation. Conditions 4-6 in Section 2.3 of the Environmental Protection Plan ("EPP") describe wood stork surveys to be conducted prior to land-clearing associated with the west transmission lines to identify any active colonies within 0.5 mile; prior to construction to determine flight paths during nesting season; and mortality/injury surveys conducted during the first nesting season following construction. As stated in the U.S. FWS Biological Opinion, the purpose of the monitoring is to evaluate the effectiveness of the flight diverters and perch discouragers, and determine if additional protective or mitigation measures are needed. As required in the Florida Fish and Wildlife Commission ("FWC") COC C.III.F.3.d, if the post-construction surveys indicate that mortality to wood storks within the colonies due to collision with the transmission lines exceeds that portion of the colonies' population that is allowed by the U.S. FWS Biological Opinion, additional mitigation measures such as, but not limited to, different configurations or greater density of flight diverters, or additional monitoring, or a combination may be required by FWC. As wood stork concerns are primarily related to operational impacts involving transmission lines, responsive actions to the identification of individual wood storks are not expected.

Question 55: Explain whether the discussion of impacts in the Draft Record of Decision on page 5 refers to the cumulative impacts or the impacts from the NRC-licensed construction and operation activities.

Response: The discussion of impacts on page 5 of the Draft Record of Decision corresponds to the combined impacts summarized in Table 10-1 of the FEIS, "Unavoidable Adverse

Environmental Impacts from Construction and Preconstruction Activities" and Table 10-2 of the FEIS, "Unavoidable Adverse Environmental Impacts from Operation." As discussed on pages 10-4 to 10-5 of the FEIS, the impacts from construction and preconstruction activities include both the direct impacts from construction activities falling within the NRC's regulatory authority, as well as construction activities that are not within the purview of the NRC, such as clearing and grading, excavating, erection of support buildings and transmission lines, and other associated activities. The construction activities that are not within the purview of the NRC are referred to as preconstruction activities and are considered in the context of cumulative impacts. As reflected in Chapter 5 of the FEIS, the impacts from operation include the operational impacts of associated offsite facilities such as transmission lines.

Where the impact significance level differs between the NRC-authorized construction and preconstruction activities, the significance levels are assigned and reported separately as was done, for example, with respect to Historic and Cultural Resources. For that resource area, the impact significance level is MODERATE when preconstruction activities are included but SMALL when limited to NRC-authorized construction.

Except for the inclusion of preconstruction activities, the discussion of impacts on page 5 of the Draft Record of Decision does not include the cumulative impacts of other past, present, and reasonably foreseeable future projects. Those cumulative impacts are assessed in Chapter 7 of the FEIS and summarized in FEIS Table 7-3, "Cumulative Impacts on Environmental Resources, Including the Impacts of Proposed Turkey Point Units 6 and 7."

Question 56: The discussion on page 5 of the Draft Record of Decision observes that "impacts during construction to Historic and Cultural Resources are expected to be MODERATE but the NRC- authorized construction impact level is SMALL." It also notes that impacts to Land Use and terrestrial ecosystems would be MODERATE, but page 10-6 of the FEIS indicates that for these areas "NRC authorized construction impact level is SMALL." Should the Record of

Decision also note that "the NRC-authorized construction impact level is SMALL" for Land Use and terrestrial ecosystems?

Response: Because page 5 of the Draft Record of Decision is summarizing the combined impacts of construction, preconstruction and operation, the description of the impacts to Land Use and Terrestrial Ecosystems are correctly described as Moderate. As reflected in Table 10-2 of the FEIS, the operational impacts to these Resource Areas will be Moderate regardless of how the impact from construction and preconstruction activities is classified.

Question 57: Should the Record of Decision be updated to reflect any terms and conditions that the FWS required in its fi7nal Biological Opinion?

Response: The Draft Record of Decision at page 9 refers generally to the EPP as ensuring compliance with the terms and conditions of any biological opinion issued pursuant to the Endangered Species Act. Whether the Record of Decision should be updated to discuss those conditions with more specificity appears a matter of agency discretion.

Respectfully submitted,

/Signed electronically by David R Lewis/

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Counsel for Florida Power & Light Company

Dated: November 7, 2017

CERTIFICATION

I, William Maher, am responsible for the responses to the above questions. I certify that these answers were prepared by me or under my direction, and I adopt the answers as part of my sworn testimony in this proceeding. I hereby certify under penalty of perjury that the forgoing is true and complete to the best of my knowledge, information, and belief.

/Executed in Accord with 10 C.F.R. § 2.304(d)/
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Dated at Juno Beach, FL
this 7th day of November, 2017