

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 120009-EI
FLORIDA POWER & LIGHT COMPANY

APRIL 27, 2012

IN RE: NUCLEAR POWER PLANT COST RECOVERY
FOR THE YEARS ENDING
DECEMBER 2012 AND 2013

TESTIMONY & EXHIBITS OF:

NILS J. DIAZ

COM	<u>5</u>
APA	<u>1</u>
ECB	<u>6</u>
GCL	<u>1</u>
RAD	<u>1</u>
SRC	<u> </u>
ADM	<u> </u>
OPC	<u> </u>
CLK	<u> </u>
Ct. Rep	<u>1</u>

DOCUMENT NUMBER-DATE

02670 APR 27 2012

FPSC-COMMISSION CLERK

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **FLORIDA POWER & LIGHT COMPANY**

3 **DIRECT TESTIMONY OF NILS J. DIAZ**

4 **DOCKET NO. 120009-EI**

5 **April 27, 2012**

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

8 A. My name is Nils J. Diaz. My business address is 2508 Sunset Way, St. Petersburg
9 Beach, Florida, 33706.

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

11 A. I am the Managing Director of The ND2 Group (ND2). ND2 is a consulting group with a
12 strong focus on nuclear energy matters. ND2 presently provides advice for clients in the
13 areas of nuclear power deployment and licensing, high level radioactive waste issues, and
14 advanced security systems development.

15 **Q. Please describe your other industry experience and affiliations.**

16 A. I presently hold policy advising and lead consulting positions in government and
17 industry, board memberships in private institutions, and Chair the American Society of
18 Mechanical Engineers Presidential Task Force on Response to Japan Nuclear Power
19 Plant Events. I previously served as the Chairman of the United States Nuclear
20 Regulatory Commission (NRC) from 2003 to 2006, after serving as a Commissioner of
21 the NRC from 1996 to 2003. Prior to my appointment to the NRC, I was the Director of
22 the Innovative Nuclear Space Power and Propulsion Institute for the Ballistic Missile
23 Defense Organization of the U.S. Department of Defense, and Professor of Nuclear

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1 Engineering Sciences at the University of Florida. I have also consulted on nuclear
2 energy and energy policy development for private industries in the United States and
3 abroad, as well as the U.S. Government and other governments. I have testified as an
4 expert witness to the U.S. Senate and House of Representatives on multiple occasions
5 over the last 30 years. I also served as a Commissioner on Florida's Energy and Climate
6 Commission from 2008 to 2010. Additional details on my background and experience are
7 provided in my Resume, which is attached as Exhibit NJD-1.

8 **Q. Are you sponsoring any Exhibits in this case?**

9 A. Yes. I am sponsoring the following Exhibits:

- 10 • NJD-1 - Summary Resume of Nils J. Diaz, PhD; and,
- 11 • NJD-2 - NRC Requirements for Mitigation Strategies for Beyond-Design-Basis
12 External Events at COL Holder Reactor Sites (from NRC Combined License
13 Issued for Vogtle Units 3 and 4).

14 **Q. What is the purpose of your testimony?**

15 A. The purpose of my testimony is to review the reasonableness of Florida Power & Light
16 Company (FPL) continuing its pursuit of a combined operating license (COL) for the
17 Turkey Point 6 and 7 project.

18 **Q. Please describe your review of FPL's approach to the licensing of the Turkey Point
19 6 and 7 project.**

20 A. I am familiar with FPL's Combined Operating License Application (COLA) for the
21 Turkey Point 6 and 7 project. I am knowledgeable regarding the Westinghouse AP1000
22 new nuclear plant design referenced by FPL in its COLA, having worked on the
23 certification of that design when I was on the NRC. I have also reviewed FPL's project

1 approach, as described in detail in the Direct Testimony of Steven Scroggs, FPL's Senior
2 Director for Project Development for the Turkey Point 6 and 7 project, filed with the
3 Commission on March 1, 2012, and on this date. I have also considered the NRC review
4 schedule for the project. Finally, I am familiar with the past and ongoing NRC reviews
5 of other COL applications.

6 **Q. Is FPL's approach to the continued pursuit of a COL for the Turkey Point 6 and 7**
7 **project reasonable?**

8 A. Yes. Based on my review, the decisions and management approaches used by FPL are
9 consistent with a reasonable strategy to establish the licensing and construction of the
10 proposed Turkey Point 6 and 7 project. FPL's scheduling and management approach of
11 pursuing the NRC license for the project at this time is reasonable and should prove
12 beneficial to FPL's customers.

13 **Q. Are there external factors that could impact FPL's COL application for Turkey**
14 **Point 6 and 7?**

15 A. Yes. Several key positive factors now exist that are favorable to a timely review and
16 successful resolution of the Turkey Point 6 and 7 COLA. These factors include:

- 17 ● A successfully completed rulemaking for the AP 1000 Design Certification.
- 18 ● The NRC's issuance of COLs for the Vogtle 3 and 4 project in Georgia and the
19 Summer 2 and 3 project in South Carolina.
- 20 ● The successful demonstration of the referenced design and licensing pathway from
21 the Vogtle and Summer projects.
- 22 ● The current NRC COLA review schedule shows that there are only three AP 1000
23 COL applications with active schedules and two other non-AP 1000 applications

1 active. While this review schedule is subject to change, the NRC's review for FPL's
2 Turkey Point 6 and 7 COLA should result in timely completion of application review.

- 3 • The rejection of all third party contentions except for one by the NRC's Atomic
4 Safety and Licensing Board presiding over the Turkey Point 6 and 7 licensing
5 proceeding. This should limit the scope of the contested hearing on the Turkey Point
6 6 and 7 licensing proceeding. FPL has requested that the remaining contention in this
7 proceeding be dismissed. If this effort is successful, the contested hearing could be
8 eliminated in its entirety.

9 **Q. What do you expect to be the effects of the 2011 Fukushima events in Japan on the**
10 **licensing of the Turkey Point 6 and 7 project?**

11 A. There should be no long term impacts from the Fukushima events on new nuclear plant
12 licensing or on the licensing of the Turkey Point 6 and 7 project.

13
14 With respect to new reactors, the NRC has recognized the significant safety
15 enhancements already built-in to reactors with passive safety systems, such as the AP
16 1000 reactor selected for the Turkey Point 6 and 7 project. The NRC has stated that "all
17 of the current COL and design certification applicants are addressing new seismic and
18 flooding requirements adequately in the context of updated NRC guidance." The NRC
19 Staff also concluded that: "By nature of their passive design and inherent 72-hour coping
20 capability for core, containment and spent fuel cooling with no operator action required,
21 the ...AP 1000 design [has] many of the design features and attributes necessary to
22 address the Task Force recommendations."

23

1 As documented in Exhibit NJD-2, there are specific areas that new reactor licensees will
2 have to incorporate into their licensing basis, including integration of accident
3 management procedures for controlling accident decision-making, pre-staging equipment
4 needed for safety actions beyond 72 hours, improvements to emergency preparedness and
5 the expansion of equipment and severe accident management guidelines, that were
6 established after the 9/11 terrorist attacks to protect plants from large fires and
7 explosions, regardless of the origin. However, it is apparent that the certified AP 1000
8 reactor referenced in the Turkey Point 6 and 7 COLA is very close to satisfying the
9 majority of the post-Fukushima changes under consideration by the NRC.

10 **Q. What is your overall conclusion with respect to FPL's efforts to pursue the Turkey**
11 **Point Units 6 and 7 project?**

12 I believe that FPL's strategy to pursue licensing for the Turkey Point 6 and 7 project
13 continues to be reasonable. Assuming that all NRC requirements are met, the NRC
14 should approve the license application for this project.

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

16 A. Yes.

NJD - 1

Dr. Nils J. Diaz is the Managing Director of The ND2 Group, an expert and policy advisor group with a strong focus on the national and international nuclear power development and deployment arena, including new and existing plant licensing, regulatory, financial, policy and communications issues, and the Chief Strategic Officer of Blue Castle Holdings, Inc. The ND2 Group is presently or was recently engaged by governments developing new nuclear options and infrastructure, a major nuclear reactor vendor, US nuclear utilities, international engineering/ consulting firms, and the U.S. Department of Energy. He also provides developmental policy advice to OECD's Nuclear Energy Agency, and serves on three Boards of Directors. He recently served as a Commissioner, Florida Energy and Climate Commission, October 2008-October 2010.

Nils Diaz is a past Chairman of the U.S. Nuclear Regulatory Commission (NRC). Dr. Diaz was designated Chairman of the NRC by President Bush on April 1, 2003 and he served as such until his retirement from government service on June 30, 2006. As Chairman of the NRC, Dr. Diaz served as the principal executive officer of and the official spokesman for the NRC, and had ultimate authority for all NRC functions pertaining to an emergency involving an NRC license; he was directly responsible for all high level interactions with the US Executive Branch and the Congress, as well as the international relationships and the policy development under NRC's charter, including the nuclear security policies and implementation of nuclear plants safety enhancements after 9/11. Dr. Diaz was first nominated by President Clinton and confirmed by the Senate as a Commissioner with the NRC in August 1996, nominated by President Bush and confirmed by the US Senate again in 2001, and exercised the responsibilities of the position until he assumed the Chairmanship of the Commission. As Chairman, he was responsible for the exercise and direction of the Commission's policy-making, licensing and regulatory functions, and employed practical managerial, technical, and entrepreneurial skills to effect changes that enhanced new reactor licensing, license renewal, reactor oversight, enforcement and licensing processes, security and adjudication. Dr. Diaz created and implemented a multi-national initiative to improve the process for safety certification of reactors; the Multinational Design Evaluation Program continues under the umbrella of the Nuclear Energy Agency, OECD.

Prior to his appointment to the NRC, Dr. Diaz was the Director (1985-1996) of a national consortium for advanced nuclear power and propulsion (INSPI) for the Ballistic Missile Defense Organization (BMDO), Department of Defense, Professor of Nuclear Engineering Sciences at the University of Florida (1969-1996, and Dean for Research at CSULB (1984-1986). As a Director for BMDO, he exercised prime contractor management and Lead Scientist responsibilities for a diverse group of industries (including Aerojet, Boeing, Pratt & Whitney, Hughes Electronics, Rocketdyne and SRI), several national laboratories (including Los Alamos NL, Sandia NL, and Lawrence Livermore NL) and seven major universities, under contracts with the Department of Defense, the Defense Nuclear Agency, the Department of Energy and NASA. From 1969 to 1996, Dr. Diaz held senior positions at universities, Boards and industry, and consulted for the U.S. Government and other governments on civilian nuclear energy

development. He also owned six small corporations serving the nuclear industry and government during that period, and spent six years at nuclear utilities and reactor vendors, often troubleshooting technical and management performance issues. He lived in Europe in 1981-1982, while serving as Principal Advisor to Spain's Consejo de Seguridad Nuclear, and consulting for nuclear industries and vendors in other European countries.

Dr. Diaz is internationally recognized for his broad expertise and contributions to nuclear sciences, reactor systems and fuels, to the regulation of nuclear facilities and radioactive materials, to the development of nuclear policy and deployment infrastructure. He has worked extensively in the international arena, including interacting and contributing to major policy, fora and decision-making efforts focusing on energy infrastructure development.

Dr. Diaz has published over 70 refereed technical articles and has participated in more than 200 international forums on nuclear energy, sciences and technology. He has been recognized worldwide for his statesmanship on nuclear affairs, including chairing the G8Nuclear Summit in Russia and leading the US Delegation to the International Atomic Energy Agency General Conference in 2005. He has received many national and international awards, including the Henry DeWolf Smyth 2008 Nuclear Statesman Award, awarded by the Nuclear Energy Institute, representing the nuclear industry, and by the American Nuclear Society. Dr. Diaz has been elected a Member of the Hispanic Hall of Fame and recognized as one of the top 50 Hispanics in Sciences and Engineering, and was named the National Hispanic Scientist of the Year for 2009.

Dr. Diaz holds a Ph.D. and M.S. in Nuclear Engineering Sciences from the University of Florida, and a B.S. Degree in Mechanical Engineering from the University of Villanova, Havana. He was licensed as a Senior Reactor Operator by the NRC and has formal training and practice in health physics, radiological sciences and nuclear medicine. He is a Fellow of the American Nuclear Society, the American Society of Mechanical Engineers, and the American Association for the Advancement of Sciences. He currently chairs the ASME Presidential Task Force in response to the Fukushima accidents.

March 2012

Docket No. 120009-EI
NRC Requirements for Mitigation Strategies for Beyond-Design-Basis
External Events at COL Holder Reactor Sites
Exhibit NJD - 2, Page 1 of 1

REQUIREMENTS FOR MITIGATION STRATEGIES
FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS
AT COL HOLDER REACTOR SITES
(VOGTLE UNITS 3 AND 4)

Attachment 2 to this order for Part 50 licensees requires a phased approach for mitigating beyond-design-basis external events. The initial phase requires the use of installed equipment and resources to maintain or restore core cooling, containment and spent fuel pool (SFP) cooling capabilities. The transition phase requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from off site. The final phase requires obtaining sufficient offsite resources to sustain those functions indefinitely.

The design bases of Vogtle Units 3 and 4 includes passive design features that provide core, containment and SFP cooling capability for 72 hours, without reliance on alternating current (ac) power. These features do not rely on access to any external water sources since the containment vessel and the passive containment cooling system serve as the safety-related ultimate heat sink. The NRC staff reviewed these design features prior to issuance of the combined licenses for these facilities and certification of the AP1000 design referenced therein. The AP1000 design also includes equipment to maintain required safety functions in the long term (beyond 72 hours to 7 days) including capability to replenish water supplies. Connections are provided for generators and pumping equipment that can be brought to the site to back up the installed equipment. The staff concluded in its final safety evaluation report for the AP1000 design that the installed equipment (and alternatively, the use of transportable equipment) is capable of supporting extended operation of the passive safety systems to maintain required safety functions in the long term. As such, this Order requires Vogtle Units 3 and 4 to address the following requirements relative to the final phase.

- (1) Licensees shall develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and SFP cooling capabilities following a beyond-design-basis external event.
- (2) These strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the normal heat sink and have adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities at all units on a site subject to this Order.
- (3) Licensees must provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities at all units on a site subject to this Order.
- (4) Licensees must be capable of implementing the strategies in all modes.
- (5) Full compliance shall include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies.