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January 15, 2013

HAND DELIVERED

Ms. Ann Cole, Director
Division of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Petition for approval of a new environmental program for cost recovery through the Environmental Cost Recovery Clause by Tampa Electric Company; FPSC Docket No. 120302-EI

Dear Ms. Cole:

Enclosed for filing in the above matter are the original and five copies of Tampa Electric Company's responses to Staff's First Data Request (Nos. 1-10) that were contained in a December 13, 2012 letter from Mr. Charles W. Murphy to the undersigned.

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning same to this writer.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Enclosure

COM ____
AFD ____
APA ____
ECO 3
ENG 1
GCL 1
IDM ____
TEL ____
CLK ____

cc: Mr. Charles W. Murphy (w/enc.)
Mr. J. R. Kelly (w/enc.)

1. In Paragraph 7, TECO states that "[t]he coal units at Big Bend Station and Polk Power Station as well as new coal and oil units are impacted by the rule.

a. Please identify the referenced "new coal and oil units."

b. Are the referenced units described in TECO's ten year site plan?

A. a. The referenced "new coal and oil units" were identified to explain what types of units are impacted by the rule. This was not to indicate that Tampa Electric has a plan to construct any new coal or oil units at any facility.

b. There are currently no plans to construct any new coal or oil units at any Tampa Electric facility. These units were only mentioned to explain what types of units are impacted by the MATS rule.

2. Referring to Paragraph 8 and Exhibit A:

a. Please provide details regarding all capital projects that are associated with the estimated capital expenditures of $150,000 and $90,000, for 2013 and 2015 respectively, presented in Exhibit A under the column "CAMR" and sub-column "Big Bend".

b. Please describe how the $150,000 estimate of capital expenditures, associated with BB's CAMR compliance for 2013, was derived; in this context, please include the cost of each component that supports the estimate.

c. Please describe how the $90,000 estimate of capital expenditures, associated with BB's CAMR compliance for 2015, was derived; in this context, please include the cost of each component that supports the estimate.

d. Please provide details regarding all capital projects that are associated with the estimated capital expenditures of $30,000, for 2013 and for 2015, which are presented in Exhibit A under the column "CAMR" and sub-column "Polk".

e. Please describe how the $30,000 estimates of capital expenditures, associated with BB's CAMR compliance for 2013 and for 2015, were derived; in this context, please include the cost of each component that supports the estimates.

f. For each of the capital projects discussed in response to questions 2.a. and 2.d., please identify i.) each entity (including, if applicable, TECO) that will provide equipment, engineering, installation, or other related services, ii.) the specific equipment and/or services that each entity will provide, and (if applicable) iii.) the date that an RFP has, or will be, issued.

A. a. The capital project with an expenditure of $90,000 is associated with the purchase of new mercury sorbent systems. Each system costs $30,000 and three systems are needed, one for each stack. These systems must be purchased every two years. The capital project with an estimated expenditure of $60,000 in 2013 is associated with purchasing an additional mercury spectrometer which is utilized to analyze the mercury in sorbent traps.

b. The estimated capital expenditure of $150,000 in 2013 is derived from the purchase of three sorbent traps at $30,000 per system. The additional $60,000 is to purchase a mercury spectrometer.

c. The estimated capital expenditure of $90,000 for 2015 is derived from the purchase of a new sorbent trap system for each stack every two years at $30,000 per system, totaling $90,000.

d. The estimated capital expenditure of $30,000 for 2013 and 2015 is associated with the purchase of a new sorbent system every two years for $30,000 each.

e. The dollar amount described in this question seems to be referring to Polk Power Station instead of Big Bend Power Station. Assuming this is true, the question has been answered in Part d above. CAMR capital expenditures for Big Bend Power Station have been explained in Parts a, b, and c above.

f. Tampa Electric is utilizing the following companies to provide equipment, engineering, installation, or other related services:

Ohio Lumex
Ohio Lumex will provide the mercury spectrometer on a sole source basis. Ohio Lumex was selected as a sole source due to Ohio Lumex being an industry leader in this technology. Tampa Electric currently owns a spectrometer from Ohio Lumex, and company analysts are trained and certified to operate an Ohio Lumex spectrometer. The alternative to this spectrometer is expensive and difficult wet chemistry analyses.

In addition to providing the equipment, Ohio Lumex will also perform the certification and the installation of the spectrometer. Tampa Electric has been utilizing Ohio Lumex's services since 2009.

Apex Instruments
Every two years, Apex Instruments will provide Tampa Electric with the redundant mercury sorbent trap systems on a sole source basis. Apex Instruments was selected because they provide competitive pricing and reliable equipment. Additionally, the accessory components for the sampling, such as probes, sampling lines, etc., match up with the Apex sorbent trap system equipment. Tampa Electric has been utilizing Apex Instruments' services since 2007.

3. Referring to Paragraph 9:

a. What does "CS0W1" mean?

b. Will MAST require that TECO monitor the amount of pollutants emitted from each specific generating unit?

c. If the answer to 3.b. is affirmative, please describe how the proposed PM CEMS, to be installed on the common stack serving Big Bend (BB) Units 1 and 2, will differentiate between emissions from Unit 1 and Unit 2.

d. Referring also to Exhibit A, please describe how the $620,000 estimate of capital expenditures associated with the installation of a PM CEMS (and its necessary ports on BB Units 1 and 2) was derived; in this context, please include the cost of each component that supports the estimate.

e. For the PM CEMS, please identify i.) each entity (including, if applicable, TECO) that will provide equipment, engineering, installation, or other related services, ii.) the specific equipment and/or services that each entity will provide, and (if applicable) iii.) the date that an RFP has, or will be, issued.

A. a. "CS0W1" is a term used to reference the common stack that Big Bend Units 1 and 2 share.

b. No. Section 63.10009 of the MATS rule describes the options for compliance by monitoring a common stack such as CS0W1 at Big Bend Station. The options include calculating individual unit compliance or emission unit averaging for multiple units of a common type. The current Tampa Electric compliance plan outlined in Paragraph 9 of the company's petition will comply with the MATS requirements.

c. Tampa Electric will not need to differentiate emissions between Big Bend Units 1 and 2.

d. A quote was obtained from multiple vendors to estimate the cost of purchasing a PM CEMS. The PM CEMS instrument and the installation of the PM CEMS are expected to cost $500,000. The additional $120,000 is to install the five required ports.

e. Sick Maihak will provide the PM CEMS instrument and installation of the PM CEMS on a sole source basis. Tampa Electric chose to sole source the PM CEMS work to Sick Maihak due to the company's previous experience with two PM CEMS instruments already in place on Big Bend Units 3 & 4. This technology has proven reliable and requires minimal maintenance. Additionally, the company can share spare parts from all three stacks.

Tampa Electric's Air Services team will perform the PM CEMS certification. Tampa Electric will perform this work with the company's own internal stack test team as it is more cost effective to perform this task in- house.

Lastly, a vendor has not yet been chosen for the port installation. The RFP process is currently underway.

4. Referring to Paragraph 11:

a. TECO states that, "achieving the SO_2 emission limit of 0.2 lb. SO_2/MMBtu is the most technically feasible option to demonstrate compliance with the MATS Rule." Please describe each compliance option that was possible and why achieving the SO_2 emission limit is the preferred option.

b. What is the current SO_2 *removal* efficiency rate for each BB units' FGD system?

c. What are the current SO_2 *emission* rates for each BB unit when the unit's corresponding FGD system is performing normally?

d. What is a "tower ring"?

e. What is the "gas liquid contact"?

f. Please describe how additional tower rings, double headed nozzles, and increases in gas liquid contact within the towers, improves SO_2 removal efficiency.

g. For each BB generating unit's FGD system, please identify i.) the number of tower rings currently used and ii.) the number of tower rings proposed to be added; in this context, please identify any FGD system that is shared by more than one unit.

h. For the BB Unit 4 FGD system, are there any existing towers that will not receive an updated spray section? If yes, please identify.

i. When are the upgrade activities described in Paragraph 11 projected to commence?

j. When are the upgrade activities described in Paragraph 11 projected to be completed?

f. For the upgrade activities described in Paragraph 11, please identify i.) each entity (including, if applicable, TECO) that will provide equipment, engineering, installation, or other related services, ii.) the specific equipment and/or services that each entity will provide, and (if applicable) iii.) the date that an RFP has, or will be, issued.

m. For each year 2012 through 2015, please provide a detailed breakdown of the component activities that comprise the estimated capital costs associated with BB Acid Gas compliance presented in Exhibit A.

A. a. The MATS rule requires continuous emissions monitoring or quarterly stack testing to demonstrate Tampa Electric's compliance with SO_2 or HCl emissions. Tampa Electric evaluated several monitoring and stacking testing alternatives to minimize the cost of compliance. The quarterly HCl stack testing alternative was not considered an economically feasible option due to the testing frequency. Furthermore, the quarterly testing frequency would be difficult to achieve due to the dispatching and operating demands. In lieu of HCl testing, HCl continuous emission monitors were also considered. The review of these monitors revealed these units were not capable of meeting the compliance limit which made this technology option infeasible for compliance purposes. This option also added significant operating and capital expenses. The SO_2 monitoring option was deemed the best option. These monitors are already installed and will not require any additional monitoring costs to implement. As such, Tampa Electric selected the SO_2 monitoring option for the MATS compliance as it is the most cost-effective option.

b. Tampa Electric evaluated the removal efficiency performance of Big Bend Units 1 through 4 between January 1, 2010 and March 31, 2012. The data showed the average removal efficiency rate was 97 percent for Units 1 and 2, 98 percent for Unit 3 and 95 percent for Unit 4. The current permit requires a removal efficiency rate of a minimum of 95 percent for Units 1 through 3 and a removal efficiency rate of a minimum of 90 percent for Unit 4.

c. Tampa Electric also evaluated the SO_2 emission rates for Big Bend Units 1 through 4 during the same period. The data showed the maximum SO_2 emission rates were 0.20 lb/mmBtu for Units 1 and 2, 0.19 lb/mmBtu for Unit 3 and 0.38 lb/mmBtu for Unit 4 based on a heat weighted, 30 day rolling average. Therefore, FGD system enhancements will be required to provide the necessary margin of compliance to achieve the SO_2 emissions rate of 0.20 lb/mmBtu on a 30 day rolling average basis.

d. A tower ring ("wall ring") is a simple structural shape that attaches to the inside circumference of the absorber tower. This ring acts as a deflector plate or vane to force flue gas away from the wall of the tower and towards the center of the tower where it may be contacted by more spray droplets.

e. Gas liquid contact is the process of bringing flue gas containing SO_2 gas molecules into contact with the liquid slurry droplets being sprayed into the absorber tower.

f. Tampa Electric is able to improve the SO_2 removal efficiency by adding tower rings and double headed nozzles to increase the gas liquid contact. The company currently uses a slurry of pulverized limestone in water that is sprayed into the tower at several levels. This slurry absorbs the SO_2 gas molecules and neutralizes the acid formed by the SO_2. By increasing the gas liquid contact, more SO_2 gas molecules will be brought into contact with the limestone slurry being sprayed into the tower thereby increasing the amount of SO_2 absorbed. Tower rings will increase the amount of contact between the spray droplets and the gas by deflecting the gas that hugs the tower wall into the path of the spray droplets. Lastly, the double headed spray nozzles generate significantly more droplets over a larger area than the standard nozzles thus increasing the amount of contact with the gas.

g. Tampa Electric's Big Bend Units 1 and 2 share a single absorber tower contained in the FGD system for those units. This tower is not equipped with any tower rings. The plan is to install two wall rings in this tower. The FGD system for Big Bend Units 3 and 4 contains four absorber towers. Big Bend Unit 3 uses towers A and B and Big Bend Unit 4 uses towers C and D. These towers are not equipped with any wall rings. The plan is to equip each tower with one wall ring.

h. Towers C and D are the only towers that will receive the proposed updated spray section. The tower used for Big Bend Units 1 and 2 as well as the towers used for Big Bend Unit 3 will not receive the proposed spray section. This is due to towers C and D having a lower removal efficiency when compared to the other towers.

i. The engineering for the wall rings and double headed nozzles for the FGD system serving Big Bend Units 1 and 2 commenced in December 2012.

j. All of these activities are projected to be completed by mid-2015.

k. Tampa Electric is utilizing the following companies to provide equipment, engineering, installation, or other related services:

Tampa Electric
Tampa Electric will provide project management services for the engineering and construction management during installation.

URS Corporation
URS will provide engineering and design services on a sole source basis. URS was selected as sole source based upon the fact the company had already provided the conceptual designs, process designs, material balances and cost estimates for these modifications under a previous contract unrelated to this filing. URS engineering rates are industry competitive and with necessary work already initiated, the company has a significant competitive advantage over any other engineering service providers. The contract for the design of the wall rings and nozzle sizing was awarded in December 2012.

Lechler Corporation
Lechler is the sole manufacturer of double headed slurry spray nozzles for FGD systems. A purchase order will be placed in January 2013.

As Yet Unnamed Fabrication Company
Fabrication of the wall rings will be awarded in January 2013 through a previously executed bid process.

As Yet Unnamed Construction Company
Installation of the wall rings and nozzles will be awarded in February 2013 through a previously executed bid process.

I. Please see the table below for the detailed breakdown of component activities by year that is associated with Big Bend Acid Gas compliance.

Big Bend Acid Gas Compliance	
Year	**Activity**
2012	First progress payment on engineering for wall rings and nozzles
2013	Purchase of wall rings and nozzles
2014	Gas inlet nozzle to tower C and tower C booster fan modification
2015	Spray section redesigned for towers C and D

5. Referring Exhibit A, are all of the cost amounts in 2012 dollars? If not, please clarify.

A. The capital cost amounts referenced in Exhibit A are in 2012 dollars. The contract process is expected to accomplish expenditures at these levels. However, the cost amounts associated with O&M expenses on Exhibit A have been escalated annually to reflect O&M expenses.

6. Please describe the results of the "preliminary evaluation" referenced in Paragraph 7.

A. Prelirninary evaluations were conducted at Big Bend Station to determine the appropriate compliance methodology for compliance with the MATS rule. The evaluations were based on available continuous monitoring data and engineering test data. As stated in response to Staff's First Data Request, No. 4a, the SO_2 monitoring option was selected as the surrogate for the MATS acid gas compliance. The monitoring data showed the average SO_2 emission rates provided in response to Part c of that same data request. The FGD system evaluation showed that the addition of tower rings and double headed spray nozzles will collectively serve to increase the gas liquid contact and increase removal efficiency. This will provide the necessary margin of compliance to meet the SO_2 emissions rate of 0.20 lb/mmBtu limit on a 30 day rolling average basis.

The evaluation also consisted of PM continuous emission monitoring or quarterly stack testing. PM CEMS were previously installed on Big Bend Units 3 and 4 pursuant the Consent Decree. The PM CEMS data showed that Units 3 and 4 could meet the filterable PM limit of 0.03 lb/mmBtu. The engineering test data collected on Big Bend Units 1 and 2 also showed the filterable limit could be achieved. The quarterly alternative was not considered an economically feasible option due the testing frequency. Furthermore, the frequency of quarterly testing would be difficult to achieve due to the dispatching and operating demands. The PM monitoring option was determined to be most cost effective option since only one additional CEMS unit would need to be installed on common stack CS0W1.

The mercury CEMS and sorbent traps were also considered in the preliminary analysis. Evaluation of the mercury CEMS showed these were not reliable and were costly to maintain for compliance. The combined capital and operating costs of these units were considerably higher when compared to the sorbent traps. The sorbent traps were also determined to be more reliable and provided more consistent results.

7. Please describe the results of the "engineering studies" referenced in Paragraphs 9, 11 and 12.

A. In 2009, URS was contracted to perform a study of the Big Bend FGD systems and determine what modifications would be necessary to improve their performance. This study was undertaken prior to any MATS regulations and was unrelated to any proposed environmental regulation. The study was undertaken to examine the modifications and associated costs necessary to enable Big Bend Station to burn higher sulfur coal and operate at full load on a 24/7 basis should it be desired. The need to operate in this manner did not materialize. The results of this effort however have become directly applicable to achieving compliance with the MATS regulations. The application of selected modifications from this study will enable the Big Bend FGD systems to meet the 0.20 lb/mmBtu limit required by regulation. The cost associated with the 2009 study is not included in this filing nor was it associated with any other ECRC filing.

In 2011 to 2012, Tampa Electric conducted a series of engineering tests to determine the appropriate compliance methodology for the MATS rule. The engineering tests were conducted to evaluate filterable and condensable PM, trace metals, HCl, and mercury at Big Bend and Polk Power Stations. For Big Bend, the filterable PM test results showed that Units 1 and 2 could meet the filterable limit of 0.03 lb/mmBtu. The mercury test results showed that all four units could meet the mercury limit of 1.2 lb/TBtu. In particular, Units 3 and 4 were determined to be less than 50 percent of the limit and appear to qualify for the Low Emitting Electric Generating Unit ("LEE") status for mercury. Under the LEE designation, only annual mercury testing would be required. This would substantially reduce the annual operating costs associated with the sorbent trap monitoring. However, additional testing will be required to achieve the LEE status.

For Polk Power Station's Unit 1, the results of the engineering studies show that Polk will be able to obtain LEE status for PM, mercury and acid gases. LEE testing at Polk Power Station is the most viable and economic decision for compliance because it requires less testing and no continuous monitoring of the pollutants. To obtain LEE status for acid gases and PM, the unit must emit less than 50 percent of the applicable emission limit. To obtain LEE status for mercury, the unit must emit 10 percent of the applicable emission limit or less than 29 lbs/yr. It is anticipated that Polk Power Station's Unit 1 will comply with the less than 29 lbs/yr option.

8. Please identify any outside contractor(s) who have performed engineering studies related to TECO's Petition.

A. Tampa Electric utilized an outside contractor, Kleinfelder, for EPA's information collection request at Polk Power Station. Other studies were performed by an internal Tampa Electric stack test team.

9. Referring to Exhibit A, please specify the time period over which the $200,000 MAST engineering study cost was, or will be, incurred; in this context, please provide a break down of the $200,000 expenditure by year and by work performed.

A. Tampa Electric expects to complete its engineering studies by the end of 2013 to allow adequate time to develop and implement a refined compliance plan prior to the April 2015 regulation deadline. The company plans to spend $40,000 on engineering studies at Polk Power Station and $160,000 on engineering studies at Big Bend Power Station.

10. Please complete the table below describing the projected bill impacts associated with the projected costs of the proposed program.

	Residential Customer Bill Impact ($/1,000 kWh)	
	Associated with the Capital Expenditures	Associated with the Total Project Costs
2013		
2014		
2015		

A.

	Residential Customer Bill Impact ($/1,000 kWh)	
	Associated with the Capital Expenditures	Associated with the Total Project Costs
2013	$.02	$.04
2014	$.05	$.07
2015	$.09	$.11