

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

**In re: Petition for Determination )  
of Need for Levy Units 1 and 2 )  
Nuclear Power Plants )**

DOCKET NO. 080148-EI  
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**TESTIMONY  
OF  
JEFFREY J. LYASH  
ON BEHALF OF  
PROGRESS ENERGY FLORIDA**

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**IN RE: PETITION FOR DETERMINATION OF NEED FOR LEVY UNITS 1 AND 2  
NUCLEAR POWER PLANTS**

**FPSC DOCKET NO. \_\_\_\_\_**

**DIRECT TESTIMONY OF  
JEFFREY J. LYASH**

**I. INTRODUCTION AND SUMMARY.**

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

A. My name is Jeff Lyash. I am employed by Progress Energy Florida, Inc. ("Progress Energy" or the "Company"). My business address is 299 First Avenue North, St. Petersburg, Florida 33701.

**Q. By whom are you employed and in what capacity?**

A. I am President and Chief Executive Officer of Progress Energy Florida ("PEF" or the "Company"). In this role, I have overall responsibility for the operations of Progress Energy Florida.

**Q. Please describe your educational background and professional experience.**

A. I graduated with a bachelor's degree in mechanical engineering from Drexel University in 1984. Prior to joining Progress Energy, I worked with the U.S. Nuclear Regulatory Commission ("NRC") in a number of capacities. In 1993, I joined Progress Energy, and spent eight years at the Brunswick Nuclear Plant in Southport, North Carolina, ultimately becoming Director of Site Operations. In January 2002, I

1 assumed the position of Vice President of Transmission/Energy Delivery in the  
2 Carolinas. On November 1, 2003, I was promoted to Senior Vice President of Energy  
3 Delivery-Florida. On June 1, 2006, I was promoted to President and CEO of PEF,  
4 which is the position I currently hold.

5  
6 **Q. What is the purpose of your direct testimony?**

7 A. I provide an overview of PEF's request for a determination of need to construct two  
8 new nuclear power plants at the Company's Levy County site, and introduce the other  
9 Company witnesses who will provide more detailed testimony supporting specific  
10 portions of our Need Petition. I outline why we need the generating capacity in the  
11 2016 timeframe, why new nuclear generation is the best resource to meet our  
12 customers' needs, and the challenges we will face over the next eight to nine years in  
13 siting, licensing, and constructing these plants, as well as the significant transmission  
14 and other facilities associated with these large base load plants.

15  
16 **Q. Are you sponsoring any exhibits to your testimony?**

17 A. No.

18  
19 **Q. Please summarize your testimony.**

20 A. PEF needs approximately 2,200 megawatts ("MW") of firm resource capacity in the  
21 2016-2019 timeframe to reliably meet its customers' growing demand for power. We  
22 have identified new nuclear generating plants as the most prudent means of meeting  
23 that need over the long term; one that will improve PEF's fuel diversity and security,

1 enhance the Company's and the State's energy independence, mitigate price volatility,  
2 add needed base load capacity to PEF's system, and play an essential role in reducing  
3 greenhouse gas and other air emissions. We recognize that these plants will have very  
4 high initial capital costs as compared to natural gas fired combined cycle plants.  
5 Furthermore, the Company appreciates that the long licensing and construction  
6 process for new nuclear plants involves inherent uncertainties that could affect the cost  
7 and schedule of such construction. Nevertheless, we believe that the Company and the  
8 State should not put all its eggs in one basket and build only new natural gas fired  
9 generation. Rather, we believe that new nuclear generation is a key to securing  
10 Florida's energy future, and a critical hedge against the future risk of volatile and  
11 increasing fossil fuel prices, and the likely significant future costs of carbon and other  
12 air emissions regulation. Our customers and the State will benefit over the long term  
13 by adding new nuclear generation in the state sooner rather than later.

14 Florida is the nation's fourth most populous state and ranks third in energy  
15 consumption per person. At PEF, we expect overall demand for electricity in our  
16 service area to grow significantly over the next ten years. We are committed to  
17 meeting the growing energy needs of the present and future with safe, reliable,  
18 environmentally responsible, and reasonably priced electric service. We will meet our  
19 customers' needs through a balanced approach that combines energy efficiency,  
20 alternative energy sources, and state-of-the-art power plants. Our balanced solution  
21 approach will result in reliable, cost-effective power for our customers, greater fuel  
22 diversity and security with less dependence on fossil and foreign fuels, a cleaner  
23 environment, and a stronger Company.

1 Energy Efficiency programs and alternative energy resources will play a  
2 critical role in PEF meeting its customers' growing demand for power. PEF is a  
3 national leader in energy efficiency programs. Through our efforts over the last 25  
4 years, our customers have reduced energy usage in an amount equal to powering the  
5 City of Orlando for two years. Our programs have reduced energy demand by 1,500  
6 MWs and eliminated the need for 3 new 500 MW generating power plants. This has  
7 resulted in reducing carbon dioxide emissions by 7,500,000 tons or the equivalent of  
8 taking 1,900,000 cars from Florida roads every year. Last year, we expanded our  
9 already successful demand side management ("DSM") and energy efficiency  
10 programs to add 39 new measures, including two new residential programs. We  
11 expect these additional measures to avoid the need to construct 527 MWs of new  
12 generation.

13 Similarly, PEF is a leader in using cost-effective, environmentally sensitive  
14 renewable energy sources within Florida. To mention just a few, we have invested in  
15 partnerships researching hydrogen fuel cell projects, including implementing Florida's  
16 first hydrogen fueling station. In 2006, we executed a contract with a renewable  
17 energy provider to build the largest carbon-neutral biomass plant in the world. In  
18 2007, we executed two 75 MW contracts with another producer for the output of the  
19 largest wood waste power plants in the nation. Building on these successes and to  
20 promote the development of even more renewable energy resources within the State,  
21 in July of last year the Company issued a Request for Renewable Resources asking for  
22 any and all renewable energy developers to come forward with proposed renewable  
23 energy projects. We are in discussions with several respondents to hopefully develop

1 more renewable energy projects within the state. These efforts benefit the  
2 environment, reduce Florida's dependence on foreign fuel sources, and increase  
3 supply diversity.

4 Energy efficiency and alternative energy sources alone, however, are not and  
5 will not be enough to meet our customers' growing needs. Without Levy Units 1 and  
6 2, PEF's reserve margins will fall below the minimum 20% planning criterion in the  
7 2016 time period and beyond.

8 Given this, PEF examined and evaluated supply and non-supply side  
9 alternatives to meet our customers' growing energy needs. This included analyses of  
10 renewable energy technologies, demand side management programs (including energy  
11 efficiency programs), conventional generating alternatives such as natural gas fired  
12 combined cycle power plants and traditional coal-fired power plants, and advanced  
13 technologies such as integrated gasification combined cycle ("IGCC") plants, super  
14 critical coal-fired plants, and advanced light water nuclear reactor technology.

15 Based on our analysis, we selected advanced, state-of-the-art nuclear power  
16 plant generation as the most cost-effective means of meeting our need for power. New  
17 nuclear generation will further diversify our fuel and generation mix, enhance fuel  
18 security, minimize fuel price volatility with a low cost, stable fuel supply, provide an  
19 emissions-free electricity source in a carbon constrained future world, and add needed  
20 base load generating capacity to PEF's system. Selection of new nuclear to meet  
21 PEF's need is also consistent with the legislation, policies, and recommendations set  
22 forth by Congress, the State Legislature, the Florida Energy Commission, the  
23 Governor's Action Team, and rules issued by this Commission last year promoting

1 new nuclear power and recognizing the critical role that new nuclear generation must  
2 play in meeting the Nation's and State's energy demands in an increasingly carbon  
3 constrained world.

4 To keep new nuclear generation as a viable option in the 2016-2017 timeframe,  
5 however, the Company must act now. Equipment suppliers and key components are  
6 limited. As such, we must execute contracts and order long lead time equipment to  
7 hold our place in the queue and preserve our ability to commence construction in the  
8 2011-2012 time period. In addition, we must prepare our combined construction and  
9 operating license application or "COLA," and file with the U.S. Nuclear Regulatory  
10 Commission ("NRC") later this year in order to assure receipt of the license by 2011  
11 to support plant construction. Likewise, we must begin acquiring the rights-of-way  
12 needed to site and construct the significant new transmission facilities that will be  
13 needed across the PEF system to accommodate the new Levy plants. This process is  
14 already underway and is expected to take at least four years. Given these time  
15 pressures, the Company must file its Need Petition now and is requesting an  
16 affirmative determination of need by the Commission for the Company's Levy Units 1  
17 and 2 nuclear power plants, together with the associated facilities, including  
18 transmission lines and substation facilities, that must be constructed in order to  
19 reliably deliver power from the Levy plants to PEF's customers.

20  
21 **Q. Please provide an overview of those, in addition to yourself, who will support**  
22 **PEF's Need Petition and the areas these witnesses will address.**

1 A. In addition to my own testimony, the Company will present the testimony of the  
2 following witnesses:

- 3 • Mr. Ben Crisp, head of PEF's System Planning and Regulatory Performance,  
4 who will support the Company's Need Study and Petition for determination of  
5 need for Levy Units 1 and 2. Mr. Crisp will discuss PEF's Integrated Resource  
6 Planning process and how that process led the Company to identify Levy Units  
7 1 and 2 to meet the Company's reliability need for the time period 2016 to  
8 2019 and beyond. He will explain how the Company determined that Levy  
9 Units 1 and 2 were superior to other supply-side alternatives, including  
10 renewable generation resources that were commercially available to the  
11 Company to meet its reliability need, and how existing and planned Demand  
12 Side Management ("DSM") programs fail to mitigate the need for Levy Units  
13 1 and 2. Mr. Crisp will explain why Levy Units 1 and 2 are the most cost-  
14 effective alternative to meet the Company's need taking into account increased  
15 fuel diversity and supply reliability, fuel independence, existing and future  
16 emission compliance costs, and long-term electric reliability that the Florida  
17 Legislature requires us to consider when determining the cost-effectiveness of  
18 nuclear power plants.
- 19 • Mr. Danny Roderick, Vice President – Nuclear Projects & Construction, who  
20 will explain the site selection process and the prudence of that site selection for  
21 Levy Units 1 and 2; explain the initial technology selection for Levy Units 1  
22 and 2 and how that selection will provide the Company and its customers with  
23 a state-of-the art nuclear power plant that will operate more efficiently and



1 safely than the safe and efficient units of the current nuclear fleet; explain the  
2 preliminary, non-binding cost estimates of Levy Units 1 and 2 and how those  
3 costs will be managed through an engineering, procurement, and construction  
4 (“EPC”) contract with an experienced contractor with this nuclear design and  
5 through other contracts; and explain the schedule for engineering, site work,  
6 and construction.

- 7 • Mr. Dale Oliver, Vice President – Transmission Operations and Planning, who  
8 will discuss the necessary transmission upgrades at the site and from the site to  
9 the Company’s load centers; explain the general routes for transmission of  
10 power from the site to load centers; provide the preliminary cost estimates for  
11 the engineering, easement procurement, and construction work; and explain the  
12 reasonableness of the preliminary transmission design, engineering, and  
13 resulting cost estimates at this time.

- 14 • Mr. Michael Kennedy, Principal Environmental Specialist, who will explain  
15 the environmental approval process associated with construction and operation  
16 of Levy Units 1 and 2; explain the environmental regulations currently in place  
17 and how Levy Units 1 and 2 provide the Company and its customers with  
18 environmental benefits compared to fossil and certain renewable generation;  
19 describe the potential additional environmental benefits from the construction  
20 and operation of Levy Units 1 and 2 in the event of greenhouse gas (“GHG”)  
21 regulations; and explain the estimated costs associated with such potential  
22 GHG regulations.

- 1           • Mr. Sasha Weintraub, Executive Director – Regulated Fuels, who will explain  
2           the Company’s fuel resources and their respective cost differences; the  
3           Company’s fuel forecasts; and the volatility and supply instability of fossil  
4           fuels (natural gas, oil, and coal), especially in Florida given its natural and  
5           physical supply constraints, compared to nuclear fuel.
- 6           • Mr. John Siphers, Manager – Nuclear Fuel, Management and Safety Analysis  
7           Section, who will explain the components of nuclear fuel assemblies used to  
8           produce energy and the respective costs of the components, including the  
9           uranium commodity market; the historical, current and future uranium  
10          commodity price; and the forecast for the cost of nuclear fuel when Levy Units  
11          1 and 2 are expected to be commercially operational.
- 12          • Mr. Robert Niekum, Director – Account Management, Origination &  
13          Cogeneration, who will explain the Company’s current and future renewable  
14          capacity and/or energy providers under contract; PEF’s efforts to obtain  
15          additional renewable energy generation, including its Request for Renewables;  
16          and PEF’s on-going negotiations with potential renewable energy providers.
- 17          • Mr. John Masiello, Director – DSM & Alternative Energy Strategies, who will  
18          explain the Company’s DSM Programs, including its current and new energy  
19          efficiency programs and measures; the historical and projected MW savings  
20          from such programs and measures; the limits of existing, planned and future  
21          DSM programs; and their inability to mitigate the need for Levy Units 1 and 2.
- 22          • Mr. Javier Portuondo, Director – Regulatory Planning, who will explain the  
23          Company’s estimated annualized base revenue requirements for the first

1           twelve (12) months of operation of Levy Unit 1 and Levy Unit 2, respectively,  
2           based on the Company's non-binding cost estimates in accordance with  
3           Section 403.519(4) (a) 4, Fla. Stats. and Rule 25-22.081(2) (c), F.A.C.  
4

5       **II.     THE COMPANY'S NEED FOR ADDITIONAL GENERATING CAPACITY**

6       **Q.     What is PEF's need for additional generating capacity in the 2016-2018**  
7       **timeframe?**

8       **A.     As Mr. Crisp discusses more fully in his testimony, PEF needs to add approximately**  
9       **2,200 MW to maintain electric system reliability and integrity in the time period 2016**  
10       **to 2019 and beyond.**

11  
12       **Q.     What is driving PEF's need for additional generating capacity?**

13       **A.     Growth in the number of customers and their demand for power, as well as PEF's**  
14       **need to further diversify our fuel and generation mix, enhance fuel security, minimize**  
15       **fuel price volatility with a low cost, stable fuel supply, provide an emissions-free**  
16       **electricity source in a carbon constrained future world, and add needed base load**  
17       **generating capacity to PEF's system. In addition, as Messrs. Crisp and Roderick**  
18       **explain, building two units "back-to-back" will provide significant economic**  
19       **advantages in the form of cost savings from engineering and construction efficiencies**  
20       **and economies of scale.**

21           Over the past two decades, PEF has seen more than 600,000 homes and  
22           businesses added within its service territory. The Company's customer base has  
23           grown by roughly 160 percent since 1975, from 622,000 customers to about 1.7

1 million today. PEF will continue to share in Florida's population growth. Even with  
2 expected slower population growth based on more recent experience and due to recent  
3 economic conditions affecting the Florida housing market, for example, PEF still  
4 expects customer growth. Over the last three years, PEF has added annually on  
5 average roughly 40,000 new customers (homes and businesses) to PEF's service area.  
6 That growth is equivalent to adding a medium-sized city each year. We expect overall  
7 demand for electricity in our service area to grow by 25% over the next ten years.

8 In addition to customer growth, our customers are using more energy today  
9 than ever before. Florida's per-capita electricity use currently ranks third in the  
10 country. Many factors contribute to this high and growing consumption of electricity,  
11 including the size of homes, the prevalence of air conditioning in Florida due to the  
12 subtropical environment, and more electronic equipment in homes and businesses that,  
13 even with technological advances in energy efficiency, consume an increasing amount  
14 of electricity. The average new home in Florida is 54 percent larger today than in  
15 1970 and 12 percent larger than in 1990. Use of air conditioning in Florida is now  
16 nearly universal when, for example, in 1980 only about two-thirds of homes in the  
17 south had air conditioning. Computers, electronic games, plasma-screen TVs (which  
18 use more electricity than a refrigerator, traditionally the third-largest source of  
19 electrical use in a typical home), and other electronic devices have increased in  
20 number and use in each home and business. As a result, per-capita electricity usage  
21 among PEF's customers in Florida has grown more than 53 percent since 1975.  
22 Increasing electricity use by customers is expected to continue to contribute to  
23 increased load growth.

1 As a result and as discussed in greater detail by Mr. Crisp, by the summer of  
2 2016, PEF's projected Reserve Margin will be 15.4 percent without the addition of  
3 Levy Unit 1, well below the Company's minimum 20 percent Reserve Margin  
4 commitment.

5  
6 **Q. Can PEF meet its need by non-generating resource alternatives?**

7 **A.** No. PEF recognizes that the cleanest and greenest MW is the one that is never used.  
8 To this end, with this Commission's leadership, PEF has implemented some of the  
9 most aggressive DSM and Energy Efficiency programs in the nation. Since 1981,  
10 through its cost-effective programs, including direct load control programs, PEF has  
11 saved approximately 1,500 MWs, equal to avoiding the need to build 3 power plants,  
12 or reducing carbon emissions by 7,500,000 tons; the equivalent of removing 1,900,000  
13 cars from Florida highways each year.

14 PEF, however, has not stopped there. Last year, PEF implemented 39 new  
15 cost-effective DSM measures. These included new attic insulation and duct test and  
16 repair programs, high-efficiency electric heat pump incentives, additional solar water  
17 heater incentives, and new low income weatherization assistance programs, to name  
18 only a few. The net effect of these programs will be to reduce PEF's demand by more  
19 than 527 MW.

20 Even under its revised DSM Plan, however, PEF still needs additional supply-  
21 side reserves over the next ten years, including Levy Units 1 and 2 in the 2016 to 2019  
22 timeframe and beyond. The goal of utility DSM programs and incentives is to  
23 encourage customers to choose more energy saving options or equipment than they

1 would without a utility program. As Mr. Masiello discusses in his testimony, a  
2 number of these programs, have reached or are reaching saturation levels with  
3 customers. For example, although PEF's direct load management program (which  
4 allows the Company to shut off customers' air conditioning and pool pumps during  
5 peak periods in exchange for a credit on their utility bill) has been very successful, it is  
6 close to reaching the maximum amount that can be used to meet PEF's reserves,  
7 which is no more than 60 percent in the winter and no more than 50 percent in the  
8 summer. With expected customer and demand growth, PEF cannot provide DSM  
9 options in quantities needed to offset the need for additional generation. PEF will still  
10 need additional generation resources to serve customer needs.

11  
12 **Q. Has PEF utilized renewable energy resources and technologies to the extent such**  
13 **resources and technologies are reasonably available?**

14 **A.** Yes. As part of our balanced approach, PEF also has been the most aggressive  
15 developer of renewable energy projects within the state. Most recently, in 2006, PEF  
16 executed a contract with Florida Biomass Energy Group to purchase the output of the  
17 largest biomass, "E-grass" plant in the nation. When it comes on line in the 2011  
18 timeframe, PEF will receive about 117 MW of carbon neutral power generated in the  
19 state. Similarly, in July 2007, PEF executed a contract with Biomass Gas & Electric  
20 to purchase the output of the largest waste wood product biomass plant in the country.  
21 This plant is expected to come on line in 2011 and produce 75 MWs of renewable  
22 energy. The Company recently executed another contract with BG&E to acquire the

1 output of a second proposed 75 MW plant, which this Commission approved in  
2 February of 2008.

3 As Mr. Niekum discusses in more detail in his testimony, in July of 2007, PEF  
4 also issued a nationwide request for renewables (or "RFR") to foster development of  
5 even more renewable energy sources in the state. In our RFR, we asked for proposals  
6 from any renewable fuel project that, among others, would be located in Florida, sell  
7 the output at a cost equal to or below the cost to build new power plants, and be  
8 capable of predictable and reliable operation. In the same RFR, we sought to expand  
9 the Company's solar energy programs and sought additional prices for solar  
10 photovoltaics. The intent of the RFR is to provide flexibility in negotiations while  
11 complying with the regulatory requirement that renewable energy resources must be  
12 cost-effective to customers. PEF is in active discussions with several renewable  
13 energy developers to potentially bring on line even more renewable energy resources  
14 in the next five years.

15 Florida's geography and weather, however, significantly limit the types of  
16 renewable energy resources that are viable in the state. Traditional renewable energy  
17 resources like geothermal power, for example, are not available in Florida. Similarly,  
18 there is a small amount of hydroelectric power in Florida but the elevation changes  
19 required for large-scale hydroelectric power plants simply do not exist. Wind and  
20 solar resources also have limited application in PEF's service area. Florida has only  
21 marginal wind resources, and they are located along the coastline where local  
22 opposition can be expected to such facilities and the wind is not constant enough at  
23 levels necessary to sustain the cost-effective production of power. The current solar

1 photovoltaic technology is also not cost effective to produce significant, sustained  
2 power levels, even assuming the vast land necessary for such large scale photovoltaic  
3 resources was available and available at a cost-effective price. Other potential  
4 renewable energy sources, such as off-shore wind and ocean currents, are still in the  
5 development stages. Thus, while renewable energy sources are part of the Company's  
6 balanced solution to meet the economic and energy needs of its customers now and in  
7 the future and PEF remains committed to renewable resources, there simply are  
8 insufficient renewable energy resources available to PEF over the next decade to meet  
9 customer capacity and energy needs without the addition of other generation resources  
10 to PEF's system. Levy Units 1 and 2 are still necessary in the 2016 to 2019 timeframe  
11 to meet the Company's capacity and energy needs for its customers.

12  
13 **III. NEW NUCLEAR GENERATION IS PEF'S BEST OPTION TO MEET ITS  
2016 NEEDS**

14 **Q. Why has PEF selected new nuclear power as its supply-side option to meet the  
15 Company's 2016 need?**

16 **A.** PEF selected new nuclear generation to meet its 2016 need primarily because Levy  
17 Units 1 and 2 will:

- 18 • Increase PEF's fuel diversity and security and improve the Company's overall fuel  
19 mix.
- 20 • Emit no GHG or other air emissions and contribute toward significant and  
21 meaningful reductions in GHG emissions on PEF's system and in the State relative  
22 to alternative fossil fuel generation options.
- 23 • Add needed high capacity factor, base load power to PEF's system.



- 1 • Meet federal and state policy makers' call for the development of new nuclear  
2 generation.
- 3 • Provide the most cost-effective generating alternative for our customers over the  
4 long term taking into account fuel diversity and fuel supply reliability, the reduced  
5 reliance on foreign fossil fuels, existing and future emission compliance costs, and  
6 long-term electric reliability.

7

8 **Q. How will the addition of Levy Units 1 and 2 help enhance PEF's fuel diversity**  
9 **and security?**

10 A. PEF has the most diverse fuel and generation mix of any Florida utility. That  
11 notwithstanding, PEF has only one other nuclear power generating unit on its  
12 system. As Mr. Crisp shows, that nuclear unit currently represents 14 percent of  
13 the electrical energy generation on PEF's system. With the addition of Levy Units  
14 1 and 2, by 2018 nuclear energy generation will represent 38 percent of the total  
15 electrical energy generation on PEF's system. Without these nuclear units,  
16 however, electrical energy generation from nuclear fuel will fall to 12 percent, and  
17 fossil fuels will account for 85 percent of the electrical energy generation on PEF's  
18 system by 2018. The addition of Levy Units 1 and 2 are critical to reducing PEF's  
19 reliance on fossil fuels and avoid a situation for PEF and its customers where, a  
20 decade from now, 85 percent of the total electrical energy generation is still  
21 dependent on fossil fuels. A decade from now Levy Units 1 and 2 will not simply  
22 maintain fuel diversity; they will enhance fuel diversity on PEF's generation  
23 system.

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**Q. Why are fuel and security diversity important?**

**A.** Fossil fuel prices tend to be volatile. Nuclear generation, in contrast, provides low, stable, non-volatile fuel costs, which help to create more stable pricing to customers. Over the last 30 years, uranium has been the lowest and most stable fuel source in the world. We expect that to continue, with customers seeing that benefit over the next 60 years. This will be particularly true when weather and other factors make oil and natural gas prices extremely volatile. Using nuclear generation also improves fuel security and helps achieve greater energy independence from the Middle East and other volatile regions where fossil fuels are produced.

As Mr. Weintraub details in his testimony, hurricanes in 2004 and 2005 disrupted a significant portion of the Gulf of Mexico natural gas production where PEF and the State receive nearly all of our natural gas supplies, which stressed utilities' abilities to meet energy demands during those periods. While PEF has sought to mitigate its exposure by contracting for alternative, inland salt dome gas storage, and executing other physical and financial hedges, all new generation in the State before 2016 will be natural gas fired, and subject to the same supply and transportation risks. In contrast, as Mr. Siphers discusses, nuclear fuel is typically not subject to these same risks. Uranium is in plentiful supply, is mined in generally stable regions such as Canada, Australia, the United States, and Russia, and is processed and assembled in locations not subject to the same weather risks.

1 **Q. How will Levy Units 1 and 2 help reduce GHG and other air emissions in**  
2 **Florida?**

3 **A.** Nuclear power plants emit no air pollutants. Unlike fossil fuel powered generating  
4 facilities, the Levy nuclear units will produce no NOx, SO<sub>2</sub>, mercury, or greenhouse  
5 gas emissions, such as carbon. A conventional coal-fired power plant of 1,092 MW  
6 capacity, for example, will emit up to approximately 48,000 tons of SO<sub>2</sub>, 12,000 tons  
7 of NOx, and roughly 7.2 million tons of carbon dioxide (CO<sub>2</sub>) per year. A nuclear  
8 plant with the same capacity emits virtually none of these compounds. Compared to a  
9 coal-fired facility of similar capacity, a 1,092 MW nuclear plant will avoid 2.9 million  
10 tons of SO<sub>2</sub>, 720,000 tons of NOx, and 432 million tons of CO<sub>2</sub> over a 60-year  
11 lifetime. Levy Units 1 and 2 will avoid 1.4 million tons of NOx, 5.8 million tons of  
12 SO<sub>2</sub>, 28,800 pounds of mercury, and 864 million tons of carbon emissions. For carbon  
13 alone, this equals removing 2.9 million cars per year off Florida roads over 60 years,  
14 or a total of 174 million cars, over the life of the plant. No other generating resource  
15 has these significant environmental benefits.

16  
17 **Q. How do potential GHG emissions costs affect the economics of the Levy nuclear**  
18 **units?**

19 **A.** GHG costs significantly improve the economics of new nuclear generation. New  
20 nuclear generation provides a significant hedge against potential additional costs to  
21 consumers resulting from the likely future regulation of GHG emissions, and  
22 depending on the magnitude of GHG costs, favorably affects the economics of new  
23 nuclear generation. As set forth in the Company's Need Study and as explained by

1 Mr. Crisp, when GHG compliance costs are taken into account in PEF's base case  
2 analysis, Levy Units 1 and 2 are more economic than an all gas generation plan under  
3 the majority of possible scenarios, with the benefits for customers on a CPVRR basis  
4 ranging from a low of \$85 million to a high of \$12 billion in those scenarios. In the  
5 Company's judgment, over the course of the expected 60-year commercial life of  
6 Levy Units 1 and 2, the nuclear generation units are more cost effective than an all gas  
7 generation plan when the hedge against future GHG regulatory costs and the benefits  
8 of enhanced fuel diversity and supply reliability, greater fuel independence, and  
9 improved long-term stability and reliability of the electric grid are considered.

10  
11 **Q. What benefits do customers receive with the addition of new base load generating  
12 capacity to PEF's system?**

13 **A.** PEF has not added new base load capacity to its system in more than two decades.  
14 During the last 15 years, PEF has added only peaking and intermediate natural gas-  
15 fired capacity to its generating fleet. Base load nuclear plants will run around-the-  
16 clock because of their low cost fuel and reliable operations, and will thus displace  
17 higher cost generation on PEF's system. This will benefit customers over the long  
18 term in more stable prices.

19  
20 **Q. How is building new nuclear generation consistent with federal and state policy?**

21 **A.** Policy-makers at the federal and state levels have recognized new nuclear generation's  
22 critical role in gaining energy independence, enhancing fuel diversity and security, and  
23 lowering GHG and other air emissions, and have enacted legislation to promote

1 nuclear power as a key element of any balanced energy policy. In 2005, Congress  
2 expressed its clear support for nuclear power when it enacted the Energy Policy Act of  
3 2005 ("EPAct of 2005"). In the EPAct of 2005, Congress established several federal  
4 incentives to foster new nuclear development.

5 Likewise, in 2006, the Florida Legislature passed by a 119-1 vote the Florida  
6 Renewable Energy Technologies and Energy Efficiency Act of 2006, which further  
7 promoted the development of new nuclear generation within the State and which (1)  
8 required the Commission to determine need based on electric system reliability and  
9 integrity, including fuel diversity, the need for base load generation, and the need for  
10 adequate electricity at a reasonable cost; and (2) required the Commission to consider  
11 the cost-effectiveness of nuclear power generation taking into account the need to  
12 improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and  
13 natural gas, reduce air emission compliance costs, and contribute to the long-term  
14 stability and reliability of the grid. This legislation also directed the Commission to  
15 implement rules related to nuclear power plant cost recovery including, for example,  
16 the recovery of preconstruction costs and carrying costs through the capacity cost  
17 recovery clause and the allowance in base rates of the annual revenue requirements  
18 associated with the nuclear power plant when that plant is placed in commercial  
19 service.

20 Consistent with this legislative directive, the Commission subsequently  
21 enacted the nuclear power plant cost recovery rule to implement the 2006 Florida  
22 legislation. In its recommendation to the Commission regarding implementation of  
23 the nuclear cost recovery rule as directed by the Florida legislature, the Commission

1 Staff explained that the “clear intent of the 2006 Florida Legislation is to promote new  
2 nuclear generation in Florida by providing Florida utilities the incentives to overcome  
3 these obstacles [including federal regulatory review, the “extremely long” permitting  
4 and construction period, and public perception]; the Legislature was clearly concerned  
5 that without these incentives, Florida utilities will continue to build natural gas and  
6 coal fired generation to meet Florida’s growing energy needs.”

7 Similarly, as recent as October and November of last year, the Florida Energy  
8 Commission and the Governor’s Action Team on Energy and Climate Change issued  
9 recommendations encouraging the development of new nuclear power within the  
10 State.

11 PEF’s selection of Levy Units 1 and 2 clearly supports this public policy  
12 encouraging new nuclear generation.

13  
14 **Q. Are Levy Units 1 and 2 the most cost-effective and best means of meeting PEF’s  
15 2016 capacity needs?**

16 **A.** Yes. Our analysis shows that new nuclear generation is more cost-effective than  
17 *natural gas fired generation over the life of the proposed plants taking into account the*  
18 *factors of fuel diversity and fuel supply reliability, reduced reliance on foreign fossil*  
19 *fuels, existing and future emission compliance costs, and long-term electric reliability*  
20 *that the Florida Legislature requires us to consider. There is no question and we*  
21 *recognize that these plants will have very high, initial capital costs; particularly as*  
22 *compared to traditional natural gas fired combined cycle power plants. Our analysis*  
23 *shows, however, that new nuclear plants are the best economic choice to meet the*

1 Company's future capacity needs when one considers the costs of carbon regulation,  
2 the strong possibility that natural gas prices will continue to rise more than our  
3 conservative forecasts, the critical need for enhanced fuel diversity, the need to reduce  
4 the Company's reliance on fossil fuels, and the plants' significant contribution to PEF  
5 making meaningful reductions in carbon and other air emissions.

6 The cost-effectiveness of the proposed nuclear facilities has reasonably been  
7 determined under the existing legislative requirements based on the circumstances we  
8 currently face and the information available to us at this time. However, the design  
9 finalization, financing, licensing, and construction processes are all long and complex  
10 and each carries risks and uncertainties that cannot be entirely avoided. We will be  
11 taking steps to mitigate those risks and will not proceed with a project that imposes an  
12 unreasonable portion of those risks on the Company or our customers. Nevertheless,  
13 we cannot proceed with a project without appreciating the existence and potential that  
14 such uncertainties and risks exist. Other PEF witnesses including Messrs. Crisp,  
15 Kennedy, Weintraub, and Roderick address these issues in greater detail.

16  
17 **Q. Has PEF had any discussions with other entities regarding potential joint**  
18 **ownership of a portion of Levy Units 1 and 2?**

19 **A.** Yes. We have had discussions with nearly every, if not every, electric utility,  
20 including municipal electric utilities, power agencies, electric co-operatives, and other  
21 investor-owned utilities, within the state. PEF met with the Florida Municipal Power  
22 Agency ("FMPPA") in the summer of 2006 when we were in the early stages of our  
23 evaluation of potential new nuclear plants in Florida. We also had a number of

1 separate discussions during that time with Orlando Utilities Commission ("OUC"),  
2 Seminole Electric Cooperative, Inc. ("SECI"), Jacksonville Electric Authority  
3 ("JEA"), Tampa Electric Company ("TECO"), and a number of other municipal  
4 electric utilities within the state. As the project became more defined, we held a  
5 second meeting in September 2007 with representatives of FMPA (representing 15  
6 cities in its All Requirements Project), OUC, SECI, and JEA. We had separate  
7 discussions in September with representatives from Lakeland Electric, Gainesville  
8 Regional Utilities ("GRU"), Reedy Creek Improvement District, and the cities of  
9 Tallahassee, New Smyrna Beach, Homestead, and Vero Beach regarding what, if any  
10 interest, any of these entities had in ownership or purchasing output from the plant in  
11 the event PEF had any potential excess MWs to sell. PEF held another follow up  
12 meeting in November, and most recently last month. Our discussions to date have  
13 been encouraging and are ongoing.

14 Although PEF needs the full output of both units, joint ownership may have  
15 some potential benefits to PEF customers. These potential benefits include smoothing  
16 out the "lumpiness" of the large units when they come on line, spreading a portion of  
17 the significant capital risk to other non-PEF customers, and assisting in the siting of  
18 the significant transmission facilities required for the project. PEF will continue its  
19 negotiations with potential joint owners; however any ultimate decision will depend  
20 upon whether the parties can reach mutually agreeable terms and conditions, and  
21 whether joint ownership benefits PEF and its customers.



1 **IV. KEY RISKS AND CHALLENGES PEF WILL FACE IN LICENSING AND**  
2 **CONSTRUCTING LEVY UNITS 1 AND 2**

3 **Q. Please explain the key risks and challenges PEF will face in bringing Levy Units 1**  
4 **and 2 on line in 2016 and 2017.**

5 **A.** PEF believes that adding new nuclear generation is the right decision for the  
6 Company, its customers, and the State. However, this will be a multi-billion dollar,  
7 decade long project involving not only the construction of the first nuclear plants in  
8 the country on a Greenfield site in more than 25 years, but also the siting and  
9 construction of one of the single, largest transmission infrastructure projects in the  
10 history of Florida. As such, there will be significant risks and challenges to  
11 completing this project on the aggressive schedule, and on budget – most of which  
12 will be beyond the Company’s reasonable control. Such risks and challenges include,  
13 among others: permitting and licensing delays at both the state and federal level;  
14 litigation delays at both the state and federal level; labor and equipment availability;  
15 vendor ability to meet schedules; cost escalations; the imposition of new regulatory  
16 requirements; the ability to acquire necessary rights-of-way in a timely manner for all  
17 associated facilities, including those necessary to construct the new 500 kV and 230  
18 kV transmission lines to reliably deliver the power from the energy complex to our  
19 customers; significant inflation or an increase in the cost of capital; the ability to  
20 obtain and maintain financing at reasonable terms; lack of public, investor, or policy  
21 maker support; and potential regulatory disallowances of costs incurred, to name only  
22 a few. Any one of these hurdles, if significant enough, could jeopardize the project.

23 Although we plan to move forward with this project upon receipt of an order  
by this Commission approving PEF’s need, maintaining a cooperative dialogue to

1 monitor key project milestones, and education of and transparency to all key  
2 stakeholders during the next eight to nine years will be critical to overcoming these  
3 challenges and to successfully completing a project of this magnitude and cost.  
4

5 **Q. Should the Commission grant PEF's request for a determination of need for Levy**  
6 **Units 1 and 2?**

7 **A.** Yes. As I discussed above, new nuclear generation will be critical to PEF's ability to  
8 meet its growing capacity needs, while at the same time, improving fuel diversity and  
9 security, enhancing fuel price stability, lessening the Company's reliance on fossil  
10 fuels, and contributing to significant reductions in GHG and other air emissions. We  
11 are mindful of the significant costs of this project; particularly as compared to  
12 traditional natural gas fired combined cycle plants. However, we believe that the  
13 Company and the State should adopt a balanced approach to our energy future, and not  
14 limit new base load generation additions to natural gas fired generation. Rather, new  
15 nuclear generation is a critical hedge against the future risk of volatile and increasing  
16 fossil fuel prices, and the likely significant future costs of carbon and other air  
17 emissions regulation. Our customers and the State will benefit over the long term by  
18 adding new nuclear generation in the state sooner rather than later.  
19

20 **Q. Does this conclude your testimony?**

21 **A.** Yes, it does.  
22