

State of Florida



Public Service Commission

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COMMISSION CLERK
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DATE: March 29, 2012

TO: Office of Commission Clerk (Cole)

FROM: Division of Economic Regulation (Wu)
Office of the General Counsel (Murphy)

RE: Docket No. 110262-EI – Petition for approval of new environmental program for cost recovery through the Environmental Cost Recovery Clause, by Tampa Electric Company.

AGENDA: 04/10/12 – Regular Agenda – Proposed Agency Action - Interested Persons May Participate

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: Brisé

CRITICAL DATES: None

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\PSC\ECR\WP\110262 Revised.RCM.DOC

Case Background

On August 29, 2011, Tampa Electric Company (TECO or Company) petitioned the Florida Public Service Commission (Commission) for approval of a new Big Bend (BB) Station Gypsum Storage Facility Program and the recovery of the costs of this program through the Environmental Cost Recovery Clause (ECRC) (Petition). The TECO Petition was filed pursuant to Section 366.8255, Florida Statutes (F.S.), and Commission Order Nos. PSC-94-0044-FOF-EI and PSC-94-1207-FOF-EI.¹

¹ Order No. PSC-94-0044-FOF-EI, issued January 12, 1994, in Docket No. 930613-EI, In re: Petition to establish an environmental cost recovery clause pursuant to Section 366.0825, F.S., by Gulf Power Company; Order No. PSC-94-1207-FOF-EI, issued October 3, 1994, in Docket No. 940042-EI, In re: Environmental Cost Recovery Clause.

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FPSC-COMMISSION CLERK

In its petition, the Company asserts that in order to continue operating its BB Units 1 through 4 in compliance with applicable environmental requirements, it needs to construct and place into service a new facility at BB Station within which to store gypsum, which is a byproduct of the operation of the flue gas desulfurization (FGD) systems, commonly referred to as scrubbers, currently serving these coal-fired units.

Staff filed a recommendation regarding TECO's petition on March 1, 2012 and the item was addressed by the Commission at the March 13, 2012. At the agenda, the Commissioners asked that the staff obtain and analyze additional information to assist them with their decision. FIPUG and OPC raised concerns of the need as well as its costs and life cycle of the proposed facility. Staff has obtained and analyzed the additional information and has filed this revised recommendation.

The Commission has jurisdiction over the subject matter of this Petition pursuant to Chapter 366, F.S. Pursuant to Section 366.8255(2), electric utilities may petition the Commission to recover projected environmental compliance costs required by environmental laws or regulations. According to Section 366.8255(1)(c), F.S., environmental laws or regulations include "all federal, state or local statutes, administrative regulations, orders, ordinances, resolutions, or other requirements that apply to electric utilities and are designed to protect the environment." If the Commission approves the utility's petition for cost recovery through this clause, only prudently incurred costs may be recovered. The Commission has jurisdiction over this matter pursuant to Section 366.8255(2), F.S.

Discussion of Issues

Issue 1: Should the Commission approve TECO's Petition for approval of the BB Gypsum Storage Facility Program and the recovery of the associated costs through the ECRC pursuant to Section 366.8255, F.S.?

Recommendation: Yes. TECO's proposed BB Gypsum Storage Facility Program satisfies the statutory requirements specified in Section 366.8255, F.S., and meets the criteria for ECRC cost recovery. (Wu, Murphy)

Staff Analysis:

Need for a New Storage Facility

Gypsum is an unavoidable by-product of the operation of the FGD systems which are used to control sulfur dioxide (SO₂) emissions. In order to comply with the Clean Air Act Amendments of 1990 (CAAA) and a Consent Decree entered into in 2000, in *United States v. Tampa Electric Company*, Civ. No. 99-2524-CIV-T-23F (Consent Decree), TECO has constructed and operated FGD systems to scrub the flue gases emanating from BB Units 1 through 4. Under the requirements set forth in paragraph 40 of the Consent Decree, TECO cannot operate its base load units at BB without scrubbing the flue gas from those units. The Commission has previously found TECO's FGD projects to be the most cost-effective alternative for compliance with the SO₂ emissions reduction requirements of CAAA, and approved recovery of the associated costs through the ECRC.² The Commission has acknowledged that the Consent Decree requires that the BB Units not operate un-scrubbed after 2010 (for Unit 3) and 2013 (for Units 1 and 2).³

TECO has been able to sell a portion of the gypsum by-product to manufacturers who use it in the production of wallboard and cement, or for agriculture applications, etc. TECO indicated that the allocation of the revenues from the sale of gypsum is normally split at the 50 percent level, namely, 50 percent is allocated to base rates and 50 percent allocated to the ECRC.⁴ Attachment A provides more details regarding the revenue allocation.

TECO indicated⁵ that the Company is an industry leader in the beneficial reuse of coal combustion products (CCPs) and recycled approximately 86 percent of the total CCPs produced in 2010. When including the CCPs temporarily stored in inventory, more than 99 percent of the Company's 2010 CCPs will ultimately be reclaimed for beneficial use compared to an industry

² Order No. PSC-96-1048-FOF-EI, issued August 14, 1996, in Docket No. 960688-EI, In re: Petition for approval of certain environmental compliance activities for purposes of cost recovery by Tampa Electric Company at pp. 2-3; and Order No. PSC-99-0075-FOF-EI, issued January 11, 1999, in Docket No. 980693-EI, In re: Petition by Tampa Electric Company for approval of cost recovery for a new environmental program, the Big Bend Units 1 & 2 Flue Gas Desulfurization System at pp. 22-23.

³ Order No. PSC-07-0499-FOF-EI, issued June 11, 2007, in Docket No. 050958-EI, In re: Petition for approval of new environmental program for cost recovery through Environmental Cost Recovery Clause by Tampa Electric Company at p. 1.

⁴ TECO's response to Staff's Second Data Request, No. 14.

⁵ TECO's response to Staff's Second Data Request, No. 7.

average of 43 percent. The Company's efforts on CCP sales were recognized as "commendable" in the "Review of Coal Combustion Residual Storage and Disposal Processes of the Florida Electric Industry" produced by the Commission's Office of Auditing and Performance Analysis in December 2011. Attachment B provides historical data regarding the amounts of gypsum produced versus marketed and remaining at the BB Station.⁶ As shown in Table 1 below, the Company historically has managed to market 50 percent to 130 percent of the gypsum produced at the BB Station. Through reviewing TECO's response to Staff's Second Data Request, staff observed that the Company is actively seeking to contract with new buyers, and has an aggressive marketing plan in place for 2012 and beyond.

Table 1: Comparisons of the marketed gypsum, excess gypsum, and the total amount of gypsum produced

Year	Gypsum Produced	Gypsum Marketed		Gypsum Excess	
	(Tons)	(Tons)	%	(Tons)	%
2002	683,535	612,476	89.6%	71,059	10.4%
2003	691,547	507,404	73.4%	184,143	26.6%
2004	599,505	706,699	117.9%	-107,194	-17.9%
2005	555,066	715,462	128.9%	-160,396	-28.9%
2006	557,650	588,582	105.5%	-30,932	-5.5%
2007	655,887	683,090	104.1%	-27,203	-4.1%
2008	683,537	585,787	85.7%	97,750	14.3%
2009	560,300	444,401	79.3%	115,899	20.7%
2010	662,530	533,921	80.6%	128,609	19.4%
2011	719,982	361,234	50.2%	358,748	49.8%
10-year Total	6,369,539	5,739,056		630,483	
10-year Average	636,954	573,906	90%	63,048	10%
Last 5-year Total	3,282,236	2,608,433		673,803	
Last 5-year Average	656,447	521,687	79%	134,761	21%

Data source: Attachment A - TECO's response to Staff's Second Data Request, No. 9.

Despite its marketing efforts and its ability to sell much of its gypsum, the Company, over time, has been left with a surplus of gypsum by-product. As reflected in Attachment B, the lowest level of excess gypsum was negative 160,396 tons (TECO sold more than it produced) in 2005; the highest level of excess gypsum was 358,748 tons, which occurred in 2011. As can be seen in Table 1, over the last decade, the yearly excess gypsum at the BB Station has been 63,000 tons, or approximately 10 percent of the gypsum produced. Over the last 5 years, excess gypsum averaged 135,000 tons, or approximately 21 percent of the total produced.

The Company has stored the excess gypsum in a 35 acre storage facility on site at the BB Station. That storage facility and its associated conveyor system were built according to the environmental requirements in place during the early 1980s. By its Petition, TECO reported that the capacity of the storage facility is nearly exhausted, and that there are issues with periodic dust emissions and uncertainty over ground water contamination. In its response to Staff's Second Data Request, the Company further reported that the existing on-site storage area could reach its limit at some point in time between August 2012 and early mid-2015, depending upon gypsum market demand.⁷ TECO indicated that storing gypsum in an unpermitted area is not a legal option. Thus, absent appropriate storage, the Company could be faced with curtailment or

⁶ TECO's response to Staff's Second Data Request, No. 9.

⁷ TECO's responses to Staff's Second Data Request, Nos. 3 and 4.

shutdown of the units at BB Station. Ceasing operation of these units would result in the loss of nearly 1,600 MWs of generation. The Company asserted that it must increase its gypsum storage capacity by constructing a new gypsum storage facility on site at BB Station. The Company indicated that the existing storage facility will continue to be utilized and serve as a secondary storage area once the new storage facility is built.

The proposed new gypsum storage facility will cover approximately 27 acres. It is designed to benefit customers through the operating life of the BB Station.⁸ The new gypsum storage area addition is not being designed as a permanent storage area. It is intended to provide an appropriate amount of “working storage” to manage temporary imbalances in supply and demand. The new facility will hold 870,000 tons of gypsum at full capacity, complementing the existing storage area which has 1,000,000 tons of total capacity.

TECO also indicated that the proposed facility would satisfy all applicable federal and state environmental regulations, and all relevant pending environmental regulations. Specifically, the design of the new facility would meet the criteria contained in the EPA’s proposed regulations for the management of Coal Combustion Residuals.⁹ The Company submitted to the Commission a 55-page detailed site plan of the proposed new facility.¹⁰ The design of the new storage facility includes a lined gypsum pile management area, along with equipment for conveying, stacking, dry storing, and truck loading of gypsum. The new facility will also incorporate advanced dust control and liner systems. TECO indicated that the handling system at the new facility will allow the gypsum to be sorted and stored in a manner which will enable it to be sold for manufacturing uses as the market permits.¹¹ Construction efforts would commence in 2012 and are expected to be completed in 2015. The Company has also submitted a 7-page critical path time line with milestones of the proposed program.¹²

Cost-effectiveness of the Proposed New Storage Facility

TECO considered various alternatives to the proposed storage facility. It examined the potential for switching to a low sulfur coal in an effort to lessen the amount of gypsum produced in the scrubbing process. Assuming the BB Station burned the same quantity of MMBTUs of coal as projected in TECO’s 2011 fuel filing, and using the current selling price of \$4.30/MMBTU delivered, this option would translate to approximately \$94.5 million in additional fuel costs per year. In contrast, the proposed new storage facility will require approximately \$55 million in total capital investment plus \$0.4 million in annual operations and maintenance (O&M) expense.

TECO also evaluated the option of permanently disposing its gypsum in a Company-owned landfill. An independent firm, Sargent & Lundy, was retained to perform the evaluation. It estimated that this alternative would cost approximately \$160 million to construct a landfill

⁸ TECO’s response to Staff’s Second Data Request, No. 15 (c).

⁹ TECO’s responses to Staff’s Second Data Request, Nos. 11 (c) and (d).

¹⁰ TECO’s response to Staff’s Second Data Request, No. 10.

¹¹ Exhibit A of the Petition, pages 12 - 13.

¹² TECO’s response to Staff’s Second Data Request, No. 11 (k).

over 430 acres in size, plus approximately \$3 million in O&M costs annually.¹³ Apart from its costs, the size of the landfill also makes this option not practical due to the location of the BB Station, even though it is common industry practice (nationally and in Florida).

TECO considered the option of disposing the BB gypsum at a third-party landfill. The Company currently produces approximately 700,000 tons of gypsum annually. TECO stated that attempting to dispose of this amount in commercial landfills would cost an estimated \$25 million per year at current disposal rates. It would also involve prohibitively high transportation expense. TECO had previously used a landfill in Okeechobee, and incurred roughly \$40 for each ton that was disposed. Moreover, this option is contingent on the availability of adequate space in a third-party landfill; absent such availability, the Company would be at risk of requiring the BB units to be shut down.

TECO also assessed the possible options of retrofitting the existing storage facility, and leasing a portion of the proposed new storage facility to another entity once it is placed in-service. The Company indicated that retrofitting the existing gypsum storage area will not create the additional temporary storage area TECO requires to manage the ebb and flow of gypsum inventory.¹⁴ Similarly, leasing part of the proposed new storage facility to another company will not create the working area necessary to manage BB Station's gypsum production. Therefore, these options are not feasible. Moreover, TECO concluded that choosing such options could necessitate the curtailment or shutdown of the units at the BB Station.¹⁵

Finally, TECO evaluated three different designs for the new storage area, including transporting gypsum from the FGD to the new storage site by enclosed conveyor system, by rail, or by truck.

TECO concluded that its proposed storage facility at BB Station is the most reliable and cost-effective option. Attachment C provides economic comparisons between the proposed new storage facility and its alternatives, as well as the assumptions behind the analyses. It includes (1) the estimated initial capital amount and subsequent estimated capital investments for 2011 through 2015 in nominal and 2011 dollars; (2) estimated annual amount of O&M expense for each year in nominal and 2011 dollar values, and (3) the assumptions used by TECO to derive the dollar amounts shown. Table 2 below summarizes the results of the comparison.

	New Storage Area Conveyor (TECO proposed)	New Storage Area Rail (TECO proposed)	New Storage Area Truck (TECO proposed)	Fuel Switch Low Sulfur Coal	Offsite Landfill
Capital Investment Total (in 2011 \$) for period 2011 - 2015	\$54,976,700	\$52,914,600	\$42,776,700	—	\$160,600,000
Capital Investment Total (Net Present Value) for period 2011 - 2015	\$45,441,210	\$43,386,201	\$34,896,753	—	—
O&M Expenses Total (Net Present Value) for period 2011 - 2049	\$3,969,428	\$9,374,437	\$27,657,765	\$1,501,498,730	\$47,883,190

¹³ TECO's response to Staff's Second Data Request, No. 11 (o).

¹⁴ TECO's response to Staff's Second Data Request, No. 12 (a).

¹⁵ TECO's response to Staff's Second Data Request, No. 12 (b).

Estimates of the Associated Costs

The proposed new gypsum storage facility is estimated to require an investment of approximately \$54,976,700 in capital costs and annual operation and maintenance expenses of \$365,000. The major cost components involved in pursuing the proposed program, its associated capital costs, and estimated O&M expenses are reflected in Attachment D. Among the activities listed, the estimates for construction, major equipment and contingency are approximately \$11 million, \$17 million and \$8 million, respectively.

Table 3 below illustrates the revised estimated residential monthly bill impacts for a 1,000 kWh bill associated with the proposed storage facility.

Table 3: Estimated Residential Bill Impacts¹⁶

Year	Residential Rate \$/1,000 kWh
2015	0.41
2016	0.39
2017	0.38
2018	0.37
2019	0.35

TECO indicated, at the March 13, 2012, agenda conference and in its response to Staff's Second Data Request, No.1, that because other capital projects currently recovered through the ECRC will be fully recovered, the net incremental increase to the 2015 residential ECRC factor will be \$0.11 for 1,000 kWh.

TECO expected to begin incurring costs associated with the new gypsum storage facility in 2011. The Company indicated in its petition that because the proposed program is appropriate for Allowance for Funds Used during Construction (AFUDC) accounting treatment, the facility's costs will be separately accounted for while the new storage facility is under construction. These costs will not be proposed for inclusion for ECRC cost recovery until after the new storage facility is placed in-service, which is expected to occur in early 2015. TECO confirmed that all aspects of the proposed program would be subject to audit by the Commission. TECO plans to start the preliminary engineering in March 2012, and targets an in-service date of April 2015.

Allocation of the Costs to Rate Classes

TECO affirmed that the proposed storage facility program is a compliance activity associated with the requirements of the CAAA and the Consent Decree. The Company asserted, therefore, that expenditures associated with the proposed program should be allocated to rate classes on an energy basis. This is consistent with the Commission's precedential orders. In

¹⁶ TECO's response to Staff's Second Data Request, No. 13. The Company has corrected an inadvertent error in its calculation of the bill impact submitted in its response to Staff's First Set of Interrogatories, No. 3.

Orders No. PSC-94-0044-FOF-EI¹⁷ and PSC-05-0998-PAA-EI,¹⁸ the Commission found that costs associated with compliance with CAAA should be allocated to rate classes in the ECRC on an energy basis, due to the strong nexus between the level of emissions which the CAAA seeks to reduce and the number of kilowatt-hours generated.

Eligibility for the ECRC Cost Recovery

It appears that, based on prior Commission orders and the present circumstances, the Company cannot operate the BB Units un-scrubbed, consistent with the CAAA and paragraph 40 of the Consent Decree, nor can the Company operate the units scrubbed without a new facility to store the gypsum by-product of the scrubbing process. The proposed storage facility will enable TECO to continue operating the BB Units in compliance with the CAAA and the Consent Decree, by providing a cost-effective means to dispose of the gypsum resulting from operation of the emission control equipment serving the BB units, that cannot otherwise be sold or be sent to a third-party landfill. Sending gypsum to a third-party landfill involves an unacceptable reliability risk, since a third-party landfill would have no obligation to take material from specific sources and could refuse to accept gypsum at any time;¹⁹ moreover, there would be very high associated costs reaching up to \$25 million per year, with a commensurate rate impact of approximately \$1.25 per 1,000 kWh.²⁰

TECO has actively sought to market gypsum produced at the BB station during the past. As the Company points out, the existing 35 acre storage capacity would have been exhausted much sooner if the Company had needed to store more excess gypsum on-site. However, TECO has been successfully marketing this by-product, as evidenced by it being able to sell on average 79 percent (over the last 5 years) to 90 percent (over the last decade) of the gypsum produced. Moreover, TECO has indicated that it has an active ongoing marketing plan in place which should help the Company to promote gypsum sales aggressively in the future. Nevertheless, the Company has indicated that constructing a new storage facility is an essential component for the pursuit of TECO's most cost-effective and preferred alternative – selling gypsum for other uses. Staff notes that the proposed new facility is designed to provide an appropriate amount of “working storage” to manage temporary imbalances in gypsum supply and demand, rather than to serve as a permanent storage area.²¹

Staff believes that construction and operation of the new gypsum storage facility is not a discretionary or voluntary project. Instead, it is an essential environmental project that would not be constructed but for TECO's obligation to scrub the flue gases emanating from its BB coal-fired units consistent with government-imposed environmental regulations. Staff also believes that the proposed storage facility is the most reliable and cost-effective alternative for TECO to remain in compliance with the applicable environmental mandates at BB Station, given that the

¹⁷ Order No. PSC-94-0044-FOF-EI, at pp. 21-23.

¹⁸ Order No. PSC-05-0998-PAA-EI, issued October 14, 2005, in Docket No. 050316-EI, In re: Petition for approval of integrated Clean Air Regulatory Compliance Program for cost recovery through Environmental Cost Recovery Clause, by Progress Energy Florida, Inc., at pp. 6-7.

¹⁹ Exhibit A of the Petition, page 17.

²⁰ TECO's response to Staff's Second Data Request, No. 5.

²¹ TECO's response to Staff's First Set of Interrogatory, No. 1.

currently based, and the costs of the proposed facility are not recovered through some other cost recovery mechanism or through base rates. Therefore, staff believes that TECO's proposed new Gypsum Storage Facility Program meets the criteria for ECRC cost recovery established by the Commission by Order No. PSC-94-0044-FOF-EI, in that:

- (a) all expenditures will be prudently incurred after April 13, 1993;
- (b) the activities are legally required to comply with a governmentally imposed environmental regulation enacted, became effective, or whose effect was triggered after the Company's last test year upon which rates are based; and
- (c) none of the expenditures are being recovered through some other cost recovery mechanism or through base rates. *See id. at page 6*

Conclusion

Based on the above, staff believes that TECO's petition for approval of ECRC cost recovery for its proposed new BB Gypsum Storage Facility Program should be granted pursuant to Section 366.8255, F.S. Staff also recommends that the costs associated with the proposed program be allocated to rate classes on an energy basis.

Docket No. 110262-EI
Date: March 29, 2012

Issue 2: Should this docket be closed?

Recommendation: Yes. This docket should be closed upon issuance of a Consummating Order unless a person whose substantial interests are affected by the Commission's decision files a protest within 21 days of the issuance of the proposed agency action. (Murphy)

Staff Analysis: If no timely protest to the proposed agency action is filed within 21 days, this docket should be closed upon the issuance of a Consummating Order, unless a person whose substantial interests are affected by the Commission's decision files a protest within 21 days of the issuance of the proposed agency action.

Attachment A – Allocation of the revenue from the sale of gypsum

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DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
REQUEST NO. 14
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14. Referring to revenues from sales of gypsum, Mr. H. Bryant of TECO stated, at the March 13, 2012, agenda conference, that "it is basically split fifty-fifty. 50% goes to the Company, and 50% goes back to customers. . . ." Is this statement correct? Please provide a detailed explanation of how the revenues generated by selling gypsum are distributed between the ECRC, base rates, and the Company (and the methodology employed), and why this distribution is reasonable and fair. Please cite the Commission order(s), if any, approving the allocation methodology and indicate how long TECO has employed the current methodology.

A. The statement is referring to the disposition of gypsum revenue derived from the sale of gypsum produced from the operation of two FGD systems ("scrubbers") at Big Bend Station. The key to understanding the statement is determining the source of funding for the construction of the scrubbers. The scrubber for Big Bend Unit 4 went in-service in 1985 and was funded through base rates. Big Bend Unit 3 was integrated into that scrubber in 1996. The scrubber for Big Bend Units 1 and 2 went in-service December 1999 and by Commission decision was funded through the ECRC. Therefore, the revenue from the sale of gypsum produced by the scrubbers is nominally split at a 50 percent level, namely, 50 percent is allocated toward base rates as an offset to total overall costs included in base rates and 50 percent is allocated toward the ECRC as an offset to total overall costs included in the ECRC. In both cases, the revenue offset has the impact of lowering the two rates that would otherwise be levied against customers.

The decision to manage gypsum revenues in this manner was determined during the FPSC audit of the 2000 ECRC True-up Filing. At that time, the scrubber for Big Bend Units 1 and 2 had been online for one year of commercial operation and it was necessary to establish the procedure in which the revenue from the sale of gypsum as well as the cost of raw materials, or consumables, used to produce the gypsum would be managed. The method utilized has been audited every year since 2000 and has been accepted at the annual ECRC hearings as the appropriate, fair and reasonable treatment of gypsum revenue and consumables cost from Big Bend Station.

Abashment B – Historical data of the amount of gypsum produced versus marketed and remained at the BB Station

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9. Referring to the table included in TECO's response to Staff's Information Data Request No.1, please provide the following information:

- (a) Additional column to show the percentage of gypsum sold vs. produced;
- (b) All the data extending to year 1999.

A.

a. The table below is similar to Tampa Electric's response to Staff's Informal Data Request, No. 1 with an additional column reflecting the percentage of gypsum sold vs. produced and with all the data from 1999 forward.

Year	Produced (Tons)	Marketed (Tons)	Sales Revenue (\$)	Difference (Tons)	Difference (%)*
1999	339,871	416,656	1,939,933	(76,785)	123%
2000	692,450	474,696	2,179,096	217,754	69%
2001	819,291	757,601	3,157,920	61,690	92%
2002	683,535	612,476	2,766,334	71,059	90%
2003	691,547	507,404	2,194,332	184,143	73%
2004	599,505	706,699	3,012,256	(107,194)	118%
2005	555,066	715,462	2,393,087	(160,396)	129%
2006	557,650	588,582	2,497,793	(30,932)	106%
2007	655,887	683,090	2,517,237	(27,203)	104%
2008	683,537	585,787	2,949,187	97,750	86%
2009	560,300	444,401	2,216,892	115,899	79%
2010	662,530	533,921	2,129,724	128,609	81%
2011	719,982	361,234	1,667,124	358,748	50%

*Percentages higher than 100 percent include sales from inventory.

Attachment C – Economic comparisons between TECO proposed new storage facility and its alternatives, as well as the assumptions used

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11. Please refer to Exhibit B Net Present Value Analyses of TECO's petition. For each of the five scenarios included, please provide the following information:
- (a) All the assumptions (general to all scenarios and specific to the individual scenario) that TECO used to derive the dollar amount presented;
 - (f) The estimated initial capital investment amount, if any, and any subsequent estimated investment expressed in nominal and 2011 dollar values, in the years that these investments occur and why;
 - (g) The estimated annual amount of O&M expense for each year in nominal and 2011 dollar values;
- A. a. Please see the tables below reflecting the assumptions used by Tampa Electric to derive the dollar amounts present.

Assumptions

Gypsum Options	Capital Investment (\$)	AFUDC Amount (\$)	Depreciation (\$/year)	Depreciation Rate (%)	Asset Life (Years)	O&M**** (\$)	O&M Escalation Rate (%)	Transportation Savings* (\$)
New Storage Area-Conveyor	54,976,700	5,196,669	143,270	2.4	35	77,000	2.2	56,659,346
New Storage Area-Rail	52,914,600	4,693,873	137,163	2.4	35	590,000	2.2	56,659,346
New Storage Area-Truck	42,776,700	3,577,403	110,367	2.4	35	1,740,700	2.2	56,659,346
Fuel Switch Low Sulfur Coal**	n/a	n/a	n/a	n/a	n/a	94,500,000	2.2	n/a
Offsite Landfill***	160,600,000	n/a	382,381	2.4	35	2,943,243	2.2	n/a

*Transportation Savings is a savings of \$2.50 per ton with an escalation rate of 2.2 percent to have gypsum delivered to National Gypsum's facility. Savings increases each year to offset O&M and declines due to retirement of units.

** To perform the analysis on switching fuel to low sulfur coal, Tampa Electric assumed low sulfur, Powder River Basin coal would be the most cost-effective option at \$4.39/MMBtu.

***Offsite Landfill is company-owned landfill.

****O&M is reflective of first year costs.

Expected Gypsum Production by Year*

Year	Total Production (Tons)	Year	Total Production (Tons)
2015	709,748	2033	736,762
2016	712,362	2034	736,215
2017	710,289	2035	685,306
2018	710,644	2036	560,944
2019	714,947	2037	560,357
2020	720,387	2038	440,751
2021	733,611	2039	371,236
2022	733,712	2040	378,188
2023	730,204	2041	284,324
2024	735,461	2042	219,017
2025	734,812	2043	218,993
2026	734,383	2044	219,500
2027	733,022	2045	219,111
2028	736,697	2046	218,915
2029	735,952	2047	218,984
2030	735,612	2048	219,562
2031	732,674	2049	218,971
2032	736,412		

*The expected production of gypsum per year was used to calculate the transportation savings.

- f. Please see the table below reflecting the estimated initial capital amount and subsequent estimated capital investments for 2011 through 2015 in nominal and 2011 dollars.

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck
2011	\$ 1,772,000	\$ 1,762,000	\$ 1,832,000
2012	\$ 9,023,000	\$ 5,688,300	\$ 4,035,000
2013	\$ 11,378,600	\$ 11,185,000	\$ 8,414,600
2014	\$ 24,972,400	\$ 27,073,666	\$ 20,178,000
2015	\$ 7,830,700	\$ 7,205,634	\$ 8,317,100
Capital Investment Total	\$ 54,976,700	\$ 52,914,600	\$ 42,776,700
NPV	\$ 45,441,210	\$ 43,386,201	\$ 34,896,753

- g. Please see the table below for the estimated annual amount of O&M expense for each year in nominal and 2011 dollar values.

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2015	\$ 77,000	\$ 590,000	\$ 1,740,700	\$ 94,500,000	\$ 2,943,243
2016	\$ 154,000	\$ 602,980	\$ 1,778,995	\$ 96,579,000	\$ 3,007,995
2017	\$ 256,000	\$ 616,246	\$ 1,818,133	\$ 98,703,738	\$ 3,074,170
2018	\$ 359,000	\$ 629,803	\$ 1,858,132	\$ 100,875,220	\$ 3,141,802

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2019	\$ 359,000	\$ 643,659	\$ 1,899,011	\$ 103,094,475	\$ 3,210,922
2020	\$ 359,000	\$ 657,819	\$ 1,940,789	\$ 105,362,554	\$ 3,281,562
2021	\$ 359,000	\$ 672,291	\$ 1,983,487	\$ 107,680,530	\$ 3,353,757
2022	\$ 360,000	\$ 687,082	\$ 2,027,123	\$ 110,049,501	\$ 3,427,539
2023	\$ 360,000	\$ 702,197	\$ 2,071,720	\$ 112,470,590	\$ 3,502,945
2024	\$ 360,000	\$ 717,646	\$ 2,117,298	\$ 114,944,943	\$ 3,580,010
2025	\$ 360,000	\$ 733,434	\$ 2,163,879	\$ 117,473,732	\$ 3,658,770
2026	\$ 360,000	\$ 749,569	\$ 2,211,484	\$ 120,058,154	\$ 3,739,263
2027	\$ 361,000	\$ 766,060	\$ 2,260,137	\$ 122,699,434	\$ 3,821,527
2028	\$ 361,000	\$ 782,913	\$ 2,309,860	\$ 125,398,821	\$ 3,905,600
2029	\$ 361,000	\$ 800,137	\$ 2,360,676	\$ 128,157,595	\$ 3,991,524
2030	\$ 361,000	\$ 817,740	\$ 2,412,611	\$ 130,977,062	\$ 4,079,337
2031	\$ 362,000	\$ 835,731	\$ 2,465,689	\$ 133,858,558	\$ 4,169,082
2032	\$ 362,000	\$ 854,117	\$ 2,519,934	\$ 136,803,446	\$ 4,260,802
2033	\$ 362,000	\$ 872,907	\$ 2,575,372	\$ 139,813,122	\$ 4,354,540
2034	\$ 362,000	\$ 892,111	\$ 2,632,031	\$ 142,889,010	\$ 4,450,340
2035	\$ 363,000	\$ 911,738	\$ 2,689,935	\$ 146,032,569	\$ 4,548,247
2036	\$ 363,000	\$ 931,796	\$ 2,749,114	\$ 149,245,285	\$ 4,648,309
2037	\$ 363,000	\$ 952,295	\$ 2,809,594	\$ 152,528,681	\$ 4,750,572
2038	\$ 364,000	\$ 973,246	\$ 2,871,406	\$ 155,884,312	\$ 4,855,084
2039	\$ 364,000	\$ 994,657	\$ 2,934,576	\$ 159,313,767	\$ 4,961,896
2040	\$ 364,000	\$ 1,016,540	\$ 2,999,137	\$ 162,818,670	\$ 5,071,058
2041	\$ 364,000	\$ 1,038,904	\$ 3,065,118	\$ 166,400,681	\$ 5,182,621
2042	\$ 365,000	\$ 1,061,760	\$ 3,132,551	\$ 170,061,496	\$ 5,296,639
2043	\$ 365,000	\$ 1,085,118	\$ 3,201,467	\$ 173,802,849	\$ 5,413,165
2044	\$ 365,000	\$ 1,108,991	\$ 3,271,899	\$ 177,626,512	\$ 5,532,254
2045	\$ 366,000	\$ 1,133,389	\$ 3,343,881	\$ 181,534,295	\$ 5,653,964
2046	\$ 366,000	\$ 1,158,323	\$ 3,417,446	\$ 185,528,049	\$ 5,778,351
2047	\$ 366,000	\$ 1,183,806	\$ 3,492,630	\$ 189,609,666	\$ 5,905,475
2048	\$ 367,000	\$ 1,209,850	\$ 3,569,468	\$ 193,781,079	\$ 6,035,395
2049	\$ 367,000	\$ 1,236,467	\$ 3,647,996	\$ 198,044,263	\$ 6,168,174
NPV	\$3,969,428	\$9,374,437	\$27,657,765	\$1,501,498,730	\$47,883,190

Attachment D – Breakdown of the Estimated Costs of the Proposed New Storage Facility

Table 4: Capital Costs Breakdown

	Major Activities of the Proposed New Facility	Associated Costs
1	Construction Activities	\$11,229,900
2	Engineering	3,583,000
3	Major Equipment	17,173,900
4	Floodplain Compensation, Wetlands Mitigation	5,442,500
	Project/Construction Management	4,347,500
5	Silo & Stackout	2,300,000
6	Storage Area Liner	2,756,700
7	Contingency	8,143,200
	Total	\$54,976,700

Table 5: O&M Costs Breakdown

	Major Parts Requiring the Maintenance	Associated Costs
1	Conveyor belts, rollers, head and tail pulleys, belt scrappers/ cleaners, tracking/ alignment issues, and other mechanical components	\$175,000
2	Drive motors, gear boxes, electrical equipment and related cabling	125,000
3	Control systems, lighting, and structural steel repairs	65,000
	Total	\$365,000

Date source: Exhibit A of the Petition, page 13.