

BEFORE THE FLORIDA
PUBLIC SERVICE COMMISSION

DOCKET NO. 070098 -EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S
PETITION TO DETERMINE NEED FOR
FPL GLADES POWER PARK UNITS 1 AND 2
ELECTRICAL POWER PLANT

CMP _____
COM 5
CTR Org
ECR
GCL 1
OPC 1
RCA _____
SCR _____
SGA _____
SEC _____
OTH _____

DIRECT TESTIMONY & EXHIBIT OF:

WILLIAM L. YEAGER

DOCUMENT NUMBER-DATE

01105 FEB-15

FPSC-COMMISSION CLERK

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **FLORIDA POWER & LIGHT COMPANY**

3 **DIRECT TESTIMONY OF WILLIAM L. YEAGER**

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

5 **JANUARY 29, 2007**

6

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

8 A. My name is William L. Yeager. My business address is Florida Power &
9 Light Company, Engineering and Construction Division, 700 Universe
10 Boulevard, Juno Beach, Florida 33408.

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

12 A. I am employed by Florida Power & Light Company (FPL) as Vice President
13 of Engineering and Construction.

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

15 A. I am responsible for engineering and construction of all generation projects
16 for the Company, as well as all procurement and start-up activities. This
17 includes the proposed FPL Glades Power Park (FGPP) Units 1 and 2.

18 **Q. Please describe your educational background and business experience?**

19 A. I received a Bachelor of Mechanical Engineering degree from the Georgia
20 Institute of Technology in 1982. I received an MBA from the University of
21 South Florida in 2003. I am a registered professional Engineer in the State of
22 Florida and a member of the American Society of Mechanical Engineers.

1 My entire 24 years of work experience has involved the design, engineering
2 and construction of electrical power plants, in which I have held numerous
3 positions with increasing responsibilities. My career began as a mechanical
4 engineer with FPL in 1982. In 1987, I was lead engineer for the preliminary
5 engineering phase of Lauderdale 4 and 5, two 400 MW combined cycle
6 repowered units that came on line in 1992.

7
8 From 1988 to 1991, I was the Project Engineering Manager for FPL's Martin
9 Coal Gasification Combined Cycle Project. This project consisted of the
10 permitting of the Martin Combined Cycle Units 3 and 4, two 400 MW natural
11 gas fired combined cycle plants; Martin Coal Gasification Combined Cycle
12 Units 5 and 6, two 400 MW integrated gasification combined cycle plants, and
13 the retrofit capability for converting Units 3 and 4 to coal gasification. This
14 project is noteworthy in that it represented one of the first detailed reviews for
15 the use of constructing a large scale 400 MW integrated combined cycle plant
16 using coal as a feedstock in the United States. Due to poor economics (e.g.,
17 high O&M and poor reliability) and concerns with scale-up of the technology,
18 FPL only constructed the natural gas fired Martin Combined Cycle Units 3
19 and 4 portion of the project.

20
21 Following the completion of Martin 3 and 4 in 1991, I held various
22 management positions at the FPL Martin Plant site. In 1995, I became
23 Operations Manager for FPL Energy's predecessor, ESI Energy, Inc., an

1 unregulated affiliate of FPL. This included operations responsibilities for
2 fossil fueled power plants which included natural gas, oil and coal, and
3 renewable energy power plants which included wind, solar and wood by-
4 products.

5
6 From 1997 to 1999, I was a General Manager within the Power Generation
7 Division for FPL responsible for providing engineering for combustion
8 turbines and balance of plant components. In this role I had responsibilities
9 for fossil fueled power plants which included natural gas, oil and FPL's coal
10 plants St. Johns River Power Park Units 1 and 2, which FPL has a 20%
11 ownership and Scherer Unit 4, in which FPL has a 76% ownership.

12
13 From 1999 through 2001, I was Plant General Manager of FPL's Manatee
14 Plant.

15
16 From 2001 to 2005, I was the Director of Engineering in the Engineering and
17 Construction Division with overall responsibility for the engineering of all
18 FPL power plant projects.

19
20 In my current position as Vice President of Engineering and Construction I am
21 responsible for the engineering, construction and start-up of all power plant
22 projects for FPL. This position includes an overall responsibility for
23 reviewing, monitoring and performing any technical evaluations on all

1 generation technology options for FPL. This includes providing technology
2 assessments, which would include the estimation of construction costs,
3 operating costs, and performance projections such as heat rate, output,
4 availability and reliability, requiring an understanding of the most current
5 technology advancements. For a solid fuel power plant, such technological
6 options include sub-critical pulverized coal (SPC), supercritical pulverized
7 coal (SCPC), ultra-supercritical pulverized coal (USCPC or advanced
8 technology coal), circulating fluidized bed (CFB) and integrated gasification
9 combined cycle (IGCC) plants.

10 **Q. Are you sponsoring an exhibit in this case?**

11 A. Yes. I am sponsoring an exhibit consisting of the following documents which
12 are attached to my direct testimony:

13 Document No. WLY-1 FGPP Construction Cost Components

14 Document No. WLY-2 FGPP Indexing

15 **Q. Are you sponsoring any part of the Need Study for this proceeding?**

16 A. Yes. I co-sponsor Sections III.E, F, G and Section V.A.4.a.(i) of the Need
17 Study. I also sponsor Appendix H of the Need Study.

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

19 A. I am testifying in support of FPL's Petition for Determination of Need. I
20 describe some of the key considerations in determining the technology
21 proposed to be used at FGPP and explain why USCPC is the best option
22 among the solid-fuel technologies considered. I discuss FPL's expected in-
23 service dates for FGPP 1 and 2, and describe areas of uncertainty associated

1 with a project of this size and scale, particular as those uncertainties relate to
2 the schedule. Finally, I explain the approach FPL has employed to produce
3 reasonable estimates for the cost of FGPP 1 and 2.

4

5

I. TECHNOLOGY

6

7 **Q. What advanced coal generating technologies were considered by FPL?**

8 A. The technologies that were considered are: SPC, USCPC, CFB and IGCC.
9 Cost and performance estimates were provided as part of the initial
10 assessments performed in the fall of 2004 for FPL's Report on Clean Coal
11 Generation, a report that was provided to the FPSC on March 10, 2005.
12 Updated cost and performance estimates were also provided to FPL's
13 Resource Planning in December of 2006.

14 **Q. Please provide a brief overview of the technologies considered.**

15 A. Most coal burning power plants use SPC boilers, which are the most
16 predominant. SCPC plants have been in use since the initial introduction in
17 the 1960s, while USCPC have been in use since the mid 1990s. The most
18 advanced coal-fired pulverized coal plants, USCPC, have been in successful
19 operation starting in 1994. There are currently 17 USCPC plants in operation
20 with another 25 plants currently under construction, mostly in Europe and the
21 Far East. The industry's technology choice is trending toward USCPC due to
22 its inherent performance advantages over the older SPC technology.

1 The two commercially available technologies that use the fluidized bed boiler
2 are the bubbling bed (BFB) or CFB. The CFB technology is the most
3 prevalent of the fluidized bed technologies used today. The first utility-grade
4 CFB unit was a 110 MW Department of Energy (DOE) Clean Coal
5 Demonstration Project constructed in 1987. The largest CFB unit operating in
6 the United States is the 300 MW Jacksonville Electric Authority (JEA)
7 Northside plant. The technology is considered to be a viable technology in
8 300 MW sized boilers and typically is used in locations where fuels such as
9 lignite or a coal waste product are readily available, which is not the case in
10 South Florida.

11
12 FPL also considered IGCC. IGCC utilizes a gasification process which dates
13 back to the 1800s. In fact, the first patent was granted to Lurgi GmbH in
14 Germany in 1887. Though the gasification process itself is considered
15 mature, it is the integration of the gasification process into a combined cycle
16 power plant that is not currently viewed as viable for large scale reliable
17 power generation applications. In connection with my responsibilities when I
18 was the Engineering Project Manager of the Martin Coal Gasification Project
19 between 1988 and 1991, FPL extensively evaluated the IGCC process and
20 determined that the technology had not matured to a point where it would be
21 competitive with other technologies. Issues at the time included higher
22 construction and operating costs, lower availability due to reliability issues,
23 and marginal performance characteristics, e.g., heat rates greater (meaning

1 less efficient) than USCPC. FPL continues to reassess the technology each
2 year as part of its generation technology planning. However, FPL's current
3 evaluation of IGCC indicates that there have not been sufficient advancements
4 in the technology: thus, FPL continues to conclude that IGCC is not the most
5 cost effective solid fuel alternative currently available.

6 **Q. Please comment on FPL's selection of the USCPC technology from your**
7 **perspective as the Vice President responsible for reviewing, monitoring**
8 **and performing any technical evaluations on all generation technology**
9 **options for FPL.**

10 A. The detailed reasons for the technology selection are discussed by other
11 witnesses, including David Hicks, Steve Sim, and Steve Jenkins. From my
12 perspective, USCPC is the right choice for FPL and its customers. The
13 USCPC technology has a substantial track record of successful application in
14 the industry. There are currently over 17 USCPC applications operating
15 worldwide with 25 currently under construction. Also, in the case of the
16 USCPC and SPC technologies, single units in the 1,000 MW range already are
17 operating reliably; therefore, there are no scale-up risks associated with these
18 technologies.

19
20 In contrast, there are only four applications operating worldwide for a coal-
21 fired IGCC electric generating plant – a technology that has been available far
22 longer than USCPC. Moreover, the four operating IGCC plants, which
23 include two in the United States, are small scale (less than 300 MW)

1 demonstration projects, built with substantial government funding, and have
2 not met initial projections of cost, efficiency and reliability performance.
3 Although there are plans to increase the technology's commercial size to 600
4 MW, to date no unit has been built at this scale. IGCC has substantial scale-
5 up risk.

6
7 Simply stated, in contrast to USCPC, cost, schedule and performance risks
8 associated with IGCC were determined to be unacceptable.

9 **Q. What other considerations or advantages relative to advanced technology**
10 **coal influenced FPL's technology selection?**

11 A. As I discussed, the technology and construction risk also have an impact on
12 the potential for schedule risk. It is FPL's desire to bring fuel diversity into
13 our current mix of fuels used for our generation fleet in the 2013 and 2014
14 timeframe. The selection of USCPC provides us with the best plan in meeting
15 this timeframe.

16

17

II. CONSTRUCTION

18

19 **Q. What is the expected construction schedule for FGPP Units 1 and 2?**

20 A. FPL will begin construction upon receipt of the necessary federal and state
21 certifications and permits, currently estimated to occur as early as February
22 2008. The expected construction duration for FGPP as a whole is
23 approximately 64 months, with Unit 1 taking approximately 52 months to

1 complete and Unit 2 following approximately 12 months later. For reasons
2 that I discuss more fully below, it has become increasingly clear that, due to
3 market conditions relating to demand for power generation equipment and
4 engineering, procurement and construction (EPC) services, as well as other
5 uncertainties associated with the permitting and construction schedules, it is
6 more likely that the in-service date of FGPP 1 will occur later in 2012 or early
7 in 2013 instead of the previously projected in-service date of June 2012 and,
8 likewise, that the in-service date of FGPP 2 will occur in later 2013 or early
9 2014, instead of June 2013. For purposes of the analysis, however, FPL is
10 assuming in-service dates of June 1, 2013 for Unit 1 and June 1, 2014 for Unit
11 2.

12 **Q. Please describe the factors that lead you to conclude that the prospects**
13 **for meeting the summer of 2012 and 2013 in-service dates for FGPP 1**
14 **and 2 are less likely than previously thought?**

15 A. This is a project of enormous scope and size, requiring many different
16 approvals and permits, large pieces of equipment, separately ordered and
17 manufactured with long delivery lead times, and a massive labor force of
18 craftsmen and skilled labor. Thus, there are many aspects of FGPP that could
19 negatively affect the ability to achieve the earlier in-service dates.

20
21 Obviously, a first, critical step in the development of FGPP is to obtain all of
22 the regulatory approvals necessary to commence construction. At the state
23 level, this includes the Land Use and Certification Orders from the Florida

1 Siting Board. Federal level approvals include the Prevention of Significant
2 Deterioration (PSD) Air Construction permit, the Underground Injection
3 Control (UIC) permit and the Army Corp of Engineers (ACOE) Dredge and
4 Fill permit. These approvals are required not only for the power plant site, but
5 also for the off-site transmission improvements, which include the Hendry
6 sub-station described in Mr. Coto's testimony. There are numerous other
7 permits and approvals that are required along the way.

8
9 Delays in the delivery of major equipment or difficulties in obtaining adequate
10 labor for a project of this scope and scale could also negatively affect FGPP's
11 originally planned in-service dates. For example, the current backlog in
12 specialty fabrication facilities, which include large forgings for steam
13 turbines, boilers and fuel handling equipment, are such that any shop delays
14 resulting from labor issues, weather, or factory malfunctions could result in an
15 extended delay in the delivery of the equipment. Obtaining adequate labor
16 itself at the FGPP site will present a significant challenge for the project. The
17 project is expected to employ, on average, 1,600 construction workers over
18 the 64-month construction timeframe. Though the general region around the
19 FGPP site has an estimated construction labor force of 65,000, there will be a
20 significant portion of the labor force which will require specialized skills
21 generally not found in the region. These skilled craftsmen, such as
22 boilermakers, welders qualified in high alloy welding and supervision
23 experienced in power plants, are expected to be in high demand given the

1 number of projected coal generation projects being constructed in the United
2 States. Current projections are that as many as 45 coal units will be under
3 construction in the United States during the 2008 to 2013 timeframe.

4
5 Because of the significant uncertainties presented by these and similar factors
6 on a project of such scale, and their potential impact on FGPP's construction
7 schedule, it is simply not possible to project with sufficient confidence the
8 original in-service dates for FGPP 1 and 2 of June 2012 and June 2013,
9 respectively. For these reasons, we have based our project plan and the
10 associated analyses on nominal in-service dates of June 1, 2013 and June 1,
11 2014, which I am confident can be met. However, as I previously indicated
12 FPL intends to pursue a schedule that will bring FGPP on-line earlier.

13 **Q. What is FPL doing to mitigate these potential schedule uncertainties for**
14 **FGPP Units 1 and 2?**

15 A. FPL has taken several steps to minimize and mitigate schedule uncertainties.
16 Such actions taken have included:

- 17 • Submitted all permit applications necessary for the start of
18 construction. This included the Site Certification Application, PSD
19 Air Construction application, Underground Injection Control
20 exploratory well application and the ACOE Dredge and Fill
21 application.
- 22 • Initiated procurement of major equipment, which includes the boilers,
23 steam turbines and the pollution control equipment.

1 The power plant costs include site development, major equipment, EPC, start-
2 up and project staffing. The site development costs include, but are not
3 limited to: costs of engineering, designing, and permitting the power plant;
4 costs associated with site and technology selection; initial site clearing, filling
5 of the site up to finished grade, all roadways, stormwater facilities and the on-
6 site rail loop. Major equipment costs would include boilers, steam turbine
7 generators, and the pollution control equipment. EPC costs would include
8 balance of plant equipment such as the stack, cooling towers, transformers,
9 condensers, fuel and limestone unloader, reclaimer and crushers, and bulk
10 materials such as concrete, steel, cable and labor. A majority of the power
11 plant costs are based on firm proposals, based on which we are in advanced
12 stages of negotiation. This includes the EPC, boilers, steam turbine and
13 pollution control equipment costs.

14
15 The transmission interconnection and integration costs include all of the on-
16 site switchyard and the off-site electrical improvements necessary to
17 interconnect the FGPP power plants to the FPL transmission system. A more
18 detailed discussion is included in Mr. Coto's testimony.

19
20 The power plant land cost is based on a negotiated land option agreement.
21 Off-site land costs for the transmission upgrades are estimated and discussed
22 in more detail in Mr. Coto's testimony.

1 The allowance for funds used during construction is based on projected cash
2 flows for the project.

3

4 The components of the total plant cost are shown in Document No. WLY-1.

5 **Q. Do you propose that the cost estimate upon which a determination of**
6 **need would be based include certain indexed components?**

7 A. Yes. A portion of the costs upon which the Commission would base its
8 decision in granting a determination of need should be based on indices.

9 **Q. What portion of the estimated capital costs of FGPP do you propose**
10 **should be based on indices?**

11 A. There are two components of the total estimated capital costs for the power
12 plant that should be based on indices: escalation for labor costs in the EPC
13 agreement and the escalation for high alloy steels and metal costs in the
14 pollution control equipment (e.g., Fabric Filter, Wet Flue Gas
15 Desulphurization and the Wet Electric Static Precipitator). The portion of the
16 total estimated cost representing the projected escalation for labor costs,
17 including AFUDC, in the EPC scope is nominally \$594 million, or about 10%
18 of the total capital cost of FGPP. The portion of the total cost estimate
19 representing the alloy material component of the pollution control equipment
20 is nominally \$151 million, including AFUDC, or about 3% of the total capital
21 cost of FGPP.

1 **Q. Why should these two cost components be based on indices?**

2 A. These two cost components are subject to significant market price risks that
3 suppliers simply are not willing to assume. Essentially, these indices address
4 market risks over which neither the supplier nor FPL will have control. Thus,
5 in each case, it is necessary to apply indices for these particular cost
6 components. For the EPC pricing, the labor component will be indexed to a
7 rate derived from the United States Department of Labor Bureau of Labor
8 Statistics County Employment and Wages Bulletin, which is outlined in
9 Document No. WLY-2. For the pollution control equipment contracts, high
10 alloy steels and metal costs will be indexed to published market indices for
11 high alloy steels and metals used in producing the equipment.

12 **Q. Why are suppliers unwilling to accept cost risks without imposing a
13 significant contingency price premium?**

14 A. Over the last two years the industry has experienced sharp increases in labor
15 and material costs that have adversely impacted the suppliers and contractors.
16 In general the costs of bulk material such as metals have also increased
17 substantially. Changes in the backlog of shop orders have risen significantly
18 as a result of the number of announced orders for coal projects in the United
19 States and abroad. This competition for suppliers has placed a premium on
20 the acquisition of major equipment for FGPP.

21

22 In some cases, like the pollution control equipment (e.g., Fabric Filter, Wet
23 Flue Gas Desulphurization and Wet Electric Static Precipitator), the market is

1 so saturated with buyers and orders that firm pricing is not even attainable.
2 This market saturation is due not only to the current backlog of proposed new
3 coal projects, but also to the numerous coal plant retrofit projects underway.
4 Such retrofit projects are in response to new environmental compliance
5 programs such as the Clean Air Interstate Rule (CAIR), Clean Air Mercury
6 Rule (CAMR) and Best Available Retrofit Technology (BART).

7 **Q. Please explain how the proposed indexing mechanism for these power
8 plant costs would work.**

9 A. The current project cost for the power plant includes the projected escalations
10 based on the current projections for the future value of each index. In the
11 event that the actual value of the index is higher than projected, the contract
12 cost would increase. Any increases in the contract cost due to such a higher
13 than projected value for the index would result in an increase in the total
14 project cost. FPL proposes that the total approved cost of the project
15 approved by the Commission be based on the indexing mechanism presented
16 in Document No. WLY-2 for the labor component in the EPC costs and a
17 similar approach utilizing a yet to be determined material-based index for
18 pollution control equipment.

19 **Q. Please describe the potential cost impact of the indexed portion of costs
20 on the total estimated installed cost of FGPP.**

21 A. The total cost estimate includes assumptions regarding how the index will
22 behave. Therefore, depending on the actual movement of the relative indices,
23 the total project cost could be slightly higher or lower. For example, in the

1 case of the EPC labor costs, if the actual labor escalation were double the 4%
2 rate of growth reflected in the filed cost of FGPP over the entire construction
3 period, the increase in labor costs would be \$146 million. In the case of the
4 high alloy steels and metal for the pollution control equipment, if the actual
5 material escalation were double the 4% rate of growth reflected in the filed
6 cost of FGPP over the entire construction period, the increase would be
7 approximately \$6 million.

8 **Q. What has FPL done to ensure the reasonableness of the total estimated**
9 **installed cost of FGPP?**

10 A. FPL secured firm pricing for three major pieces of equipment and the EPC.
11 Specifically, FPL sought and obtained competitive equipment pricing for the
12 boiler, steam turbine and the pollution control equipment. The selection
13 process included at least three bids for each of the major equipment
14 procurements. For the boiler and steam turbine, the process resulted in firm
15 pricing. For the pollution control equipment this resulted in pricing with the
16 majority of the costs firm and the remaining portion subject to an adjustment
17 based on a predetermined index, as I discussed earlier. The immense scope of
18 this project, in the first instance, necessarily limits the number of potential
19 EPC contractors. Thus, the EPC pricing was based on an initial inquiry to
20 three major contractors with coal engineering, procurement, and construction
21 experience. In fact, the result of this inquiry produced only one contractor
22 with resources available in sufficient quantity to handle a project of this
23 magnitude in the timeframe required. FPL promptly undertook to negotiate a

1 market-competitive agreement for the EPC services. In negotiating a market-
2 competitive agreement, FPL employed two fundamental approaches: first, the
3 terms and conditions used were from the competitively-bid West County
4 Energy Center EPC contract; second, the cost was benchmarked against a
5 similar competitively-bid project. These costs included quantities for
6 materials and equipment along with fees and labor man-hours adjusted for
7 scope differences between the projects. Scope differences included the unit
8 size and number of units (one versus two) along with site and region
9 differences.

10 **Q. What is your conclusion regarding the reasonableness of the estimated**
11 **costs of FGPP?**

12 A. For the reasons I have discussed above, the estimated costs for FGPP are
13 reasonable.

14 **Q. What else has FPL done to satisfy itself that the estimated costs of FGPP**
15 **are reasonable?**

16 A. In order to ensure the reasonableness of FGPP's estimated cost, FPL also
17 hired the services of a consultant, Cummins & Barnard, who has performed an
18 independent detailed review of the installed cost estimate for FGPP. In his
19 testimony, Mr. William Damon of Cummins & Barnard discusses the scope
20 and results of his review which concludes that the estimated installed cost for
21 FGPP are reasonable and competitive.

1 **Q. How have the expected costs of constructing generating units changed**
2 **over the last two years?**

3 A. The costs of constructing all types of electric generating units have increased
4 substantially over the last two years and they are expected to continue to
5 increase. These cost increases are similar to what was observed back in the
6 early 2000 to 2005 timeframe when the demand for combined cycle plants
7 increased significantly in the market place. These market conditions,
8 characterized by intensive demand and comparatively limited supply is also
9 occurring in the pulverized coal plants, with approximately 45 units projected
10 to be coming into service in the 2008 to 2013 timeframe. As the demand
11 increases for the supply of major equipment along with services, the market
12 pricing changes in favor of the provider. Other cost stresses in the market
13 include recent increases in bulk material costs for concrete, steel, and high
14 alloy metals.

15
16 As these cost increases, both actual and expected, relate to the construction of
17 a coal unit, I would note that in FPL's Report on Clean Coal Generation,
18 provided to the FPSC on March 10, 2005, the total installed cost of FGPP
19 (excluding transmission interconnection and integration) was estimated to be
20 \$3,200 million for 1,700 MW or \$1,880/kw. In our most recent Ten Year
21 Power Plant Site Plan 2006-2015 filing dated April 2006 the total installed
22 cost of FGPP (excluding transmission interconnection and integration) was
23 estimated to be \$3,500 million for 1,700 MW or \$2,050/kw. The current

1 estimate, when adjusted to exclude the transmission interconnection and
2 integration cost is \$4,982 million for 1,960 MW or \$2,542/kw. These
3 increases in cost are attributable to the various changes in the market
4 conditions that I have discussed and which are affecting the costs of all forms
5 of generation.

6 **Q. What are the bases for the cost estimates for the combined cycle units**
7 **against which FGPP was compared?**

8 A. The basis for the cost estimates for these combined cycle units are FPL's West
9 County Energy Center contracted costs with adjustments for escalation,
10 including adjustments for current labor and high alloy steels and metals
11 markets, site differences, including site development, land, and transmission
12 and integration.

13
14 The costs for a combined cycle plant also are increasing. Similar pricing
15 adjustments were observed when FPL developed its cost for the West County
16 Energy Center in 2005 when compared to the 2003 developed costs for the
17 Turkey Point Unit 5 Project. However, the impact to the overall cost is not as
18 dramatic. Mitigating factors include: (1) the percentage of construction labor
19 to the total project cost is less for a combined cycle plant than a pulverized
20 coal plant; (2) the pulverized coal plant involves a higher percentage of high
21 alloy steels and metals; and (3) the number of planned combined cycle plants
22 has significantly declined resulting in reductions in combustion turbine
23 pricing.

1 **Q. Please summarize your testimony.**

2 A. USCPC technology is the most mature technology when compared to CFB
3 and IGCC technologies. This technology provides FPL with the best
4 opportunity to meet its generation needs by 2013 with a solid-fuel option. The
5 FGPP installed-cost estimate upon which FPL's request for a determination of
6 need is based is reasonable. We have secured firm pricing for a majority of
7 the power plant costs, which would include the EPC, boiler, steam turbine and
8 pollution control equipment, with a portion of those costs subject to market
9 indices. FPL also has confirmed the reasonableness of the estimate through
10 the independent detailed review of the installed cost estimate for FGPP by an
11 outside engineering consultant who has concluded that the estimated cost of
12 FGPP is reasonable.

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

14 A. Yes.

**FPL GLADES POWER PARK UNITS 1 AND 2
PLANT CONSTRUCTION COST COMPONENTS**

	Unit 1 (2013\$)	Unit 2 (2014\$)
Power Plant	\$2,396	\$1,668
Transmission Interconnect & Integration	\$201	\$195
Land- Power Plant	\$125	
Land- Transmission	\$73	
<u>AFUDC</u>	<u>\$661</u>	<u>\$381</u>
Total Plant Cost	<u>\$3,456</u>	<u>\$2,244</u>
Total Project Costs		\$5,700

**FPL GLADES POWER PARK UNITS 1 AND 2
EPC INDEXING**

Overview:

The EPC contractor has agreed to utilize wage data published by the United States government to true up labor costs on an annual basis. The source of the wage data to be used in determining the annual labor adjustment is the United States Department of Labor Bureau of Labor Statistics County Employment and Wages Bulletin (BLS Data) which is published on a quarterly basis and available on the department's web site (<http://www.bls.gov/news.release/pdf/cewqtr.pdf>).

The process for determining the annual labor adjustment is to:

1. Determine the year-to-year difference between the annual wage growth rate as determined from the BLS Data and the annual wage growth rate that the EPC contractor used as a basis for the bid price (4%). The BLS Data derived annual growth rate will be a weighted annual average of the regions of the United States that the workforce will be drawn from (examples; Florida, Georgia, Texas, Mississippi, Louisiana).
2. Multiply the expected labor cost from the EPC contractor bid in a given year by the difference in wage growth rates for that year.
3. Add or deduct the resulting amount from future payments to the EPC contractor.
4. Repeat the above steps for each year of the project.

Example:

The values in this example are indicative and intended only to demonstrate the process for calculating the annual labor cost adjustment as described above.

Year	Expected Annual Labor Cost from EPC Proposal (includes AFUDC)	BLS Weighted Annual Average	Growth Rate Difference	Annual Adjustment
2009	\$13,000,000	4.075%	0.075%	\$9,750
2010	\$46,000,000	3.922%	-0.078%	(\$35,880)
2011	\$168,000,000	5.882%	1.882%	\$3,161,760
2012	\$208,000,000	4.113%	0.113%	\$235,040
2013	\$140,000,000	3.878%	-0.122%	(\$170,800)
2014	\$19,000,000	4.034%	0.034%	\$6,403
Total	\$594,000,000			\$3,206,273