



L-2012-188  
10 CFR 52.3

April 26, 2012

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

Re: Florida Power & Light Company  
Proposed Turkey Point Units 6 and 7  
Docket Nos. 52-040 and 52-041  
Response to NRC Request for Additional Information Letter 120316  
(RAI 6347 Rev. 1) Related to ESRP Section 9.3 – US Army Corps of Engineers

Reference:

NRC Letter to FPL dated March 13, 2012, Environmental Request for Additional Information Letter 120316 Related to ESRP Section 9.3, US Army Corps of Engineers, for the Combined License Application Review for Turkey Point Units 6 and 7

Florida Power & Light Company (FPL) provides, as an attachment to this letter, its response to the Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI) EIS USACE-2 provided in the referenced letter. The attachment identifies changes that will be made in a future revision of the Turkey Point Units 6 and 7 Combined License Application (if applicable).

If you have any questions, or need additional information, please contact me at 561-691-7490.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 26, 2012.

Sincerely,

A handwritten signature in blue ink, appearing to read 'W. Maher', is written over a horizontal line.

William Maher  
Senior Licensing Director – New Nuclear Projects

WDM/RFO

Proposed Turkey Point Units 6 and 7  
Docket Nos. 52-040 and 52-041  
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Attachment: FPL Response to NRC RAI No. EIS USACE-2 (RAI 6347 Rev. 1)

Enclosure: Alternative Analysis Flow Chart and Practicability Evaluation Matrix

cc:

PTN 6 & 7 Project Manager, AP1000 Projects Branch 1, USNRC DNRL/NRO  
Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant 3 & 4

Proposed Turkey Point Units 6 and 7  
Docket Nos. 52-040 and 52-041  
FPL Response to NRC RAI No. EIS USACE-2 (RAI 6347 Rev. 1)  
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**NRC RAI Letter 120316 Dated March 13, 2012**

**SRP Section: EIS 9.3 – US Army Corps of Engineers**

Question from Environmental Projects Branch 1 (RAP1)

**NRC RAI Number: EIS USACE-2 (RAI 6347 Rev. 1)**

These questions are in response to the FPL submittal entitled, "Section 404(b)(1) Alternatives Analysis" submitted October 2011. A subsequent meeting was held on December 9, 2011 and several additional clarifications and outstanding items were discussed with the applicant. The following items/clarifications are still pending:

**Question 1**

Under Section 1.3 on page 5, the Corps requested a more in depth discussion from FPL as to why the energy demand cannot be satisfied by other alternative forms of energy.

**FPL RESPONSE:**

An in depth analysis of the potential for base-load generation through alternative forms of energy is provided in Section 9.2 of the ER and the Florida Public Service Commission (FPSC) Need Study. A summary is provided in Section 3.2 of the Section 404(b)(1) Alternatives Analysis. The evaluation included capacity purchases, upgrading or repowering existing resources, using existing peaking capacity, demand side management (DSM), and new generation resources utilizing alternative fuels and generation technology such as, but not limited to, wind, solar, natural gas-fired combined cycle, and pulverized coal. The analyses presented in the ER and FPSC Need Study were the basis for the conclusions in Section 1.3 of the Section 404(b)(1) Alternatives Analysis. The FPSC considered these issues when it granted a Need Order for the project in 2008. In that Need Order, the FPSC came to the following conclusions:

*"FPL's need was determined after taking into account 1,899 MW of additional DSM, all other currently committed supply projects, 414 MW of recently approved nuclear capacity uprates, and 287 MW of renewable generation, although none are yet contracted, from 2 biomass projects and 3 municipal waste-to-energy projects. FPL's need for additional capacity to meet rising electricity demands cannot be satisfied with additional purchased power from renewable generation. Additional DSM programs and renewables are not capable of deferring the need for additional capacity." [FPSC Need Order 08-0237, page 6]*

This illustrates that in approving the Turkey Point 6 & 7 project, the FPSC comprehensively considered alternative resources and found that the project was needed in excess of the reasonably identifiable alternative resources. Further, the FPSC spoke to what might occur due to future changes:

*“If FPL’s load forecast dramatically declines or the amount of DSM or renewable generation available substantially increases, the most likely result will be the cancellation of some gas-fired combined cycle plants that have not yet been certified.”*  
[FPSC Need Order 08-0237, page 7]

The FPSC also concurred that the nuclear generators are needed for reliability concerns as cost-effective sources of base-load power and note the limitations of renewable forms of generation to provide dependable base-load power:

*“The evidence reflects that the high capacity factor of FPL’s nuclear units means that these units would represent a substantial amount of base-load capacity on its system. In addition, new nuclear base-load capacity provided by Turkey Point 6 and 7 is needed to maintain system reliability and provide fuel diversity at a reasonable cost for its customers. FPL asserts that there is no cost-effective alternative to Turkey Point 6 and 7 that would provide the reliable base-load capacity to meet its customers’ future resource needs. Turkey Point 6 and 7 will add between 2,200-3,040 MW of nuclear-fueled base-load generating capacity which is needed to keep pace with the increasing demand for reliable power and steady population growth in Florida. Some renewable generation resources available today such as wind and solar cannot provide base-load capacity. Florida has limited capacity for wind power. With respect to using solar energy, price and availability are impediments that cause this form of generation to be a less reliable source of base-load capacity. At best, solar is only available twelve hours per day and weather can cause the power produced by solar energy to be intermittent. The record indicates that renewable generation available today or in the near future cannot provide enough base-load capacity to avoid the need that would be met by the addition of Turkey Point 6 and 7.”* [FPSC Need Order 08-0237, page 10]

As stated in Section 9.2.2.2.5 of the ER, offshore wind technology has not matured sufficiently to support production for a base-load facility, and land-based wind energy would only be available along Florida’s coastline at the start of commercial operation of the proposed nuclear project. The potential for solar generation to fulfill the base-load generation need is discussed in Section 9.2.2.3 of the ER. As a result of the intermittent nature of solar photovoltaic and solar thermal generation, the capacity factor for solar technology is inadequate to provide base-load power.

Having reviewed DSM and renewable generation as alternatives to the project, the next step would be to compare the project to conventional base-load generation technologies such as coal and natural gas fired generation.

As discussed in Section 9.2.3 of the ER, the pulverized coal-fired alternative would result in greater potential impacts associated with air quality, land use, and waste management. As described in Section 9.2.3.1 of the ER, Executive Orders issued by Florida’s Governor in July 2007 require a significant reduction in greenhouse gas emissions in Florida. Furthermore, on March 27, 2012, the EPA Administrator signed for publication in the Federal Register Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units (40 CFR Subpart TTTT). In this proposed New Source

Performance Standard (NSPS), which will be applicable to any coal-fired electric generating unit constructed after the publication date of the proposed rule in the federal register, greenhouse gas emissions are limited to 1,000 lb CO<sub>2</sub>/MWh gross output on a 12-month annual basis. The most efficient coal-fired units cannot meet this proposed standard without carbon capture and sequestration (CCS) system. As an alternative, a coal-fired unit can meet a limit of 1,800 lb CO<sub>2</sub>/MWh gross output on a 12-month annual basis for the first 10 years, beginning in the 11th year the CCS system must be operation and no more than 600 lb CO<sub>2</sub> /MWh gross output on a 12-month annual basis, and no more than 1,000 lb CO<sub>2</sub>/MWh gross output on a 30-year operation basis. This NSPS would make coal-fired generation technically and economically infeasible as an alternative to nuclear generation.

Therefore, these results lead to the conclusion that natural gas combined cycle is the most feasible base-load generation alternative. Similar to pulverized coal-fired technology, combined cycle gas-fired generation would also emit large quantities of greenhouse gases, although in much less quantities than the coal-fired alternative. Due to the potential impacts of air emissions, pulverized coal-fired units or combined cycle natural gas-fired units would not be environmentally preferable to the proposed nuclear project.

As compared to a state of the art natural gas combined cycle project of the same capacity, FPL expects the Turkey Point 6 & 7 project will:

- *Provide estimated fuel cost savings for FPL's customers of approximately \$892 million (nominal) in the first full year of operation;*
- *Provide estimated fuel cost savings for FPL's customers over the life of the project of approximately \$58 billion (nominal);*
- *Diversify FPL's fuel sources by decreasing reliance on natural gas by approximately 13% beginning in the first full year of operation;*
- *Reduce annual fossil fuel usage by the equivalent of 28 million barrels of oil or 177 million mm BTU of natural gas; and*
- *Reduce CO<sub>2</sub> emissions by an estimated 255 million tons over the life of the project, which is the equivalent of operating FPL's entire generating system with zero CO<sub>2</sub> emissions for 6 years.*

## **Question 2**

Under Section 1.5 on page 12, the Corps requested additional information as to how the proposed secondary impacts are calculated. The State of Florida has specific distances that are prescribed. The Corps does not have the same requirements and asked for a more qualitative review of secondary impacts from FPL.

### **FPL RESPONSE:**

Secondary effects on the aquatic ecosystem are defined in 40 CFR Section 230.11(h) as effects that are associated with a discharge of dredged or fill materials, but do not result from

the actual placement of the dredged or fill material. Examples include surface runoff from residential or commercial developments on fill located in waters of the U.S., or fluctuating water levels in an impoundment and downstream associated with the operation of a dam. In the case of the preferred and alternative sites, it may be assumed that if necessary, all areas of fill within waters of the U.S. will be separated from adjacent areas through installation of silt fencing and other erosion and turbidity control methods to ensure water quality standards for turbidity are met. Any diversion and impoundment of surface waters would be limited to incidental diversion during construction, and unlikely to result in permanent functional loss to adjacent undisturbed wetlands. These best management practices would be used to minimize the potential for discharge of surface runoff from areas of fill. Therefore adjacent undisturbed wetlands will not experience a measurable loss in functional value. The conservative secondary wetland impact assessment presented in the Section 404(b)(1) Alternatives Analysis utilized a 25-foot buffer around all areas of wetland fill to calculate the acreage of potential secondary wetland impact, consistent with State of Florida guidelines, and applied a 60% loss of wetland functions within these areas to derive the total functional loss in terms of credits (see Section 1.5, page 12).

### **Question 3**

Under Section 4.5 on page 44, FPL provided a discussion of jurisdiction in the existing cooling canals. To date, this item has not been resolved with the Environmental Protection Agency and the Corps considers this an open item.

### **FPL RESPONSE:**

Comment noted. As described on page 44, for the purposes of the Section 404(b)(1) Alternatives Analysis FPL has assumed wetlands at the Units 6 & 7 Site as jurisdictional. However, it is FPL's position that the waters within the industrial wastewater treatment facility are not Waters of the United States pursuant to 40 C.F.R. 230.3(s)(7). When the siting studies for the project were conducted in 2006, the industrial wastewater treatment facility was not considered to be Waters of the United States. Based on discussions with the USACE (Corps), FPL is planning on proceeding with a non-binding jurisdictional determination with the expressed understanding that doing so will have no affect on the current activities conducted within the industrial wastewater treatment facility nor will it indicate the waters are jurisdictional.

**Question 4**

Under Section 4.5.1, the FPL Reclaimed Water Treatment Facility is discussed. FPL was asked to clarify if the location of the site has been changed since the June 30, 2009 application was submitted.

**FPL RESPONSE:**

As part of the initial Project design and layout, the location of the FPL reclaimed water treatment facility (RWTF) was determined based on a number of considerations including plant operations, land availability, construction feasibility, and potential environmental impacts. This location was presented in the June 30, 2009 application and is also reflected in the Section 404(b)(1) Alternatives Analysis. In response to requests from Miami-Dade County, FPL analyzed alternative locations for construction of the FPL RWTF. Although no upland alternatives are available on site, FPL has identified a potential alternative location for construction of the FPL RWTF that reduces sawgrass and mangrove wetland impacts by approximately 10 acres as compared to the originally proposed location (Figure 1). Either the proposed or alternate site is agreeable to FPL; the application has not been revised to reflect the potential alternative location.



### LEGEND

- FPL Reclaimed Water Treatment Facility
- FPL Reclaimed Water Treatment Facility Alternate Location
- Proposed Roadway Improvements



FLUCFCS Code	Landuse/Landcover Type	FPL Reclaimed Water Treatment Facility Impact Acreage	FPL Reclaimed Water Treatment Facility Alternate Location Impact Acreage
510	CANAL		2.93
511	DITCHES		0.30
612-B	DWARF MANGROVES		19.98
6411/612-B	SAWGRASS MANGROVE	42.82	
617	MIXED WETLAND HARDWOODS	0.78	
619	EXOTIC WETLAND HARDWOODS		3.73
6411	SAWGRASS MARSH		12.58
TOTAL		43.60	39.52

### REFERENCES

1. Aerial Imagery, FDOT, 2009.
2. Proposed Site, Alternate Site Location, FPL, 2010 / 2011.

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	FPL RECLAIMED WATER TREATMENT FACILITY PROPOSED AND ALTERNATE LOCATION	
	FILE No.	09387652F016
	REV.	0
	PLOT DATE	4/12/2012
		FIGURE 1

**Question 5**

Under Section 6.1 FPL was asked to provide the distance from the Mean High Water Line at the Turkey Point site to the closest coral reef.

**FPL RESPONSE:**

The closest coral reef is approximately 7.8 statute miles (6.8 nautical miles) from the Mean High Water Line at the Turkey Point site.

**Question 6**

The Corps requested FPL clarify their definition of canopy clearing so the determination as to whether or not this is a regulated activity could be made.

**FPL RESPONSE:**

Canopy clearing within forested wetlands was included in the comparative environmental impact evaluation for transmission facilities at the proposed and alternate sites. Electric service reliability and public safety require clearance between trees and transmission lines in the right-of-way in accordance with the North American Electric Reliability Corporation's Electric Reliability Standard FAC-003-1. Vegetation which has an expected mature height of 14 feet or more under transmission lines and up to 20 feet on either side of the outermost conductor may endanger the lines and therefore must be cut or removed by hand or by mechanized equipment to a height no lower than the soil surface. This conversion of forested wetlands to herbaceous wetlands partially reduces the functional value of the wetland system; this reduction is typically temporary however the resulting habitat is different as a result of the altered vegetative composition. The reduction in functional value is attributed to potential adverse impacts to water quality, substrate, vegetative composition, and wildlife habitat. Potential water quality impacts occur due to turbidity and erosion associated with soil disturbance. Compaction of soils resulting from heavy machinery required for canopy clearing may also impede regeneration of understory vegetation and further contribute to reduced water quality. The loss of vegetative community structure also may have a direct impact on potential habitat for threatened and endangered species. As stated in the USACE Nationwide Permit 12, "Where certain functions and values of waters of the US are permanently adversely affected, such as the conversion of a forested wetland to a herbaceous wetland in the permanently maintained utility line right-of-way, mitigation will be required to reduce the adverse effects of the project to the minimal level." For these reasons, the acreage of canopy clearing and quality of forested wetlands traversed by transmission facilities was included in the assessment of functional loss for the proposed and alternate sites.

Proposed Turkey Point Units 6 and 7  
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**Question 7**

The Corps requested a matrix/flow chart of the last five sites be included in a revised submittal.

**FPL RESPONSE:**

The alternative analysis flow chart and practicability evaluation matrix for the last five sites is enclosed.

The above responses are PLANT SPECIFIC.

**References:**

North American Electric Reliability Corporation (NERC), 2006. Electric Reliability Standard FAC-003-1 - Transmission Vegetation Management Program. Available at: <http://www.nerc.com/files/FAC-003-1.pdf> (accessed on April 21, 2012).

Florida Public Service Commission (FPSC), 2007. Florida Public Service Commission, FPL's Petition to Determine Need for the Turkey Point Nuclear Units 6 & 7 Electrical Power Plant, Need Study for Electrical Power, Docket NO. 0706050-EI, October 16, 2007. Available at: <http://www.psc.state.fl.us/dockets/cms/docketFilings3.aspx?docket=070650> (accessed on April 21, 2012).

**ASSOCIATED COLA REVISIONS:**

No COLA changes have been identified as a result of this response.

**ASSOCIATED ENCLOSURE:**

Alternative Analysis Flow Chart and Practicability Evaluation Matrix

Proposed Turkey Point Units 6 and 7  
Docket Nos. 52-040 and 52-041  
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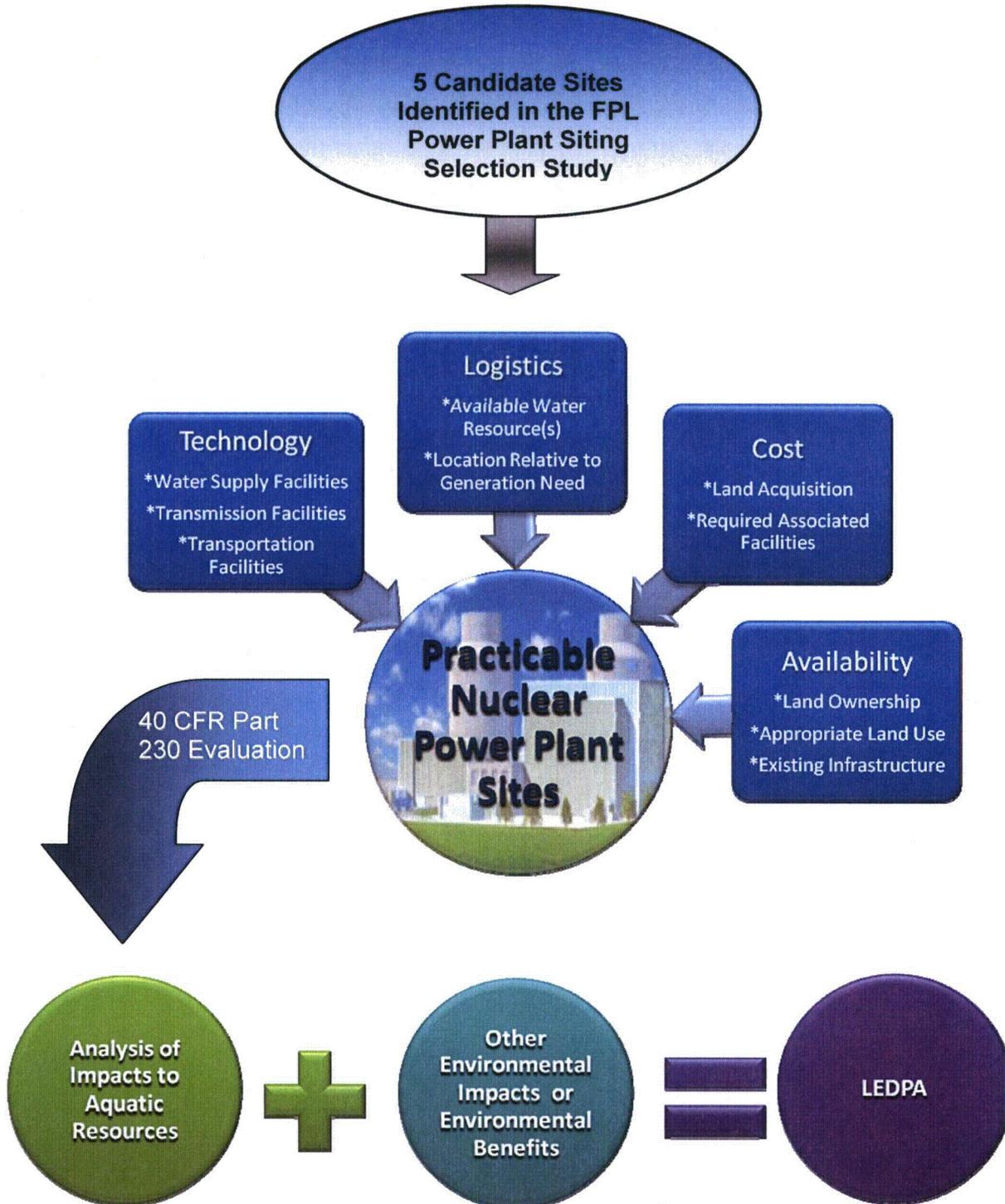
## **Enclosure**

### **Turkey Point Nuclear Plant Units 6 and 7 COL Application**

#### **ENVIRONMENTAL REPORT NRC RAI No. EIS USACE-2 (RAI 6347 Revision 1)**

#### **Alternative Analysis Flow Chart And Practicability Evaluation Matrix**

## FPL Turkey Point Units 6 & 7 Alternative Analysis



Summary of the Practicability Evaluation of Alternative Sites and Determination of LEDPA Site

Site	Technology			Logistics		Costs	Availability	Practicability Evaluation Results	Practicable Sites		
	Water Suppl. Facilities	Transmission Facilities	Transportation Facilities	Availability of Water Resource	Location Relative to Generation Need				Analysis of Impacts to Aquatic Resources	Other Environmental Impacts or Benefits	LEDPA SITE?
Glades	Multiple water sources required. No reclaimed water available. Storage reservoir (+3,000 acres) required.	Approximately 121 miles of transmission line needed for 3, 500 kV lines. 40 miles of new ROW required.	Estimated 1 mile of paved access road needed, also approximately 6 miles of rail spur needed to connect to existing railroad.	Sufficient water of the quantity/quality not available due to existing allocations, water use restrictions and environmental water reservations. Use of saline aquifers at an inland site not practicable.	Site requires lengthy transmission lines but interconnection is at Andytown Substation (121 miles from site) that is located in Southeastern Florida, particularly Miami-Dade and Broward Counties	Additional costs for site (not owned by FPL, but options to purchase exist) and transmission (significant amounts of new transmission ROW needed). Additional cost for transportation including rail and road easements required. Roadway improvements would encroach upon 6 parcels and 2 landowners.	Option on property must be completed. Agricultural site requiring extensive land use approvals. No existing infrastructure.	Not Practicable due to availability cost, technology and logistics. No sufficient water supply; lengthy transmission connection to projected generation/load imbalance in Miami-Dade and Broward counties.			
Martin	Multiple water sources required. No reclaimed water available. Storage reservoir (+3,000 acres) required. Approximately 2.5 miles of pipeline needed to reach water sources.	Estimated 31 miles of transmission corridor needed for 3, 500 kV lines; 1 mile of new ROW required.	Estimated 39 miles of road widening on SR 710 needed, as well as approximately 4.5 miles of rail spur needed to access existing rail.	Sufficient water of the quantity/quality not available due to existing allocations, water use restrictions and environmental water reservations. Use of saline aquifers at an inland site not practicable.	Site does not address the projected imbalance between load and generation in Miami-Dade and Broward Counties	No additional costs for plant area (owned by FPL). Additional costs for acquiring adjacent property for reservoir (+3,000 acres). Additional cost for road easements. Roadway improvements would encroach upon 178 parcels and 109 landowners.	Existing fossil power plant site with existing infrastructure. Land use approvals for power plant required.	Not Practicable due to availability cost, technology and logistics. No sufficient water supply; lengthy transmission connection to projected generation/load imbalance in Miami-Dade and Broward counties.			
Okeechobee -2	Multiple water sources required. No reclaimed water available. Storage reservoir (+3,000 acres) required. Approximately 2.5 miles of pipeline needed to connect to surface water source. Quantity/quantity of water withdrawal unlikely due to current allocations.	Estimated 38 miles of new transmission corridor needed for 4, 500 kV lines.	Widening of approximately 8.5 mile stretch of SR 70. Estimated 3.9 mile rail spur needed to access existing rail.	Sufficient water of the quantity/quality not available due to existing allocations, water use restrictions and environmental water reservations. Use of saline aquifers at an inland site not practicable.	Site does not address the projected imbalance between load and generation in Miami-Dade and Broward Counties	Additional cost for acquiring site (not owned by FPL and purchasing options have not been developed). Additional costs for transmission ROW acquisition. Additional cost for rail and road easements. Roadway improvements would encroach upon 119 parcels and 94 landowners.	Agricultural site that must be purchased from existing owners. Extensive land use approvals required. No existing infrastructure.	Not Practicable due to availability cost, technology and logistics. No sufficient water supply; lengthy transmission connection to projected generation/load imbalance in Miami-Dade and Broward counties.			
St. Lucie	Saltwater available from Units 1 and 2 discharge.	Approximately 63 miles of existing transmission corridor needed for 3, 500kV lines	Widening of approximately 19.1 miles of A1A. 1.6 miles of Seaway Drive, and 1.3 miles of NE Ocean Boulevard needed.	Sufficient saltwater available in proximity of site for cooling water.	Site does not address the projected imbalance between load and generation in Miami-Dade and Broward Counties	No additional costs for site (FPL-owned). No additional cost acquiring additional transmission ROW. Additional costs for road easements. Roadway improvements would encroach upon 541 parcels and 401 landowners.	Existing nuclear power plant site. Land use approvals required. Transmission ROW available.	Practicable site, due to availability, cost, technology and logistics (water). Existing FPL nuclear site. Water source is readily available and accessible but lengthy electric transmission required to address load imbalance.	544 acres permanent, 10 acres temporary, and 68 acres secondary wetland impact; 94 acres of wetland canopy clearing. Approximately 491 UMAM credits of functional loss.	Site and roadway improvements located on Hutchinson Island. Coastal Barrier Resource Act of 1982 constrains construction on coastal barrier islands. Impacts to EFH within Jensen Beach to Jupiter Inlet Aquatic Preserve.	NO
Turkey Point	Reclaimed water available; approximately 9 miles of reclaimed water pipeline. Radial collector wells for saltwater backup supply.	Approximately 89 miles of transmission needed for 2, 230 kV lines and 2, 500 kV lines; majority of transmission in existing right-of-way (ROW).	Approximately 10.3 miles of temporary access roads; barge transportation available at the site.	Reclaimed water available in sufficient quantity and quality.	Site provides generation directly in Miami-Dade County directly addressing the projected generation/load imbalance	No additional cost for site (FPL-owned); transmission ROW (majority FPL-owned transmission right-of-way) or transportation ROW (majority FPL ownership). Majority of roadway improvements upon FPL land, total of 73 parcels and 38 landowners encroached upon non-FPL land.	Existing nuclear power plant site. Land use in place for nuclear power plant. Transmission ROW available.	Practicable site, due to availability, cost, technology and logistics. Existing FPL nuclear site. Water source is available and beneficial. Addresses the generation/load imbalance.	649 acres permanent, 45 acres temporary, and 48 acres secondary wetland impact; 99 acres of wetland canopy clearing. Approximately 473 UMAM credits of functional loss.	Ability to utilize reclaimed water. Approximately 250 acres (39%) of direct wetland impact is proposed within existing industrial wastewater treatment facility.	YES