

State of Florida



Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: April 24, 2012
TO: Ann Cole, Commission Clerk, Office of Commission Clerk
FROM: Charles Murphy, Senior Attorney, Office of the General Counsel
RE: Docket Number 110262-EI - Petition for approval of new environmental program for cost recovery through Environmental Cost Recovery Clause, by Tampa Electric Company

COMMISSION CLERK

12 APR 24 AM 9:58

RECEIVED-FPSC

Please place the attached document in the above-referenced docket file. This information needs to be accessible through both the PSC website and internally through CMS.

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DOCUMENT NUMBER - DATE

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FPSC-COMMISSION CLERK

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1. (a) Has TECO conducted any studies to evaluate whether greater quantities of gypsum could be disposed of if the gypsum were provided at zero cost to the recipient? If so, please provide all such studies.
 - (b) If the response to (a) is no, please explain why TECO believed there was no need to conduct any such studies.
- A.
- a. Although Tampa Electric has done extensive analyses of the opportunities for beneficially re-using or disposing of gypsum, it has not hired a third party to prepare a formal study to evaluate whether greater quantities of gypsum could be disposed of if the gypsum were provided at zero cost to the recipient or paid recipients to take the gypsum.
 - b. Tampa Electric has been beneficially re-using generation by-products such as gypsum, fly ash and sulfuric acid for over 27 years. The company has four full time employees in various roles, who are responsible for cost-effective marketing and beneficial reuse of generation by-products. They are actively engaged in the by-products markets and have a comprehensive understanding of the uses of gypsum, market dynamics and the real time impacts of supply and demand. Based on this experience, the company does not believe that it would be value added to hire a third-party to prepare a formal study to evaluate whether greater quantities of gypsum can be disposed of by giving it away for free or paying takers to receive additional gypsum.

The primary determinant for gypsum consumption is the demand for the finished product, not commodity pricing. A reduction in the total price of gypsum (commodity cost plus transportation expense) to a consumer will increase their sales margin but will not by itself create additional demand for the finished products. In economic terms, gypsum has a low "price elasticity of demand."

Tampa Electric has identified possible end-users of additional gypsum and analyzed the potential of providing additional gypsum to each one. In each case, the company has identified issues with transportation logistics, transportation costs or contractual arrangements with other suppliers of gypsum that constrain the company's ability to give gypsum away or to pay end-users to receive additional gypsum.

The following response explains, in more detail, why the company believes hiring a third-party to perform a formal study is not warranted and why giving gypsum away or paying persons to take it is not a realistic or cost effective long term solution to the company's gypsum by-product disposal requirements.

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Background. Gypsum is a mineral containing calcium and sulfur. The chemical term is calcium sulfate or CaSO_4 . Natural gypsum is a sedimentary rock found in many locations in North America.

Gypsum is also a by-product of flue gas desulfurization ("FGD") systems used in power generation. Gypsum produced from FGD systems is also known as "by-product gypsum" or "synthetic gypsum." JEA/Florida Power and Light, Progress Energy, Gainesville Regional Utilities, Lakeland Electric, Orlando Utilities Commission, Seminole Electric and Tampa Electric each produce gypsum in Florida.

Tampa Electric has a responsibility as a generator of coal combustion by-products, including gypsum, to ensure that these materials are properly handled from production to end use. The company is not at liberty to store gypsum wherever it wants or to deliver it to any location that may be available. Storage of gypsum in an unpermitted area is not allowed by law and Tampa Electric could be responsible for remediation of any site that has not complied with regulations for proper handling and storage.

Uses. Gypsum from either natural rock or synthetic gypsum has three primary uses: wallboard (sheetrock), production of Portland cement¹ and as an agricultural soil amendment. The largest use for synthetic gypsum is as a raw material for wallboard production. In Portland cement, gypsum typically represents between three and five percent by weight and is used to control the speed at which the cement hardens.

The total amount of gypsum used in Portland cement in Florida represents a small amount produced in the State. This is significant, because it demonstrates that selling gypsum to cement manufacturers does not present a significant market opportunity for Tampa Electric and other utilities that produce gypsum. This is especially true for Tampa Electric, because the other utilities producing gypsum are closer to the cement manufacturing operations than Tampa Electric, as shown in the mileage chart contained in the response to Staff's Third Data Request, No. 8.

Gypsum can also be used in agriculture as a soil amendment to improve the structure of soils containing clays or as a nutrient source for calcium or sulfur. Consumers of gypsum will generally use by-product gypsum over natural gypsum rock if the delivered price is lower; however, some modifications to plant equipment may be needed. The delivered price to the end-user takes into

¹ Portland cement is a component of concrete, which is a mixture of Portland cement and various types of aggregates. Although there are many concrete mixing plants that use Portland cement in Florida, there are a limited number of Portland cement manufacturing plants in Florida. Gypsum is used in the manufacturing of Portland cement, but is not used in the mixing of concrete.

account the cost of transporting the gypsum from the supply source to the point of use.

Construction uses. Wallboard and Portland cement are both used in construction. The construction demand for gypsum is directly related to the demand for the finished product; therefore, the need for gypsum varies with the amount of construction activity, which in turn is related to population growth and the level of economic activity. Population growth and economic activity in Florida have been very low for the past several years.

Producers of wallboard and cement typically maintain a small inventory of gypsum at their site to support their manufacturing needs. These producers do not have the capability to store large quantities of gypsum at their sites. Typically, gypsum storage areas are subject to strict environmental requirements for liners, water, collection, etc. and consumers do not have large permitted storage areas at their sites. Reducing the price of gypsum or even paying these consumers to take the material could possibly incent them to maximize their inventory; however, the effect on the company's need to dispose of gypsum would be minimal and short term. As such, it is not a long term solution to the company's need for additional temporary storage.

As noted in the response to Staff's Third Data Request, No. 8, the company has identified three wallboard manufacturers and six Portland cement manufacturers within a 300 mile radius of Big Bend Station. The company has evaluated the prospects of giving gypsum to these potential takers or paying them to take gypsum, but believes that the costs and logistics of transporting gypsum to them, their reduced demand for gypsum and the presence of a "closer to" supply preclude those possibilities as feasible long term options. A summary of the company's evaluation of the potential takers is provided below:

1. ***US Gypsum (Jacksonville)***

This wallboard manufacturer has a contract to purchase all of its gypsum needs from JEA's St John's Power Park which is approximately 10 miles from the facility versus the 217 miles to Tampa Electric's Big Bend Station. This manufacturer is currently operating at a reduced capacity due to market conditions and does not have any capacity to receive additional gypsum. Even if US Gypsum had the demand for additional gypsum or could store additional amounts, the company estimates that it would cost approximately \$33 per ton to transport gypsum from Big Bend Station to US Gypsum's facility in Jacksonville, which makes disposing of gypsum in this manner an uneconomic alternative.

2. ***Lafarge (Palatka)***

This wallboard manufacturing facility is in Palatka, Florida, contiguous to Seminole Electric Cooperative's plant. The facility was built in close proximity to Seminole's plant to have a ready source of gypsum. It purchases all of its gypsum needs from Seminole under a contractual arrangement and like other wallboard manufacturers is experiencing reduced demand for its product. This plant is 175 miles from Big Bend Station. Even if Lafarge needed or could take additional gypsum, the company estimates that it would cost approximately \$26 a ton to transport gypsum by truck from Big Bend Station to the Lafarge plant, which makes disposing of gypsum in this manner an uneconomic alternative.

3. ***National Gypsum (Apollo Beach)***

This wallboard manufacturer is located in Hillsborough County contiguous to the Big Bend Station. Like the Lafarge facility, the National Gypsum facility was purposely built adjacent to Tampa Electric's Big Bend Station for access to the plant's gypsum production. National Gypsum is currently contracted with Tampa Electric and has first call on the company's annual gypsum production from Big Bend Station. National has closed one of its Tampa facilities and modified the operations at its existing facility to accept 100 percent synthetic gypsum versus a mix of synthetic and natural rock. National Gypsum is currently operating on a reduced production schedule and is close to capacity at their adjacent facility's two storage sites. The material not taken by National Gypsum in a calendar year is available to sell to other parties only if it is released by National Gypsum or if the calendar year expires.

4. ***American Cement Company (Sumterville)***

American Cement Company is located in Sumter County, Florida, approximately 81 miles from Big Bend Station. American Cement is the newest Portland cement manufacturer in Florida, beginning operations in April 2011. The facility does not have rail or barge access and is currently only running when they receive product orders due to the downturn in the economy. This potential taker currently receives gypsum from Progress Energy's Crystal River plant. Progress Energy's plant is approximately 54 miles closer to American Cement's facility than Tampa Electric. This transportation difference and the plant's limited operation schedule means that the American Cement Company is not a viable long term economic solution for use of gypsum.

5. ***Vulcan Materials (Newberry)***

Vulcan Materials currently receives gypsum from Progress Energy's Crystal River plant and is located in Alachua County. The plant has access to rail facilities but does not have access to barge facilities. Every FGD gypsum producer in Florida except Gulf's Crist plant is closer, to Vulcan's facility, several significantly closer than the 159 mile distance to Big Bend Station. The company estimates that it would cost approximately \$24 per ton to transport gypsum by truck from Big Bend Station to this Newberry plant, which makes use of gypsum in this manner an uneconomic alternative. Although rail transportation may be a possibility, the pre-existing supply relationship with Progress Energy and the modest demand for gypsum at this site means that this potential taker is not a meaningful solution to the company's long-term needs.

6. ***Cemex (Brooksville)***

The Cemex Brooksville facility is located in Hernando County, Florida. The facility is currently being supplied all of its gypsum needs from Lakeland Electric's McIntosh plant. The facility does not have barge access; however, it does have on site rail access. Lakeland Electric's McIntosh plant is closer to Brooksville than Big Bend Station. Even if Cemex could take additional gypsum from the company, the transportation differential and cost would prevent Cemex in Brooksville from being a viable long-term taker of gypsum from Big Bend Station.

7. ***Cemex (Miami)***

Cemex's facility is located in Miami-Dade County. It has rail access at the site, but does not have barge access; however, it is located in proximity to the local port. This means that it could be possible to ship by rail to the plant or by barge to the port and then truck to the plant, but changing modes of transportation would mean additional trans-loading and storage costs.

Importantly, this manufacturer uses natural gypsum rock in the process, not synthetic gypsum. Therefore, Cemex would have to make significant capital investments in its facility to be able to use synthetic gypsum on a long-term basis. Furthermore, the closest gypsum producers are over 200 miles from this facility, which would make transportation costs a significant hurdle. Specifically, Big Bend Station is approximately 258 miles from the Cemex plant in Miami, so trucking gypsum from Big Bend Station to this location would cost approximately \$39 per ton. Due to the

inability of the plant to use synthetic gypsum and the distance from Big Bend Station, it is not a viable solution.

8. ***Suwanee American (Bradford)***

Suwanee American is a manufacturer of Portland cement located in Bradford, Florida. It has no rail or barge access at the site and is 180 miles from Big Bend Station. There are four other FGD gypsum producers less than 100 miles from the Suwanee American facility. The company estimates that truck transportation to this Bradford County site would cost approximately \$27 per ton, which together with the existence of other suppliers closer to Bradford County, would prevent Suwanee American from being a viable long-term taker of gypsum from Big Bend Station.

9. ***Titan American (Medley)***

Titan American's facility is also located in Miami-Dade County. It is similar to Cemex's Miami facility having rail access at the site and without barge access at the site but it is also located in proximity to the local port. This means that it could be possible to ship by barge to the port and then truck to the plant, but changing modes of transportation would mean additional trans-loading and storage costs.

Like Cemex, this manufacturer uses natural gypsum rock in the process, not synthetic gypsum. Titan would have to make capital investments in their facility to be able to use synthetic gypsum at their facility and the closest gypsum producers are over 200 miles from their facility. Big Bend Station is approximately 247 miles from the Titan plant in Miami; therefore, trucking gypsum from Big Bend Station to this location would cost approximately \$37 per ton. Due to the distance and since this plant does not use synthetic gypsum, it is not a viable solution at this time.

Agriculture. The use of gypsum as a soil amendment is a smaller local market than for building materials but has similar market dynamics. The price elasticity of demand is low. Agricultural users will not apply more soil amendment than would otherwise be beneficial simply because the price is reduced, because the amount of gypsum to be used is a function of the chemistry of the soil. The same issues with on-site storage regulations prevent users from stockpiling gypsum for future use.

Agricultural uses of gypsum are also regulated by the Florida Department of Agriculture and Consumer Services. Sellers of fertilizer products and soil

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amendments must be licensed to do so. Tampa Electric uses brokers who are licensed and specialized in the fertilizer markets to sell gypsum for agricultural use.

The company has had discussions with several of its licensed brokers on whether dramatically lowering the price of the gypsum would increase the amount of gypsum they could sell. The company has asked its brokers whether reducing the price would materially increase agricultural demand for gypsum, and has been advised that it would not. The agricultural market in Florida for gypsum is relatively small and does not represent a major opportunity to beneficially re-use gypsum.

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2.
 - (a) Has TECO conducted any studies to evaluate whether greater quantities of gypsum could be disposed of if TECO paid recipients to take the gypsum? Please identify at what price points (e.g., \$1.00 per ton, \$2.00 per ton, etc.) TECO conducted all such analyses, and provide all such studies.
 - (b) If the response to (a) is no, please explain why TECO believed there was no need to conduct any such studies.

- A.
 - a. Although the company has not hired a consultant or third-party to perform a formal study, the company has done extensive analyses of the options for the beneficial re-use and disposal of gypsum produced at Big Bend Station. The reasons that paying recipients to accept gypsum is not feasible are detailed in the company's response to Data Request No. 1(b).
 - b. Please see response to Staff's Third Data Request, No. 1(b).

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- 3.** (a) Has TECO conducted any studies that compare the costs and benefits of paying recipients to accept TECO's gypsum, with the cost and benefits of constructing and operating the proposed gypsum storage facility? Please provide all such studies.
- (b) If the response to (a) is no, please explain why TECO believed there was no need to conduct any such studies.
- A.** a. Although the company has not hired a consultant or third-party to perform a formal study, the company has done extensive analyses of the options for disposing of the gypsum by-product produced at Big Bend Station. The reasons that paying recipients to accept gypsum due to not being feasible are detailed in the company's response to Staff's Third Data Request, No. 1(b). In addition, as discussed in the company's response to Staff's Second Data Request, No. 11 (a-o), the company evaluated landfilling and other on and off-site storage options. The analyses done by the company demonstrate that building the new stack as proposed in the Petition is the best and most cost-effective long term solution to the company's need for temporary gypsum storage.
- b. Please see response to Staff's Third Data Request, No. 1(b)

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4. (a) Has TECO issued any requests for proposals (RFPs) in order to increase the potential number of recipients who would be willing to accept TECO's gypsum? Please provide copies of all such RFPs and indicate whether issuing such RFPs successfully expanded the number of potential recipients of the company's gypsum.
- (b) If the response to (a) is no, please explain why TECO believed there was no need to issue any such RFPs.
- A. a. No. Please see the response to (b), below.
- b. The company has four full time employees in various roles who are responsible for cost-effective marketing and beneficial re-use of generation by-products. These employees are actively engaged in the byproducts markets and have a comprehensive understanding of the uses of gypsum, market dynamics and the real time impacts of supply and demand.

Tampa Electric maintains contact with all potential building product customers through the American Coal Ash Association ("ACAA"). This association has building product members from across the country. Tampa Electric is represented on its board and hosted the last ACAA meeting in Tampa. The company works closely with fourbrokers who specialize in agricultural applications for gypsum.

As a result, the company knows who the potential takers are, where they are located, how much it would cost to transport gypsum to those sites and the other supply options that are available to potential takers. The company also understands the effect of the economic downturn on the business operations of potential takers and how the downturn has suppressed their demand for gypsum. The brokers Tampa Electric works with have advised that the company is already taking full advantage of the opportunity to beneficially re-use gypsum for agricultural uses. As discussed in the response to Staff's Third Data Request, No. 1(b), the dynamics of geography, transportation logistics and costs and other supply opportunities closer to the points of demand, together with reduced demand and the economic downturn make it highly unlikely that a formal RFP process will identify new options for disposal.

5. What is the per mile cost per ton TECO would incur to transport gypsum using each of the following means:
- (a) by rail transport;
 - (b) by barge; or
 - (c) by truck?

- A. a. Typically, Tampa Electric sells its gypsum Free on Board ("FOB") shipping point and does not incur the cost to transport. As such, the transportation of gypsum is generally contracted by either the buyer or by the seller, on a dollar per short ton basis as quoted from one particular location to another. The transportation costs for gypsum can vary widely based upon the following: current supply and demand for the transportation product, market conditions of transportation providers which are driven by their ability to move other profitable products, loading infrastructure and lastly, infrastructure, unloading and storage capabilities at the destination. The storage capacity at either the load or unload points may be affected by constraints imposed by the facility's operating and environmental permits or by other locational constraints and this coupled with the loading and/or unloading capabilities of the facility can cause the transportation cost to vary greatly.

Transportation costs of gypsum by rail would vary significantly depending on location and volume of material transported. Shipments of bulk commodities such as coal are cost-effective due to the volumes and distance associated with those shipments as well as the infrastructure in place to handle those movements. Tampa Electric currently does not have the facilities in place to efficiently load gypsum into rail cars and would require additional infrastructure to perform this activity on a regular basis. Only two of the possible off takers described later in the company's response to Staff's Third Data Request, No. 8, has rail unloading capabilities or the necessary infrastructure to handle gypsum shipments by rail. As such, any shipments by rail to facilities without unloading capabilities would require storage capacity at unload points plus additional loading and transportation costs to move the gypsum to its final destination. For these facilities, trucking the gypsum is a more cost-effective option due to the relative proximity and additional transportation costs necessary to deliver the gypsum to cement and wallboard manufactures. The two facilities that presently have rail unloading facilities currently use natural gypsum rock in the process, not synthetic gypsum. These manufacturers would have to make significant capital investments in their facilities to be able to use synthetic gypsum. In addition, due to the configuration of CSX's track and rail facilities, gypsum transported by rail from Big Bend Station to either of these plants would

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require a rail move to northern Florida and then south to the facilities. The rail transportation distance would be triple the distance of the gypsum would have to travel to reach the manufacturer and put it on par with movements made for the company's coal deliveries but the potential total volumes for these facilities would only be 50,000 to 100,000 tons or approximately two to five percent of the annual coal rail volumes making rail movements non-cost effective.

As stated in Tampa Electric's response to Staff's Third Data Request, No. 1, due to the low price elasticity of demand, typically, the transportation component is the largest component of the delivered price and thus will impact the ability to move the product to off-site locations. Please see response to Staff's Third Data Request, No. 5(a).

- b. As stated in part a of this data request, the transportation of gypsum is generally contracted by either the buyer or by the seller, on a dollar per short ton basis as quoted from one particular location to another. The transportation costs for gypsum can vary widely based upon the following: current supply and demand for the transportation product, market conditions of transportation providers which are driven by their ability to move other profitable products, loading infrastructure and lastly, infrastructure, and unloading and storage capabilities at the destination. The storage capacity at either the load or unload points may be affected by constraints imposed by the facility's operating and environmental permits or by other locational constraints and this coupled with the loading and/or unloading capabilities of the facility can cause the transportation cost to vary greatly.

Tampa Electric's recent history would suggest that barge transportation for a ton of gypsum is approximately \$0.05 per mile to a US port. Accompanying every barge movement of product is the additional costs of transporting the material to the loading facility, loading the material on to the vessel, off-loading the material from the vessel, then stored and/or transporting to the place where the material will be utilized. The costs for the above activities can range from \$18 to \$30 per ton, excluding the actual cost to barge the material, for facilities in proximity. There are three facilities in Florida in proximity to barging facilities US Gypsum, Cemex (Miami) & Titan America. US Gypsum currently receives its gypsum from Jacksonville/FPL's St John's Power Park located approximately 10 miles from the facility. Cemex (Miami) and Titan America are both located in the same general region, but do not use synthetic gypsum. The trucking cost to both facilities is about \$39 and \$37 per ton, respectively. The total cost to transport gypsum from Big Bend to either of these facilities by barge would be approximately \$41 per ton. Therefore, trucking material to each of these sites would be more cost-effective than barging.

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- c. As stated earlier in part a of this data response typically, Tampa Electric sells its gypsum FOB shipping point and does not incur the cost to transport. As such, the transportation of gypsum is generally contracted by either the buyer or by the seller, on a dollar per short ton basis as quoted from one particular location to another. The transportation costs for gypsum can vary widely based upon current supply and demand for the transportation product, market conditions of transportation providers which are driven by their ability to move other profitable products and loading/ unloading.

Trucking costs vary by distance and fuel surcharges. Current rates paid to landfills (per response to Staff's Third Data Request, No. 7(a)) vary from \$0.15 per ton-mile to \$0.69 per ton-mile. Tampa Electric has used the conservative value of \$0.15 per ton-mile for the trucking cost estimates in response to Staff's Third Data Request, No. 1(b). The response to Staff's Third Data Request, No. 8(a) contains a table that has the distance to Florida Wallboard and Portland cement manufacturers in Florida.

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6. (a) Is TECO retaining any volumes of gypsum in storage in order to potentially sell these volumes at a higher price in the future?
- (b) If the response to (a) is yes, what financial benefits would inure to TECO or its ratepayers by retaining volumes of gypsum in storage in order to potentially sell these volumes at a higher price in the future?
- (c) If the response to (a) is yes, what financial or operational risks, if any, would TECO incur if it retained volumes of gypsum in storage in order to potentially sell these volumes at a higher price in the future?

- A. a. No, the company is not purposefully holding gypsum inventory waiting for a favorable sales price. The existing gypsum stack at Big Bend Station was sized and built for Big Bend Unit 4, only, but now is being used for all four Big Bend Units. As discussed in the response to Request 1(b), the dynamics of geography, transportation logistics and costs and other supply opportunities closer to the points of demand, together with reduced demand and the economic downturn, have severely limited the cost-effective disposal options available to the company and as a result the existing gypsum stack is not adequate to meet the temporary storage requirements for all four units.

The company's goal is to manage gypsum through beneficial reuse at the lowest and most reliable long run cost to customers, not to achieve a certain sales price or to maintain a growing inventory until demand increases. Achieving this goal requires that the company secure additional temporary storage on site. Temporarily storing and selling gypsum to beneficial users is the best option primarily because permanent disposal in a landfill is a much more expensive option. Although it is not a major consideration, the company also tends to believe that landfilling a product that has other beneficial uses is neither environmentally sound nor consistent with notions of sustainability.

As stated in the response to Staff's Second Data Request, No.7, the company is an industry leader in the sale of coal combustion residual ("CCR") products and sold approximately 86 percent of the total CCRs produced in 2010. When the CCRs temporarily stored in inventory are included, more than 99 percent of the company's 2010 CCRs will ultimately be reclaimed for beneficial use compared to an industry average of 43percent. The company's efforts on CCR sales were also recognized as "commendable" in the Review of Coal Combustion Residual Storage and Disposal Process of the Florida Electric Industry produced by the Florida Public Service Commission Office of Auditing and Performance Analysis issued in December 2011.

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- b. As discussed above, the company is not purposefully holding gypsum inventory waiting for a favorable sales price, but revenues from the sale of gypsum byproducts do inure to the benefit of customers.
- c. Not applicable.

7. Regarding the third-party landfills disposal option:
- (a) Please identify the landfills that TECO has used before to dispose of gypsum produced at the BB Station, and the tipping fees was charged.
 - (b) Please identify the distance between each of the landfills discussed in (a) and the BB Station, and the transport costs incurred by TECO.
 - (c) Please identify all landfills known to the Company within a 300 mile radius of the BB station, in which TECO could dispose of the gypsum produced at the BB Station, and the tipping fees TECO would be charged.
 - (d) Please identify the distance between the BB Station and each of the landfills discussed in (c), and the transport costs TECO would incur.

A. a. Tampa Electric does not routinely dispose of gypsum produced by the FGD systems at Big Bend Station. Both on-specification and off-specification gypsum are stored onsite in the existing management area. A small amount of residual gypsum "scale" is intermittently produced during the cleaning of the scrubber towers at the plant and this material may be shipped offsite for disposal at any of the facilities identified below. Also provided are the current disposal fees for these facilities, as well as the transportation costs charged by the contracted waste hauler.

Company/Landfill	Distance (mi.)	Tipping Fee (\$/ton)	Transportation Cost (\$/ton)	Total Cost
Waste Management Inc./Okeechobee	138		\$20.63	
Omni Waste Svcs. / Oak Hammock	117		\$18.98	
Republic Services Inc./Cedar Trail	45		\$9.00	
Southeast Landfill (Gypsum Scale only)	14		\$9.69	

- b. See Response to Staff's Third Data Request, No. 7(a), above.
- c. There are 36 known Class 1 landfills (per FDEP website) within 300 miles of Big Bend Station. Of these, the four landfills identified above are properly permitted and will accept special wastes such as gypsum from Big Bend Station for disposal. The remaining facilities on the list are either transfer stations or county landfills which accept only municipal solid wastes. Landfills located at a greater distance than those identified above would result in greater transportation costs and therefore be cost prohibitive as a disposal option.
- d. See Response to Staff's Third Data Request, No. 7(a), above.

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8. Please identify all the wallboard and cement manufacturers known to the Company within a 300 mile radius of the BB station. Please also identify the distance between each of these manufacturers and the BB Station.
- A. Please see the table below that represent all known wallboard and cement manufacturers known to Tampa Electric within a 300 mile radius of Big Bend Station as well as their distance from the other generators with scrubbers that produce gypsum.

		GYPSUM CONSUMERS AND DISTANCE (MILES) FROM GENERATORS WITH SCRUBBERS THAT PRODUCE GYPSUM							
		Big Bend (TEC)	Crist (Gulf)	Crystal River (PEF)	Deerhaven (GRU)	McIntosh (Lakeland)	Palatka (SEC)	St. John's (JEA/FPL)	Stanton (OUC)
Wallboard	Lafarge	175	392	105	60	133	8	65	119
	National Gypsum	2	476	97	150	43	165	236	99
	US Gypsum	217	360	163	80	196	80	10	162
Cement	Cemex (Brooksville)	79	390	29	108	61	122	180	112
	Cemex (Miami)	258	680	327	355	223	327	361	231
	Titan America	247	673	320	347	212	320	353	224
	Suwannee American Cement	180	303	81	33	158	88	97	168
	American Cement	81	407	54	82	52	96	154	67
	Vulcan	159	334	68	17	136	64	98	148

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9. If TECO is denied ECRC recovery for the proposed gypsum storage facility, would the Company nevertheless construct the facility? Please explain your response.
 - A. Tampa Electric cannot say for certain whether it would or would not continue with the project, as proposed. The decision would depend on the Commission reasons given for any such denial. Tampa Electric believes the proposed project is the most cost-effective means of remaining in compliance with the environmental mandates described in the company's petition and that the proposed project therefore qualifies for ECRC cost recovery under Section 366.8255, Florida Statutes.

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10. If the Big Bend gypsum could be sold as soon as it is produced, how long would TECO have to keep the gypsum on-site, for quality testing or other purposes, before the Big Bend gypsum is available for delivery?

A. If it were possible to sell gypsum as soon as it is produced, the company estimates that it would take approximately 2 hours to perform the required moisture and chloride testing before the gypsum is ready for shipment. However, for all of the reasons explained in its response to Staff's Third Data Request, No. 1(b), the company cannot sell on an "as-produced" basis and that having adequate temporary storage is necessary to manage the inflow and outflow of gypsum to potential takers.

The consumers of gypsum typically do not operate on a 24/7 schedule. They typically operate during normal weekday business hours, 8AM to 5PM or 7AM to 4PM; with shutdowns occurring on observed holidays. Due to these practical down times, gypsum customers have taken up to 72 hours from production to the time of material pick up.

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11. Please identify the name and location of other generators in Florida within a 300 mile radius of the BB station that have scrubbers that produce gypsum. If known, please indicate how each generator disposes of its gypsum (e.g., sales, on-site storage, off-site storage, etc.)

A. The names and locations of other generators that have scrubbers that produce gypsum within 300 miles of Big Bend Station are listed below.

Company/Plant	Location	Capacity (MW)*	Sales (Y/N)	Offsite Disposal (Y/N)	Onsite Storage/Disposal (Y/N)
Gulf/Crist	Pensacola	906	Y	N	Y
Lakeland/McIntosh	Lakeland	340	Y	N	Y
Progress/Crystal River	Crystal River	1,442	Y	N	Y
OUC/Stanton	Orlando	889	Y	N	Y
JEA/St. Johns Power	Jacksonville	1,270	Y	N	Y
Seminole/Palatka	Palatka	1,326	Y	N	Y
GRU/Deerhaven	Gainesville	436	N**	N	Y

*The sizes shown in megawatts (MW) are based on the winter ratings of the total capacity of scrubbed units at each plant site.

**GRU currently landfills gypsum produced at this plant in their on-site landfill.

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- 12.** Please provide a detailed description of how gypsum is presently transported to National Gypsum's facility. As appropriate, please include in your response: how long a delivery round trip takes; how long it takes to load a truck and to take any other steps prior to departure; the time it takes to travel from the existing facility to National Gypsum's facility; the time it takes to unload the gypsum and any other steps needed; and returning to the existing Big Bend facility.

- A.** National Gypsum utilizes truck transportation to move gypsum from Tampa Electric's property to their facilities, which is located approximately three miles from Tampa Electric's storage site. The trucks have a 25 ton capacity and are loaded with standard material loading equipment such as front end loaders or a track hoe. The trucks are loaded in about three minutes, travel for ten minutes to National Gypsum's facility, stop at a scale located at National Gypsum for two minutes to be weighed, discharge their product in about three minutes and then make a ten minute return to Big Bend to receive another load. The loading, hauling and discharge process is approximately 30 minutes round trip for each truck.

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13. Referring to the footnote of TECO's response to Staff's Second Data Requests No. 11 (a), bates stamped page 149, please explain in detail how "a savings of \$2.50 per ton" was derived. Please also provide a detailed explanation, with an example if necessary, of how the \$56,659,346 transportation savings were derived.

A. The savings of \$2.50 per ton in Tampa Electric's response to Staff's Second Data Request, No. 11, was derived by taking the 2010 trucking costs of \$2.16 per ton associated with moving from the company's current site to National Gypsum and escalating it to the 2012 cost. The table below provides the 2012 rate of \$2.50 per ton escalated at 2.2 percent and applied to the projected purchases of National Gypsum.

Year	Expected National Gypsum Take	Savings Per Ton (Escalated)	Total Savings
2015	550,000	\$2.67	\$1,470,990
2016	550,000	2.73	1,503,352
2017	550,000	2.79	1,536,426
2018	550,000	2.85	1,570,227
2019	550,000	2.92	1,604,772
2020	550,000	2.98	1,640,077
2021	550,000	3.05	1,676,159
2022	550,000	3.11	1,713,034
2023	550,000	3.18	1,750,721
2024	550,000	3.25	1,789,237
2025	550,000	3.32	1,828,600
2026	550,000	3.40	1,868,829
2027	550,000	3.47	1,909,944
2028	550,000	3.55	1,951,962
2029	550,000	3.63	1,994,905
2030	550,000	3.71	2,038,793
2031	550,000	3.79	2,083,647
2032	550,000	3.87	2,129,487
2033	550,000	3.96	2,176,336
2034	550,000	4.04	2,224,215
2035	550,000	4.13	2,273,148
2036	525,000	4.22	2,217,559
2037	525,000	4.32	2,266,345
2038	408,333	4.41	1,801,491
2039	350,000	4.51	1,578,108

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Year	Expected National Gypsum Take	Savings Per Ton (Escalated)	Total Savings
2040	350,000	4.61	1,612,826
2041	247,917	4.71	1,167,553
2042	175,000	4.81	842,286
2043	175,000	4.92	860,816
2044	175,000	5.03	879,754
2045	175,000	5.14	899,108
2046	175,000	5.25	918,889
2047	175,000	5.37	939,104
2048	175,000	5.48	959,765
2049	175,000	5.61	980,879
		TOTAL	\$56,659,346

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- 14.** Assuming the new gypsum storage facility is constructed, please provide a detailed description of how BB's gypsum will be transported to National Gypsum's facility. As applicable, please include in your response the same level of detail as requested in Request No. 12.
 - A.** The company will be building a new 500 foot long road segment for deliveries from the new gypsum storage facility to National Gypsum's property. Front end loaders or track hoes will load material into a truck at the new storage site. Once loaded the truck will traverse the new road segment and stop at the scales located on National Gypsum's property, and then proceed to discharge the material for use. The exact logistical layout for loading, travel and discharge for the new configuration has not been determined; however, the loading, hauling and discharge process is expected to take less time than the approximate 30 minutes round trip for each truck described in the response to Staff's Third Data Request, No. 12.