



BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 070007-EI

IN RE:

ENVIRONMENTAL COST RECOVERY FACTORS

PROJECTIONS

JANUARY 2008 THROUGH DECEMBER 2008

TESTIMONY AND EXHIBITS

OF

PAUL L. CARPINONE

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FPSC-COMMISSION CLERK

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

PAUL L. CARPINONE

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5  
6 **Q.** Please state your name, address, occupation and employer.  
7

8 **A.** My name is Paul Carpinone. My business address is 702  
9 North Franklin Street, Tampa, Florida 33602. I am  
10 employed by Tampa Electric Company ("Tampa Electric" or  
11 "company") as Director, Environmental, Health and Safety.  
12

13 **Q.** Please provide a brief outline of your educational  
14 background and business experience.  
15

16 **A.** I received a Bachelor of Science degree in Water  
17 Resources Engineering Technology from the Pennsylvania  
18 State University in 1978. I have been a Registered  
19 Professional Engineer in the State of Florida since 1984.  
20 Prior to joining Tampa Electric, I worked for Seminole  
21 Electric Cooperative as a Civil Engineer in various  
22 positions and in environmental consulting. In February  
23 1988, I joined Tampa Electric as a Principal Engineer,  
24 and I have primarily worked in the area of Environmental  
25 Health & Safety. In 2006, I became Director of

1 Environmental Health and Safety. My responsibilities  
2 include the development and administration of the  
3 company's environmental, health and safety policies and  
4 goals. Additionally, I am also responsible for ensuring  
5 resources, procedures and programs meet or exceed  
6 compliance with applicable environmental, health and  
7 safety requirements, and that rules and policies are in  
8 place and functioning appropriately and consistently  
9 throughout the company.

10  
11 **Q.** What is the purpose of your testimony in this proceeding?  
12

13 **A.** The purpose of my testimony is to demonstrate that the  
14 activities for which Tampa Electric seeks cost recovery  
15 through the ECRC for the January 2008 through December  
16 2008 projection period are activities necessary for the  
17 company to comply with various environmental  
18 requirements. Specifically, I will describe the ongoing  
19 activities that are associated with the Consent Final  
20 Judgment ("CFJ") entered into with the Florida Department  
21 of Environmental Protection ("FDEP") and the Consent  
22 Decree ("CD") lodged with the U.S. Environmental  
23 Protection Agency ("EPA") and the Department of Justice.  
24 I will also discuss other programs previously approved by  
25 the Commission for recovery through the ECRC as well as

1 the suspension of the Clean Water Act Section 316(b)  
2 Phase II Study. Finally, I will discuss the sulfur  
3 dioxide ("SO<sub>2</sub>") emission allowance sales for 2008 and the  
4 company's position for future allowance needs.

5

6 **Q.** Please provide an overview of the ongoing environmental  
7 compliance requirements that are the result of the CFJ and  
8 the CD ("the Orders").

9

10 The general ongoing requirements of the Orders provide  
11 for further reductions for SO<sub>2</sub>, particulate matter ("PM")  
12 and nitrous oxides ("NO<sub>x</sub>") emissions at Big Bend Station.

13

14 **Q.** What do the Orders require for SO<sub>2</sub> emission reductions?

15

16 **A.** The Orders require Tampa Electric to create a plan for  
17 optimizing the availability and removal efficiency of the  
18 flue gas desulfurization systems ("FGD" or "scrubbers").  
19 The plan was submitted to the EPA in two phases, and both  
20 were approved.

21

22 Phase I required that Tampa Electric work scrubber  
23 outages around the clock and with contract labor, when  
24 necessary, speed the return of a malfunctioning scrubber  
25 to service. In addition, Phase I required Tampa Electric

1 to review all critical scrubber spare parts and increase  
2 the number and availability of spare parts to ensure a  
3 speedy return to service of a malfunctioning scrubber.  
4

5 Phase II outlined capital projects that Tampa Electric  
6 was to perform to upgrade each scrubber at Big Bend  
7 Station. It also addressed the use of environmental  
8 dispatching in the event of a scrubber outage. All of  
9 the preliminary SO<sub>2</sub> emissions reduction projects have been  
10 completed. However, additional work will occur in 2008  
11 associated with the Big Bend Units 1 and 2 FGD and Big  
12 Bend FGD System Reliability programs to comply with the  
13 elimination of the allowed scrubber outage days for 2010  
14 and 2013.  
15

16 **Q.** What do the Orders require for PM emission reductions?  
17

18 **A.** The Orders require Tampa Electric to develop and  
19 implement a best operational practices ("BOP") study to  
20 minimize PM emissions from each electrostatic  
21 precipitator ("ESP") and complete and implement a best  
22 available control technology ("BACT") analysis of the  
23 ESPs at Big Bend Station. The Orders also require the  
24 company to demonstrate the operation of a PM continuous  
25 emissions monitoring system ("CEM") on Big Bend Units 3

1 and 4 and demonstrate the operation of a second PM CEM on  
2 another Big Bend unit. Pursuant to the Orders, the  
3 installation of the second PM CEM is required on or  
4 before May 1, 2007, if the first PM CEM has been shown to  
5 be feasible and remains in operation and if Tampa  
6 Electric advises the EPA that it has elected to continue  
7 to combust coal in Big Bend Units 1, 2 and 3. The first  
8 PM CEM was installed in February 2002. The installation  
9 of the second PM CEM will commence within 18 months of  
10 approval of the pending second amendment to the CD. The  
11 delay is due to disputes between the company and EPA over  
12 the feasibility of the first unit.

13  
14 **Q.** Please describe the Big Bend PM Minimization and  
15 Monitoring program activities and provide the estimated  
16 capital and O&M expenditures for the period of January  
17 2008 through December 2008.

18  
19 **A.** The Big Bend PM Minimization and Monitoring program was  
20 approved by the Commission in Docket No. 001186-EI, Order  
21 No. PSC-00-2104-PAA-EI, issued November 6, 2000. In the  
22 Order, the Commission found that the program met the  
23 requirements for recovery through the ECRC. Tampa  
24 Electric had previously identified various projects to  
25 improve precipitator performance and reduce PM emissions

1 as required by the Orders. In 2008, there will be capital  
2 expenditures associated with the installation of a second  
3 PM CEM, O&M expenses associated with existing and recently  
4 installed BOP and BACT equipment and continued  
5 implementation of the BOP procedures. These activities  
6 are expected to result in approximately \$500,000 of  
7 capital and \$450,000 of O&M expenses.

8  
9 **Q.** What do the Orders require for NO<sub>x</sub> reductions?

10  
11 **A.** The Orders require Tampa Electric to perform NO<sub>x</sub> emissions  
12 reduction projects on Big Bend Units 1, 2 and 3 and  
13 pursuant to an amendment, for Big Bend Unit 4 to be  
14 substituted for Big Bend Unit 3. The NO<sub>x</sub> emissions  
15 reductions use the 1998 NO<sub>x</sub> emissions as the baseline year  
16 for determining the level of reduction achieved. Tampa  
17 Electric was also required by the Orders to demonstrate  
18 innovative technologies or provide additional NO<sub>x</sub>  
19 technologies beyond those required by the early NO<sub>x</sub>  
20 emissions reduction activities.

21  
22 **Q.** Please describe the Big Bend NO<sub>x</sub> Emissions Reduction  
23 program activities and provide the estimated capital and  
24 O&M expenses for the period of January 2008 through  
25 December 2008.

- 1   **A.**   The Big Bend NO<sub>x</sub> Emissions Reduction program was approved  
2           by the Commission in Docket No. 001186-EI, Order No. PSC-  
3           00-2104-PAA-EI, issued November 6, 2000. In the Order,  
4           the Commission found that the program met the requirements  
5           for recovery through the ECRC. Tampa Electric will  
6           perform the requisite capital replacement and maintenance  
7           on the previously approved NO<sub>x</sub> reduction projects. These  
8           activities are expected to result in approximately  
9           \$375,000 and \$350,000 of capital and O&M expenses,  
10          respectively and includes the optimization of the  
11          combustion neural network for Big Bend Unit 2.  
12
- 13   **Q.**   Please describe long-term NO<sub>x</sub> requirements associated with  
14          the Orders and Tampa Electric's efforts to comply with the  
15          requirements.  
16
- 17   **A.**   The Orders require Big Bend Unit 4 to begin operating with  
18          a Selective Catalytic Reduction ("SCR") system or other  
19          NO<sub>x</sub> control technology, be repowered, or be shut down and  
20          scheduled for dismantlement by June 1, 2007. Big Bend  
21          Units 1, 2 and/or 3 must either begin operating with an  
22          SCR system or other NO<sub>x</sub> control technology, be repowered,  
23          or be shut down and scheduled for dismantlement one unit  
24          per year by May 1, 2008, May 1, 2009 and May 1, 2010,  
25          respectively.



1 In order to meet the NO<sub>x</sub> emission rates and timing  
2 requirements of the Orders, Tampa Electric engaged an  
3 experienced consulting firm, Sargent and Lundy, to assist  
4 with the performance of a comprehensive study designed to  
5 identify the long-range plans for the generating units at  
6 Big Bend Station. The results of the study clearly  
7 indicated that the option to remain coal-fired at Big  
8 Bend Station and installing the necessary NO<sub>x</sub> reduction  
9 technologies is the most cost-effective alternative to  
10 satisfy the NO<sub>x</sub> emissions reductions required by the  
11 Orders. This decision was communicated to the EPA and  
12 FDEP in August 2004. Tampa Electric also apprised the  
13 Commission of this decision in its filing made in Docket  
14 No. 040750-EI in August 2004.

15  
16 **Q.** Please describe the Big Bend Units 1 through 3 Pre-SCR and  
17 the Big Bend Units 1 through 4 SCR projects and provide  
18 estimated capital and O&M expenditures for the period of  
19 January 2008 through December 2008.

20  
21 **A.** In Docket No. 040750-EI, Order No. PSC-04-0986-PAA-EI,  
22 issued October 11, 2004, the Commission approved cost  
23 recovery of the Big Bend Units 1 through 3 Pre-SCR and the  
24 Big Bend Unit 4 SCR projects. The Big Bend Units 1  
25 through 3 SCR projects were approved by the Commission in

1 Docket No. 041376-EI, Order No. PSC-05-0502-PAA-EI,  
2 issued May 9, 2005. The purpose of the Pre-SCR  
3 technologies is to reduce inlet NO<sub>x</sub> concentrations to the  
4 SCR systems, thereby mitigating overall SCR capital and  
5 O&M costs. These Pre-SCR technologies include neural  
6 networks, windbox modifications, secondary air controls  
7 and coal/air flow controls. The SCR projects at Big Bend  
8 Units 1 through 4 encompass the design, procurement,  
9 installation and annual O&M expenses associated with an  
10 SCR system for each unit.

11  
12 The projected costs for the period of January 2008 through  
13 December 2008 for which Tampa Electric is seeking ECRC  
14 recovery are for the Big Bend Units 1 through 3 Pre-SCR  
15 and Big Bend Units 3 and 4 SCR capital and O&M  
16 expenditures associated with the engineering, procurement,  
17 construction, start-up, tuning, operation and ongoing  
18 maintenance for the projects. No capital expenditures are  
19 anticipated for Big Bend Units 1 and 2 Pre-SCR for 2008  
20 however, \$75,000 each, is projected for O&M expenses. The  
21 projected capital expenditures for Big Bend Unit 3 Pre-SCR  
22 are \$890,000 with no O&M expenses expected for the year.  
23 Big Bend Unit 3 SCR will be placed in-service in April  
24 2008. The capital expenditures for the project are  
25 anticipated to be \$17,301,000 with O&M expenses of

1           \$1,607,000. Big Bend Unit 4 SCR was placed in-service May  
2           2007 therefore there will not be any capital expenditures  
3           for 2008. However, the O&M expenses for this project are  
4           anticipated to be \$1,610,000.

5  
6           The projected capital expenditures for Big Bend Units 1  
7           and 2 SCR projects are \$15,453,000 and \$41,295,000  
8           respectively. However, as stated in Tampa Electric  
9           Witness, Howard T. Bryant's Prepared Direct Testimony in  
10          this docket, the company will not seek recovery of capital  
11          expenditures until the in-service date for each project  
12          has occurred.

13  
14       **Q.** Please identify and describe the other Commission approved  
15       programs you will discuss.

16  
17       **A.** The programs previously approved by the Commission  
18       include:

- 19  
20       1) Big Bend Unit 3 FGD Integration  
21       2) Big Bend Units 1 and 2 FGD  
22       3) Gannon Thermal Discharge Study  
23       4) Bayside SCR Consumables  
24       5) Big Bend Unit 4 Separated Over-fired Air ("SOFA")  
25       6) Clean Water Act Section 316(b) Phase II Study

- 1 7) Big Bend FGD Reliability
- 2 8) Arsenic Groundwater Standard
- 3 9) Clean Air Mercury Rule ("CAMR")
- 4

5 **Q.** Please describe the Big Bend Unit 3 FGD Integration and  
6 the Big Bend Units 1 and 2 FGD activities and provide the  
7 estimated capital and O&M expenditures for the period of  
8 January 2008 through December 2008.

9  
10 **A.** The Big Bend Unit 3 FGD Integration program was approved  
11 by the Commission in Docket No. 960688-EI, Order No. PSC-  
12 96-1048-FOF-EI, issued August 14, 1996. The Big Bend  
13 Units 1 and 2 FGD program was approved by the Commission  
14 in Docket No. 980693-EI, Order No. PSC-99-0075-FOF-EI,  
15 issued January 11, 1999. In those Orders, the Commission  
16 found that the programs met the requirements for recovery  
17 through the ECRC. The programs were implemented to meet  
18 the SO<sub>2</sub> emissions requirements of the Phase I and II Clean  
19 Air Act Amendments ("CAAA") of 1990.

20  
21 The projected January 2008 through December 2008, O&M  
22 expenses for the Big Bend Unit 3 FGD Integration project  
23 are \$3,688,900. No capital expenditures are anticipated  
24 for this project. The projected January 2008 through  
25 December 2008, capital and O&M expenditures for the Big

1 Bend Units 1 and 2 FGD project are \$1,966,000 and  
2 \$7,243,000, respectively. The major components of the  
3 capital expenditures are projected to be for the electric  
4 isolation, mist eliminator upgrades and the gypsum filter  
5 vacuum pump upgrade. The major component of the expenses  
6 is projected to be reagents utilized in the scrubbing  
7 process with the balance of expenses being incurred for  
8 normal maintenance.

9  
10 **Q.** Please describe the Gannon Thermal Discharge Study program  
11 activities and provide the estimated capital and O&M  
12 expenditures for the period of January 2008 through  
13 December 2008.

14  
15 **A.** The Gannon Thermal Discharge Study program was approved by  
16 the Commission in Docket No. 010593-EI, Order No. PSC-01-  
17 1847-PAA-EI, issued September 14, 2001. In that Order,  
18 the Commission found that the program met the requirements  
19 for recovery through the ECRC. For the period of January  
20 2008 through December 2008, there will be no capital  
21 expenditures for this program. Tampa Electric anticipates  
22 O&M expenses will be approximately \$50,000 for the period.

23  
24 **Q.** Please describe the Bayside SCR Consumables program  
25 activities and provide the estimated capital and O&M

1 expenditures for the period of January 2008 through  
2 December 2008.

3  
4 **A.** The Bayside SCR and Ammonia program was approved by the  
5 Commission in Docket No. 021255-EI, Order No. PSC-03-  
6 0469-PAA-EI, issued April 4, 2003. For the period of  
7 January 2008 through December 2008, there will be no  
8 capital expenditures for this program. Tampa Electric  
9 anticipates O&M expenses associated with the consumable  
10 goods (primarily anhydrous ammonia) will be approximately  
11 \$70,000 for the period.

12  
13 **Q.** Please describe the Big Bend Unit 4 SOFA program  
14 activities and provide the capital and O&M expenditures  
15 for the period of January 2008 through December 2008.

16  
17 **A.** The Big Bend Unit 4 SOFA program was approved by  
18 Commission for ECRC recovery in Docket No. 030226-EI,  
19 Order No. PSC-03-0684-PAA-EI, issued June 6, 2003. In  
20 the Order the Commission found that the program met the  
21 requirements for recovery through the ECRC, contingent  
22 upon Big Bend Unit 4 remaining coal fired. On August 19,  
23 2004, Tampa Electric submitted a letter to the EPA  
24 declaring the intent for Big Bend Units 1 through 4 to  
25 remain coal fired and, as such, complied with the

1 applicable provisions of the CD associated with the  
2 decision. The SOFA project was completed in 2004. For  
3 the period of January 2008 through December 2008, there  
4 will be no capital expenditures for this program. Tampa  
5 Electric anticipates annual O&M expenses will be  
6 approximately \$50,000 for the period.  
7

8 **Q.** Please describe the Clean Water Act Section 316(b) Phase  
9 II Study program activities and provide the estimated  
10 capital and O&M expenditures for the period of January  
11 2008 through December 2008.  
12

13 **A.** The Clean Water Act Section 316(b) Phase II Study program  
14 was approved by the Commission in Docket No. 041300-EI,  
15 Order No. PSC-05-0164-PAA-EI, issued February 10, 2005.  
16 For the period of January 2008 through December 2008,  
17 there will be no capital expenditures for this program.  
18 EPA announced on March 20, 2007, that the rule adopted  
19 pursuant to Section 316(b) be considered suspended. The  
20 suspension of the final rule was made on July 9, 2007.  
21 Tampa Electric believes that the work will continue to be  
22 useful for purposes related to the Phase II Rule and does  
23 not intend to suspend the work because it would not be  
24 cost-effective or appropriate to do so. Therefore, Tampa  
25 Electric anticipates O&M expenses associated with the

1 sampling activities will be approximately \$150,000 for the  
2 period.

3  
4 **Q.** Please describe the Big Bend FGD System Reliability  
5 program activities and provide the estimated capital and  
6 O&M expenses for the period of January 2008 through  
7 December 2008.

8  
9 **A.** Tampa Electric's Big Bend FGD System Reliability program  
10 was approved by the Commission in Docket No. 050598-EI,  
11 Order No. PSC-06-0602-PAA-EI, issued July 10, 2006. The  
12 Commission granted cost recovery approval for prudent  
13 costs associated with this project. The Big Bend FGD  
14 System Reliability project will run concurrently with the  
15 installation of SCR systems on the generating units.

16  
17 For the period of January 2008 through December 2008,  
18 Tampa Electric will perform work associated with upgrading  
19 the booster fan, electrically isolating the FGD systems,  
20 the splitting of the inlet duct as well as other related  
21 activities for Big Bend Units 3 and 4. These activities  
22 are expected to result in approximately \$3,704,000 of  
23 capital expenditures. No O&M expenses are anticipated for  
24 the period.

25



1 Q. Please describe the Arsenic Groundwater Standard program  
2 activities and provide the estimated capital and O&M  
3 expenditures for the period of January 2008 through  
4 December 2008.

5  
6 A. The Arsenic Groundwater Standard program was approved by  
7 the Commission in Docket No. 050683-EI, Order No. PSC-06-  
8 0138-PAA-EI, issued February 23, 2006. In that Order, the  
9 Commission found that the program met the requirements for  
10 recovery through the ECRC and granted Tampa Electric cost  
11 recovery approval for prudently incurred costs. The new  
12 groundwater standard applies to Tampa Electric's H.L.  
13 Culbreath Bayside, Big Bend and Polk Power Stations.

14  
15 For the period of January 2008 through December 2008,  
16 there will be no capital expenditures for this program;  
17 however, Tampa Electric anticipates O&M expenses  
18 associated with the sampling activities will be  
19 approximately \$57,000.

20  
21 Q. Please describe the CAMR program activities and provide  
22 the estimated capital and O&M expenditures for the period  
23 of January 2008 through December 2008.

24  
25 A. The CAMR program was approved by the Commission in Docket

1 No. 060583-EI, Order No. PSC-06-0926-PAA-EI, issued  
2 November 6, 2006. In that Order, the Commission found  
3 that the program met the requirements for recovery through  
4 the ECRC and granted Tampa Electric cost recovery approval  
5 for prudently incurred costs. The CAMR program addresses  
6 the EPA established standards of performance for mercury  
7 emissions for new and existing coal-fired electric utility  
8 steam generating units as defined in the federal CAAA  
9 Section 111, known as CAMR, effective January 2009. CAMR  
10 will permanently cap and reduce mercury emissions nation-  
11 wide in two phases: Phase I cap is 38 tons per year with a  
12 compliance date of 2010 and Phase II cap is 15 tons per  
13 year with a compliance date of 2018. The FDEP administers  
14 the CAMR as delineated in Chapter 62-204, 62-210 and 62-  
15 296, Florida Administrative Code ("F.A.C.").

16  
17 Tampa Electric's Big Bend and Polk Power Stations will be  
18 affected by the nation-wide mercury emissions reduction  
19 rule. The company will install CEMs or sorbent trap  
20 monitoring systems that sample mercury found in flue gas.

21  
22 For the period of January 2008 through December 2008,  
23 Tampa Electric anticipates capital expenditures \$1,717,000  
24 for this program. No O&M expenses are expected for this  
25 program for 2008.

1 Q. Please describe how Tampa Electric reached the decision to  
2 sell SO<sub>2</sub> emission allowances in 2008 and discuss the  
3 company's allowance needs for 2008 and beyond.

4  
5 A. After the completion of the repowering project at Bayside  
6 Power Station, Tampa Electric performed a thorough  
7 evaluation of SO<sub>2</sub> emission allowance needs based on  
8 current system conditions and those projected to occur  
9 over the next 20 years. Current system conditions  
10 included the reduction in coal usage due to repowering  
11 and the impacts of the CD and CFJ on SO<sub>2</sub> emission  
12 allowances. Future conditions took into account  
13 generation expansion and the impact of new federal  
14 environmental regulations on SO<sub>2</sub> emission allowances, such  
15 as the Clean Air Interstate Rule. At the conclusion of  
16 the evaluation, it became evident that the company had a  
17 surplus of allowances that could be sold in the allowance  
18 marketplace. Furthermore, there will be an adequate  
19 remaining allowance inventory that will meet the  
20 company's needs for the next 20 years.

21  
22 In balancing the appropriate quantity to sell with the  
23 company's expected future needs, Tampa Electric will  
24 continue to evaluate potential sales opportunities of  
25 future quantities of surplus allowances.

1 Q. Please summarize your testimony.

2

3 A. Tampa Electric's settlement agreements with FDEP and EPA  
4 require significant reductions in emissions from Tampa  
5 Electric's Big Bend and Gannon Stations. The Orders  
6 established definite requirements and time frames in  
7 which air quality improvements must be made and result in  
8 reasonable and fair outcomes for Tampa Electric, its  
9 community and customers, and the environmental agencies.  
10 My testimony identified projects, which are legally  
11 required by these Orders. I described the progress Tampa  
12 Electric has made to achieve the more stringent  
13 environmental standards. I have identified estimated  
14 costs, by project, which the company expects to incur in  
15 2008. Additionally, my testimony identified other  
16 projects that are required for Tampa Electric to meet the  
17 environmental requirements and I provided the associated  
18 2008 activities and projected expenditures. Finally, I  
19 addressed the prudent sales of SO<sub>2</sub> emissions allowances  
20 that are anticipated to occur in 2008 and demonstrated  
21 that Tampa Electric's approach toward the allowance  
22 quantity contained in the sales will not jeopardize the  
23 company's long-term future allowance needs.

24

25 Q. Does this conclude your testimony?

1    **A.**    Yes it does.

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