ORIGINAL

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 070290 -EI**

In re: Petition of Progress Energy Florida, Inc.
to increase base rates to recover the full revenue requirements of the Hines Unit 2 and Unit 4 power plants pursuant to Commission Order No. PSC-05-0945-S-EI.

# DIRECT TESTIMONY OF KEVIN MURRAY

April 30, 2007

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

A. My name is Kevin Murray. My business address is Post Office Box 1551, Raleigh, North Carolina 27601.

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

A. I am employed by Progress Energy Carolinas, Inc. ("PEC") as Director, Project Engineering, in the Plant Construction Department.

**Q. What are your responsibilities and duties as Director, Project Engineering?**

A. As Director, Project Engineering, for PEC's and Progress Energy Florida's ("PEF") Plant Construction Department, I oversee the design, engineering and procurement of major equipment of PEF's and PEC's power plants (non-nuclear). Prior to becoming Director, I held the position of Manager of Project

Engineering from 2004 to 2006 where I was primarily responsible for the design and procurement of major equipment of the Hines Unit 4 natural gas fired, combined cycle power plant in Polk County, Florida. Prior to my employment with PEC, I have held various power plant engineering and project management positions with El Paso Energy International and Westinghouse Electric Corporation.

**Q. What is your educational background?**

A. I hold a Bachelor of Science degree in Mechanical Engineering from the University of Arizona.

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

A. The purpose of my testimony is to explain the reasonable and prudent steps PEF took in constructing the Hines Unit 4 power plant and the extraordinary circumstances that led to the increases in the overall costs of the power generating facility.

**Q. Are you sponsoring any Exhibits with your testimony?**

A. Yes. I am sponsoring the following Exhibits:

- Exhibit No. __ (KM-1), which is the contract between PEF and S&B/Bibb for the construction of Hines Unit 3.
- Exhibit No. __ (KM-2), which is the contract between PEF and S&B/Bibb for the construction of Hines Unit 4.

- Composite Exhibit __ (KM-3), which includes data from the U.S. Department of Labor - Bureau of Labor Statistics' website (www.bls.gov) documenting the increases in commodity prices during the 2004-2007 time frame.
- Exhibit __ (KM-4), which summarizes the total projected in-service cost of the Hines 4 generating plant and the total, estimated increase over the estimate PEF provided in its Need filing.

**Q. Please summarize your testimony.**

A. PEF's Hines Unit 4 generating plant, excluding associated transmission facilities, is estimated to cost $267.0 million. This represents an $18.4 million increase over the estimate PEF presented in its 2004 need petition. PEF's costs in excess of its estimate in the 2004 need petition were prudently incurred and due to extraordinary circumstances. From the time PEF issued its RFP, filed its need case, and received Commission approval to build the plant, commodity and labor prices increased extraordinarily. For example, PEF's constructor S&B/Bibb raised its price $8 million over its Hines Unit 3 price to account for material and labor escalation. Although PEF took all reasonable steps to minimize the increases following the selection of Hines 4 and the filing of the need case including, for example, executing a lump sum fixed price contract with S&B/Bibb to construct the plant, it still saw unprecedented increases in owner controlled items. For example, in 2004 and 2005, steel pipe and copper prices increased by 35% and 26% annually.

Because PEF had prudently factored in escalation based on historical rates, the extraordinary amount of increases in 2004-2005 costs was beyond PEF's control and unforeseen by PEF.

**Q. What was the estimated cost of the Hines Unit 4 generating plant, excluding associated transmission facilities?**

A. PEF estimated the plant cost to be approximately $248.6 million, including Allowance for Funds Used During Construction ("AFUDC").

**Q. How did the company arrive at that estimated cost?**

A. My group, within the Plant Construction Department, relied on our experience and reviewed available market data, including our own, real time experience with the costs we were incurring for the Hines 3 plant – a nearly identical unit to Hines 4, which ultimately went into service in December 2005. We escalated various components of the project, such as labor, commodities, and equipment, based on our historical experience and our understanding of where we thought the market was heading at that time. At the time PEF filed its Need Case with the Florida Public Service Commission (the "Commission") in August 2004, we were in discussions, but had not executed any contractual agreements with the major equipment or engineering, procurement and construction ("EPC") vendors. This meant that by August 2004, when PEF filed its Need case with the Commission, we were operating off early 2004 numbers, as were other respondents to the RFP. As such, our Need filing included our early 2004 estimates of what we thought that the

market would look like in late 2004 and 2005 when we planned to execute the EPC and other major contracts. For example, PEF executed the EPC contract in December 2004, which had a value of more than $105 million. From February through June of 2005, PEF executed contracts for the steam turbine generator, the heat recovery steam generators, the transformers and the condenser.

**Q. What is the estimated in-service cost of the Hines Unit 4 generating plant?**

A. As set forth in Exhibit KM-4, the estimated in-service cost of the Hines Unit 4 generating plant, excluding associated transmission facilities and including AFUDC, is $267.0 million.

**Q. What happened during the time PEF completed its bid evaluation in 2004 and the time PEF executed its contractual agreements with vendors to build the Hines 4 plant?**

A. During that period, PEF saw extraordinary increases in labor and commodity prices that it could not have foreseen at that time. These increases appeared to be due to, among other things, (1) the increased demand for commodities nationally and internationally, including steel, copper, aluminum, and concrete, (2) the increased regional and national demand for craft labor due to factors including accelerated economic expansion, and an increase in the power plant construction and petrochemical construction fields, and (3)

corresponding increases in demand, including lead times, for major equipment.

**Q. Can you provide some specific examples of these extraordinary increases?**

A. Yes. Some of the primary commodities that comprise a power plant are steel, copper and concrete. The increase in these commodities in 2004 and 2005 was extraordinary, as shown in Exhibit No. ___ (KM-3). The table below compares the annual increase in these products over the 20 year period prior to 2004 with the two year period including 2004 and 2005.

Table 1: Comparison of commodity prices

| | Average Annual Increase (from 1982 to 2003) | Average Annual Increase (during 2004 & 2005) |
|---|---|---|
| Steel tube & pipe | 1% | 35% |
| Copper | 2% | 26% |
| Concrete | 2% | 8% |

**Q. How did this affect the cost of Hines Unit 4?**

A. These extraordinary increases were reflected in the price we were ultimately able to negotiate for Hines Unit 4. For example, PEF's EPC contract increased by $8 million over the Hines 3 contract price, which was attributable to escalation in the EPC materials, equipment, and labor. In addition, the heat recovery steam generator ("HRSG"), a major piece of

equipment made primarily from steel, increased by 17% (nearly $3 million) over the cost to procure similar HRSGs for Hines 3.

**Q. What steps did PEF take to mitigate these price increases?**

A. As it did with Hines 3, PEF executed a lump sum, fixed price contract with its EPC contractor, S&B/Bibb. This shifted the risk of non-owner supplied labor, commodity, and equipment price increases to S&B/Bibb. In addition, PEF released the EPC contractor in December 2004, 6 months earlier than planned, so that the contractor could lock in prices before costs continued to rise. PEF also evaluated the use of secondary market equipment on the project. Secondary market equipment is equipment that was fabricated for use for another project that was subsequently cancelled and was never installed. Since secondary market equipment was already fabricated, it would not have been subject to escalation from raw materials. After evaluating several components, PEF ultimately elected to procure the steam turbine generator from the secondary market at a price well below the market.

**Q. Was PEF prudent in incurring the costs in excess of its initial Hines Unit 4 RFP estimate?**

A. Yes. PEF aggressively and prudently managed the costs of the Hines 4 power plant project. When it comes on line – on time – it will be one of the most efficient units on PEF's generation system. Even with the cost increases, which PEF effectively managed, Hines Unit 4 will still be more cost

effective than any of the other proposals PEF received in response to its 2003 RFP.

**Q. Were the cost increases over the initial estimate due to extraordinary circumstances?**

A. Yes. As I have noted in my testimony above, these increases were not foreseeable to PEF at the time it submitted its self build bid.

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

A. Yes, it does.

Docket No. _____-EI
Witness: Kevin Murray
Exhibit No. ___ (KM-1)

# REDACTED

Docket No. _____-EI
Witness: Kevin Murray
Exhibit No. ___ (KM-2)

# REDACTED

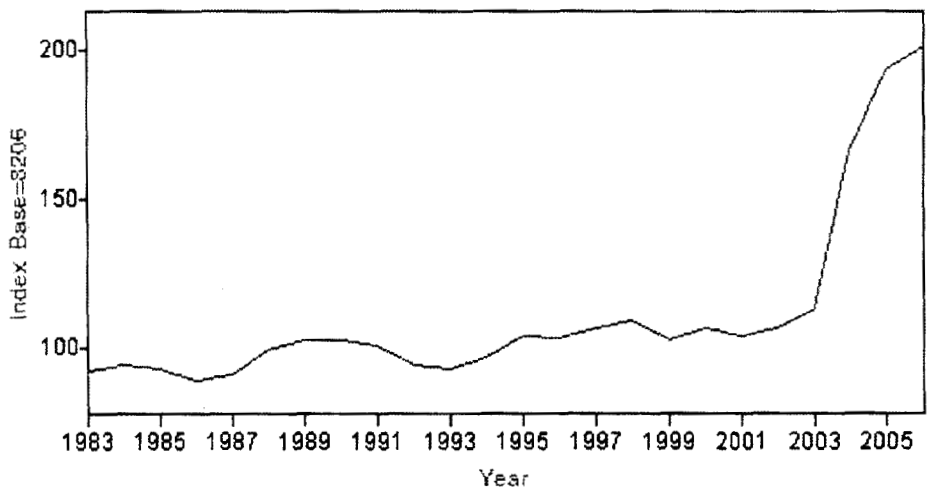
# U.S. Department of Labor
## Bureau of Labor Statistics

*Bureau of Labor Statistics Data*



## Producer Price Index-Commodities

**Series Id:** WPU101706
Not Seasonally Adjusted
**Group:** Metals and metal products
**Item:** Steel pipe and tube
**Base Date:** 8206




| Year | Annual |
|---|---|
| 1983 | 92.2 |
| 1984 | 94.2 |
| 1985 | 93.3 |
| 1986 | 89.4 |
| 1987 | 90.9 |
| 1988 | 99.3 |
| 1989 | 102.6 |
| 1990 | 102.6 |
| 1991 | 100.8 |
| 1992 | 94.1 |
| 1993 | 92.8 |
| 1994 | 96.9 |
| 1995 | 104.4 |

| | |
|---|---|
| **1996** | 103.2 |
| **1997** | 106.9 |
| **1998** | 109.4 |
| **1999** | 102.5 |
| **2000** | 106.6 |
| **2001** | 104.0 |
| **2002** | 106.7 |
| **2003** | 113.3 |
| **2004** | 166.3 |
| **2005** | 193.3 |
| **2006** | 201.6(P) |

P : Preliminary. All indexes are subject to revision four months after original publication.



**U.S. Bureau of Labor Statistics**
Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Do you have a **Data question**?
Do you have a **Technical (web) question**?
Do you have **Other comments**?

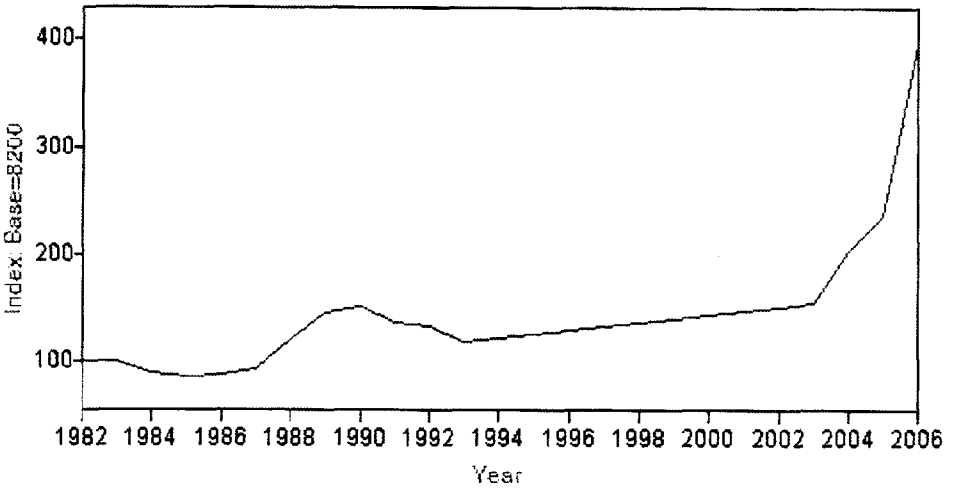
**Change Output Options:** From: 1982 To: 2007 GO

include graphs NEW!

More Formatting Options

## Producer Price Index-Commodities

**Series Id:** WPU102403
Not Seasonally Adjusted
**Group:** Metals and metal products
**Item:** Copper, alloyed and unalloyed
**Base Date:** 8200




| Year | Annual |
|---|---|
| 1982 | 100.0 |
| 1983 | 100.9 |
| 1984 | 89.5 |
| 1985 | 86.8 |
| 1986 | 87.1 |
| 1987 | 93.4 |
| 1988 | 120.5 |
| 1989 | 145.5 |
| 1990 | 151.2 |
| 1991 | 136.8 |
| 1992 | 133.1 |
| 1993 | 118.3 |
| 2003 | 154.7 |

| | |
|---|---|
| **2004** | 203.0 |
| **2005** | 235.5 |
| **2006** | 397.8(P) |

P : Preliminary. All indexes are subject to revision four months after original publication.



**U.S. Bureau of Labor Statistics**
Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Do you have a **Data question**?
Do you have a **Technical (web) question**?
Do you have **Other comments**?

**Change Output Options:** From: 1982 To: 2007 GO

include graphs NEW! More Formatting Options

## Producer Price Index-Commodities

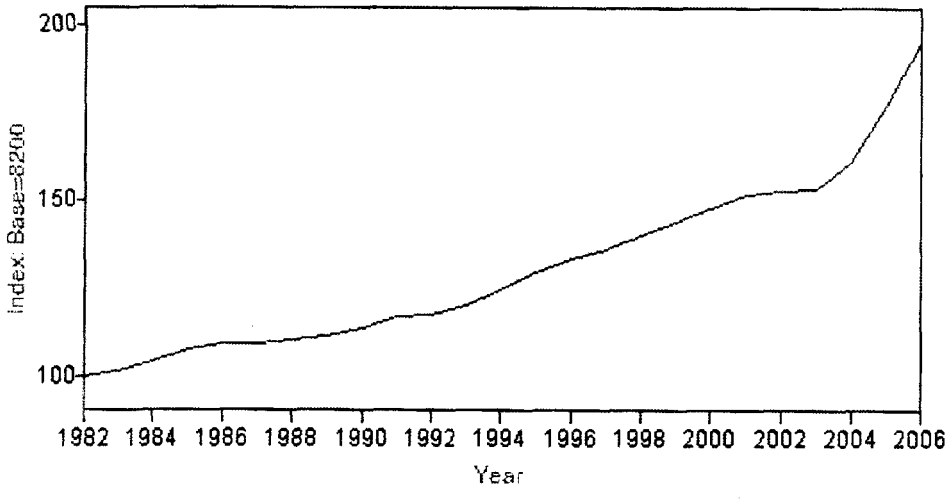
**Series Id:** WPS133
Seasonally Adjusted
**Group:** Nonmetallic mineral products
**Item:** Concrete products
**Base Date:** 8200

| Year | Annual |
|---|---|

No Data Available for selected year(s)

---

**Series Id:** WPU133
Not Seasonally Adjusted
**Group:** Nonmetallic mineral products
**Item:** Concrete products
**Base Date:** 8200




| Year | Annual |
|---|---|
| 1982 | 100.0 |
| 1983 | 101.4 |
| 1984 | 103.9 |
| 1985 | 107.5 |
| 1986 | 109.2 |

| | |
|---|---|
| **1987** | 109.4 |
| **1988** | 110.0 |
| **1989** | 111.2 |
| **1990** | 113.5 |
| **1991** | 116.6 |
| **1992** | 117.2 |
| **1993** | 120.2 |
| **1994** | 124.6 |
| **1995** | 129.4 |
| **1996** | 133.2 |
| **1997** | 136.0 |
| **1998** | 140.0 |
| **1999** | 143.7 |
| **2000** | 147.8 |
| **2001** | 151.7 |
| **2002** | 152.7 |
| **2003** | 153.6 |
| **2004** | 161.2 |
| **2005** | 177.2 |
| **2006** | 195.1(P) |

P : Preliminary. All indexes are subject to revision four months after original publication.



**U.S. Bureau of Labor Statistics**
Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Do you have a **Data question**?
Do you have a **Technical (web) question**?
Do you have **Other comments**?

Progress Energy

Hines Power Block 4
Summary By Year
Project Cost Detail for Year Ending 12/31/2006

*Regulatory Amounts Excluding Common Change Order Items*
*Total Approx. $2.6M*

| CATEGORY | 2006 YTD Actual | 2006 YTD Budget | 2006 YTD Variance | Project to Date Actual | Project to Date Budget | Project to Date Variance | Total Projection | Total Project Budget | Total Project Budget vs Projection Variance |
|---|---|---|---|---|---|---|---|---|---|
| **Generation** | | | | | | | | | |
| Major Equipment / EPC | 90,608,394 | 78,134,825 | (12,473,569) | 190,012,667 | 160,775,983 | (29,236,684) | 201,454,763 | 193,645,455 | 7,809,308 |
| Permitting | - | - | - | 654,685 | 400,000 | (254,685) | 705,568 | 1,188,924 | (483,356) |
| Natural Gas Infrastructure Upgrades | 2,179,358 | 2,000,000 | (179,358) | 2,179,358 | 2,000,000 | (179,358) | 2,220,283 | 2,067,694 | 152,589 |
| Operations and Start-Up | - | | - | - | - | - | 3,780,000 | 6,097,629 | (2,317,629) |
| Project Management | 4,711,902 | 6,714,800 | 2,002,898 | 7,449,155 | 12,935,246 | 5,486,091 | 14,398,484 | 8,180,830 | 6,217,654 |
| Owners Cost | 865,305 | 1,616,690 | 751,385 | 1,387,655 | 2,045,316 | 657,661 | 3,738,522 | 10,338,469 | (6,599,947) |
| AFUDC | 14,844,955 | 15,830,353 | 985,398 | 20,724,339 | 17,717,604 | (3,006,735) | 40,706,112 | 27,043,000 | 13,663,112 |
| **Total Generation** | 113,209,914 | 104,296,668 | (8,913,246) | 222,407,859 | 195,874,149 | (26,533,710) | 267,003,732 | 248,562,001 | 18,441,731 |
| **Transmission** | | | | | | | | | |
| Transmission Integration & Interconnection | 2,527,650 | 2,619,542 | 91,892 | 2,575,127 | 2,619,542 | 44,415 | 5,706,243 | 6,897,189 | (1,190,946) |
| Hines-West Lake Wales 230kV Line | 29,465,889 | 16,619,087 | (12,846,802) | 32,519,012 | 22,206,607 | (10,312,405) | 49,943,655 | 26,488,909 | 23,454,746 |
| AFUDC | 656,390 | 1,262,350 | 605,960 | 656,390 | 1,721,033 | 1,064,643 | 4,420,756 | 4,228,548 | 192,208 |
| **Total Transmission** | 32,649,929 | 20,500,979 | (12,148,950) | 35,750,529 | 26,547,182 | (9,203,347) | 60,070,654 | 37,614,646 | 22,456,008 |
| **Total:** | **145,859,843** | **124,797,647** | **(21,062,196)** | **258,158,388** | **222,421,331** | **(35,737,057)** | **327,074,386** | **286,176,647** | **40,897,739** |

Docket No. _____-EI
Witness: Kevin Murray
Exhibit No. ___ (KM-4)
Page 1 of 1