

**BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 070650 -EI
FLORIDA POWER & LIGHT COMPANY**

**IN RE: FLORIDA POWER & LIGHT COMPANY'S
PETITION TO DETERMINE NEED FOR
TURKEY POINT NUCLEAR UNITS 6 AND 7
ELECTRICAL POWER PLANT**

DIRECT TESTIMONY & EXHIBITS OF:

J.A. STALL

DOCUMENT NUMBER-DATE

09464 OCT 16 8

FPSC-COMMISSION CLERK

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **FLORIDA POWER & LIGHT COMPANY**

3 **DIRECT TESTIMONY OF J.A. STALL**

4 **DOCKET NO. 07____-EI**

5 **OCTOBER 16, 2007**

6
7 **Q. Please state your name and business address.**

8 A. My name is J.A. (Art) Stall. My business address is 700 Universe Boulevard,
9 Juno Beach, Florida, 33408.

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

11 A. I am employed by Florida Power & Light Company (FPL or the Company) as
12 Senior Vice President - Nuclear Operations, and Chief Nuclear Officer.

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

14 A. I am responsible for the safe operation of all of FPL Group, Inc.'s (FPL
15 Group) nuclear assets, consisting of four nuclear units in Florida – two at
16 Turkey Point Nuclear Plant (Turkey Point) (of about 1,400 MW) and two at
17 St. Lucie Nuclear Plant (St. Lucie) (of about 1,680 MW), one in New
18 Hampshire – Seabrook Station (of about 1,300 MW), and one in Iowa –
19 Duane Arnold Energy Center (of about 600 MW). Additionally, I am
20 responsible for the safe operation of two nuclear units in Wisconsin – Point
21 Beach Nuclear Plant (1,036 MW) FPL Energy, LLC completed its acquisition
22 of Point Beach on September 28, 2007.

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1 **Q. Please describe your educational background and business experience.**

2 A. I earned my Bachelor of Science degree in Nuclear Engineering from the
3 University of Florida in 1977. I also earned a Master of Business
4 Administration from Virginia Commonwealth University in 1983. I am a
5 career nuclear energy generation professional with more than 25 years of
6 nuclear generation operating experience. I joined Virginia Power Company in
7 1977, where I held various positions of increasing responsibility, including
8 superintendent of operations, assistant station manager for safety and
9 licensing, superintendent of technical services, and plant manager. I also held
10 a senior nuclear reactor operator license from the U.S. Nuclear Regulatory
11 Commission (NRC) while working at Virginia Power Company's nuclear
12 plants. In 1996, I joined FPL Group as the Site Vice President at the St. Lucie
13 Nuclear Plant. From 2000 to 2001, I was Vice President for Nuclear
14 Engineering at FPL Group. I have been Senior Vice President, Nuclear
15 Operations, and Chief Nuclear Officer at FPL Group since June 2001.

16 **Q. Are you sponsoring any exhibits in this case?**

17 A. Yes. I am sponsoring Exhibits JAS-1 and JAS-2, which are attached to my
18 direct testimony.

19 Exhibit JAS-1 World Association Nuclear Operators (WANO)
20 Indices.

21 Exhibit JAS-2 NRC Performance Indicators.

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

2 A. The purpose of my testimony is to describe objective indicators of FPL
3 Group's nuclear power plant performance in support of FPL's efforts to
4 pursue new nuclear generating capacity.

5 **Q. Please summarize your testimony.**

6 A. FPL Group's nuclear power plants are a source of reliable, safe, and cost
7 effective energy for FPL Group's customers. FPL Group's technical expertise
8 and organizational strength in safely operating and maintaining its existing
9 fleet of nuclear power plants will enable FPL to pursue new nuclear
10 generating capacity in a safe, reliable, and cost effective manner. The
11 proposed Turkey Point 6 & 7 will enable FPL to develop an option to deliver
12 safe, reliable, and cost effective power to customers at reasonable cost. Given
13 FPL's current fuel mix, the addition of non-fossil fuel, non-greenhouse gas
14 (GHG) emitting sources for generation is necessary to maintain system
15 reliability, increase fuel diversity and allow progress toward meaningful GHG
16 reductions.

17

18 **BACKGROUND ON FPL GROUP'S NUCLEAR DIVISION**

19

20 **Q. Please describe FPL Group's nuclear plants.**

21 A. FPL Group's long and successful involvement with nuclear power started in
22 the mid-1960s with the first order for nuclear generation in the South. FPL's
23 plans to build nuclear units at the Turkey Point site were announced in 1965,

1 and the first nuclear unit achieved commercial operation in 1972. FPL is
2 currently licensed by the NRC to operate Turkey Point Units 3 and 4, and St.
3 Lucie Units 1 and 2. Turkey Point Units 3 and 4 are pressurized water
4 reactors designed by Westinghouse. Unit 3 commenced commercial operation
5 in 1972, and Unit 4 did so in 1973. St. Lucie Units 1 and 2 are pressurized
6 water reactors designed by Combustion Engineering (now owned by
7 Westinghouse). Unit 1 went into commercial operation in 1976, and Unit 2
8 did so in 1983.

9
10 FPL Group's affiliate FPL Energy also owns and operates nuclear plants
11 outside of Florida. FPL Energy Seabrook, LLC (FPLE Seabrook), an indirect
12 subsidiary of FPL Energy, owns 88.23% of and operates Seabrook Station, a
13 Westinghouse pressurized water reactor facility, located in New Hampshire.
14 FPLE Seabrook acquired its share of Seabrook Station in 2002.

15
16 FPL Energy Duane Arnold, LLC (FPLE Duane Arnold), an indirect subsidiary
17 of FPL Energy, owns 70% of and operates the Duane Arnold Energy Center
18 (Duane Arnold), a General Electric boiling water reactor facility located in
19 Iowa. FPLE Duane Arnold acquired its share of Duane Arnold in January
20 2006.

21
22 FPL Group and its affiliates have successfully operated six nuclear units at
23 four nuclear generating stations for 130 total combined years of safe, electric

1 generation. During that time FPL Group's nuclear generating units have
2 produced approximately 593 million MWh of electricity, which taken
3 altogether is enough electricity to serve the needs of all of FPL's 4 million-
4 plus customers for five years. The high availability rate of these nuclear units
5 and the fact that the FPL units currently represent approximately 14% of the
6 capacity and 20% of the energy output on FPL's system makes nuclear
7 generation a substantial contributor to FPL's system.

8 **Q. Describe the ownership structure for FPL Group's nuclear units.**

9 A. FPL owns 100% of Turkey Point Units 3 and 4 and St. Lucie Unit 1. FPL
10 owns 85.10449% of St. Lucie Unit 2. The balance of St. Lucie Unit 2 is
11 owned by the Florida Municipal Power Agency, which owns 8.806%, and the
12 Orlando Utilities Commission, which owns 6.08951%. FPLE Seabrook owns
13 88.23% of and operates Seabrook Station, FPLE Duane Arnold owns 70% of
14 and operates Duane Arnold, and FPLE Point Beach owns 100% of and
15 operates Point Beach.

16 **Q. How long are FPL Group's nuclear units currently licensed to operate?**

17 A. In June 2002, FPL received renewed operating licenses from the NRC for
18 Turkey Point Units 3 and 4, and in October 2003, FPL received renewed
19 operating licenses from the NRC for St. Lucie Units 1 and 2. The renewed
20 licenses give FPL the authority to operate each unit for 20 years past the
21 original license expiration date should FPL choose to do so. Accordingly, the
22 current license expiration dates are as follows: for Turkey Point Unit 3, 2032;
23 for Turkey Point Unit 4, 2033; for St. Lucie Unit 1, 2036; and for St. Lucie

1 Unit 2, 2043. The current operating license expiration date for Point Beach is
2 2030 for Unit 1 and 2033 for Unit 2, Seabrook is 2030, and the Duane Arnold
3 operating license (which has not yet been renewed) expires in 2014.

4 **Q. Please describe the organization of FPL Group's Nuclear Division.**

5 A. FPL Group's Nuclear Division currently employs approximately 2,800
6 employees. The management team at each site reports to a Site Vice
7 President, who reports to the Vice President of Operations, who reports
8 directly to me. Additionally, the Vice Presidents of Nuclear Technical
9 Services, Plant Support, and Nuclear Training and Performance Improvement,
10 as well as an independent quality oversight organization, headed by the
11 Director of Nuclear Assurance, also report directly to me.

12

13 **FPL GROUP'S NUCLEAR PLANT PERFORMANCE**

14

15 **Q. What metrics are used by FPL Group to measure the performance of**
16 **FPL Group's nuclear plants?**

17 A. FPL Group uses two basic metrics to measure the performance of our nuclear
18 plants. Overall plant performance as measured by an objective numerical
19 index and nuclear safety and reliability performance as measured by objective
20 indicators published by the NRC.

1 **Q. Please describe the overall quality of performance of FPL Group's**
2 **nuclear operations.**

3 A. FPL Group's nuclear plant performance, from both a safety and production
4 perspective, ranks among the best in the United States. This record is
5 confirmed by a variety of objective indicators used to measure plant
6 performance, including personnel safety, nuclear safety, operating reliability,
7 and cost. These objective performance indicators, known as the WANO
8 index, confirm that our plants are operating safely and reliably.

9
10 The WANO index is an internationally recognized metric of nuclear plant
11 safety and reliability. The WANO index is calculated by summing weighted
12 values of the following key indicators: (1) Unit Capability Factor; (2) Forced
13 Loss Rate; (3) Unavailability of High Pressure Safety Injection System;
14 (4) Unavailability of Auxiliary Feedwater System; (5) Unavailability of
15 Emergency AC Power System (Site Average); (6) Unplanned Automatic
16 Reactor Trips; (7) Collective Radiation Exposure; (8) Nuclear Fuel
17 Reliability; and (9) Quality of Secondary Water Chemistry. Exhibit JAS-1
18 shows the FPL nuclear fleet performance based on the WANO index for the
19 last ten years (1997-2006). This exhibit demonstrates that FPL Group's
20 nuclear fleet outperformed the industry throughout most of this period. The
21 performance of FPL's nuclear fleet in 2005 was affected primarily by issues at
22 a single plant, Turkey Point. Turkey Point performance, as shown by the
23 WANO indicators, was affected by major component replacements, vendor

1 performance issues, and by the manual shutdown of both Turkey Point units
2 because of Hurricane Wilma. FPL's actions to replace major components at
3 Turkey Point will lead to long-term plant performance improvements and
4 support the long-term operation of the plant into its renewed license terms.

5
6 FPL Group's exemplary nuclear plant performance has been achieved while
7 maintaining excellent capacity factors (including refueling outages) at its
8 nuclear plants over the last several years. Moreover, FPL Group's nuclear
9 refueling outages are well planned and executed. Some of our refueling
10 outages have been the shortest achieved for similar units in the industry. Our
11 employees continuously critique our refueling outage performance, and
12 lessons learned are implemented across our nuclear fleet at the next refueling
13 outages to further improve our performance.

14 **Q. Please Describe the Performance of the Nuclear Plants Acquired by FPL**
15 **Energy.**

16 A. Since FPLE Seabrook's acquisition of Seabrook Station in 2002, that plant has
17 operated very well. In 2003-2006, the average capacity factor at Seabrook
18 Station with FPLE Seabrook as the operator was 92.4%, as compared with
19 84.8% under the previous operator for the 1998-2002 time frame. Since the
20 2002 acquisition, FPLE Seabrook has completed an uprate that increased the
21 plant's capacity by approximately 6.9%. From an environmental standpoint,
22 Seabrook Station has received the highest rating from the New Hampshire
23 Department of Environmental Services (NHDES) in the last five periods it has

1 been evaluated. This inspection is typically performed annually and evaluates
2 Seabrook Station's ability to self-monitor and comply with the effluent limits
3 and compliance schedules in its NHDES Permit. The most recent inspection
4 by NHDES, conducted in October 2005, resulted in the top rating of "5" being
5 assigned to the Seabrook Station program.

6
7 Since FPL Group acquired Duane Arnold in 2006, it has operated at a 97.3%
8 capacity factor, which is significantly higher than the average annual capacity
9 factor of 92.8% during the 2000-2005 time frame.

10 **Q. How does the NRC rate FPL Group's nuclear safety record?**

11 A. The nuclear safety aspects of FPL Group's nuclear operations are
12 comprehensively regulated by the NRC. The NRC maintains and tracks a set
13 of performance indicators as objective measures of nuclear safety
14 performance. These indicators monitor performance in initiating events,
15 performance of safety systems, maintenance of fission product barrier
16 integrity, emergency preparedness, occupational and public radiation safety,
17 and physical protection. As shown in Exhibit JAS-2, all of FPL Group's units
18 are in the "green" band of all NRC Performance Indicators, indicating good
19 nuclear safety performance.

1 **COMBINED OPERATING LICENSE (COL) PROJECT**

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Q. What is the Combined Operating License Project?

A. As described in greater detail in the testimony of FPL witness Scroggs, the Combined Operating License project is FPL’s effort to file an application with the NRC to obtain combined operating licenses that authorize construction and conditional operation of new nuclear power plants.

Q. Why is FPL pursuing Combined Operating Licenses from the NRC at this time?

A. FPL periodically evaluates alternatives to meet the growing power needs of Florida. Based on FPL Group’s successful track record in operating its existing fleet of nuclear plants, FPL has determined that pursuing future new nuclear capacity will create a low cost, reliable, and an environmentally attractive option to generate electricity. Pursuing this option provides fuel diversity and does not contribute greenhouse gases to the environment. FPL’s process of assessing the feasibility of pursuing a Combined Operating License is described in more detail in the testimony of FPL witness Scroggs.

Q. Will FPL be able to leverage its track record and experience in operating and licensing its nuclear fleet into pursuing a combined operating license for Turkey Point 6 & 7?

A. Yes. Our track record in nuclear licensing and operations demonstrates the capability of FPL to successfully pursue a Combined Operating License (COL) in an efficient and cost effective manner, thereby preserving the option

1 of new nuclear generation. FPL's last major licensing project, executed under
2 my supervision and direction, was the successful effort to renew the licenses
3 of Turkey Point and St. Lucie for an additional 20-year term. Both high
4 quality licensing efforts were successfully completed within the projected
5 schedule and under budget. FPL's execution of the license renewal projects
6 demonstrates its capability to undertake, manage, and successfully complete a
7 significant NRC licensing effort.

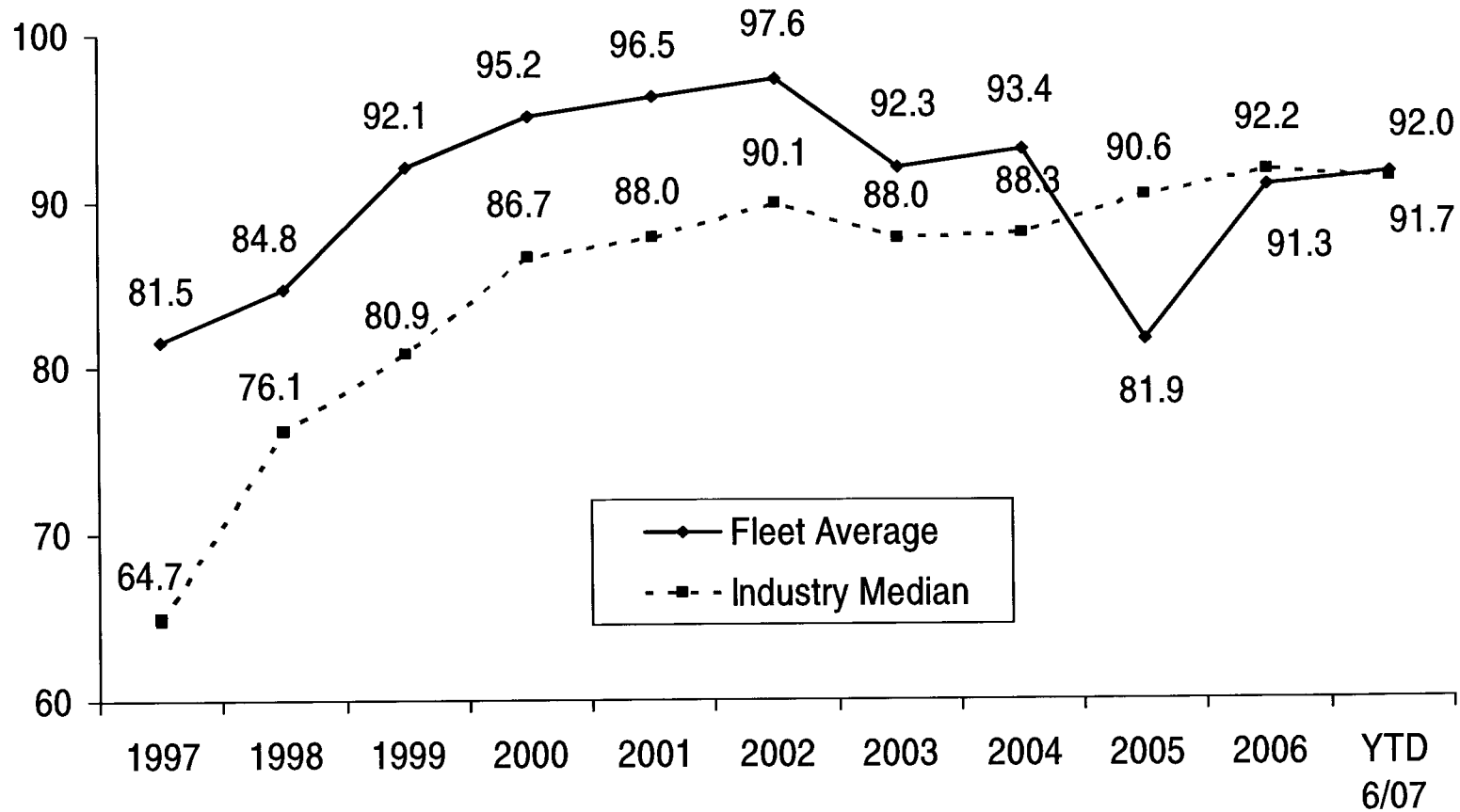
8 **Q. Does this conclude your direct testimony?**

9 **A. Yes.**

WANO Index – Fleet Performance

1997 – Year-to-Date 6/30/07

(Average of 4 sites)



Seabrook added to fleet in 2003; Duane Arnold added to fleet in 2006

NRC Performance Indicators

Initiating Events Cornerstone

Unplanned reactor scrams per 7000 critical hours (automatic and manual)

Turkey Point Unit 3	Turkey Point Unit 4	St. Lucie Unit 1	St. Lucie Unit 2	Seabrook Station	Duane Arnold
Green	Green	Green	Green	Green	Green

Unplanned reactor scrams with loss of normal heat removal

Green	Green	Green	Green	Green	Green
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Unplanned Power Changes per 7000 critical hours

Green	Green	Green	Green	Green	Green
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Mitigating Systems Cornerstone

Mitigating System Performance

Green	Green	Green	Green	Green	Green
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Safety System Functional Failures

Green	Green	Green	Green	Green	Green
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Barriers Cornerstone

RCS Activity

Green	Green	Green	Green	Green	Green
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RCS Leakage

Green	Green	Green	Green	Green	Green
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Emergency Preparedness Cornerstone

Emergency Response Organization (ERO) drill/exercise performance

Green	Green	Green	Green	Green	Green
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ERO Drill Participation

Green	Green	Green	Green	Green	Green
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Alert and Notification System Performance

Green	Green	Green	Green	Green	Green
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Occupational Radiation Safety Cornerstone

Occupational Exposure Control Effectiveness

Green	Green	Green	Green	Green	Green
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Public Radiation Safety Cornerstone

RETS/ODCM Radiological Effluent Occurrence

Green	Green	Green	Green	Green	Green
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Physical Protection Cornerstone

Protected Area Security Equipment Performance Index

Green	Green	Green	Green	Green	Green
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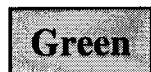
Personnel Screening Program Performance

Green	Green	Green	Green	Green	Green
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FFD/Personnel Reliability Program Performance

Green	Green	Green	Green	Green	Green
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Acceptable Performance Licensee Response Band



Acceptable Performance Increased Regulatory Response Band



Acceptable Performance Required Regulatory Response Band



Unacceptable Performance Plants not normally permitted to operate within this band

