

**TAMPA ELECTRIC COMPANY
UNDOCKETED: EPA CARBON RULE
LEGAL STAFF'S FIRST DATA REQUEST
REQUEST NO. 1
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FILED: AUGUST 8, 2014**

1. Please provide comments you have on legal aspects of the Clean Power Plan or proposed standards of performance for Modified and Reconstructed Sources that you believe are important for the Commission to review.

A. A threshold legal issue is the extent of EPA's authority to regulate greenhouse gases from electric generating units under Section 111(d) of the Clean Air Act. The use of that section has been infrequent. Amendments adopted in 1990 have introduced uncertainty about EPA's authority to utilize that section, and it will likely be the subject of litigation.

In that 1990 Clean Air Act reauthorization, the United States Senate first passed a package of Clean Air Act amendments, including amendments to Section 111(d). The House of Representatives then passed amendments to Section 111(d) that were similar, but not identical. The bill went to a conference committee to reconcile the separate Senate and House bills and, rather than reconcile the changes both chambers made to Section 111(d), both versions were adopted and signed into law.

The result of adopting both versions in the final bill signed into law is that under the House version of Section 111(d) EPA can adopt rules only for categories of sources whose toxic emissions EPA does not already regulate. Since mercury and air toxics from existing electric generating units are already regulated under Section 112 of the Clean Air Act, the current greenhouse gas rule for existing electric generating units is prohibited. The Senate version allows EPA to regulate any non-toxic emissions from sources, which would allow the regulation of greenhouse gases from existing electric generating units. EPA has opted to reconcile the different versions in favor of allowing the regulation of greenhouse gases from existing electric generating units, but the issue is by no means resolved. If EPA is incorrect, as many legal commentators assert, the entire effort will be halted until Congress chooses to act.

There are also legal issues associated with the substance of the EPA proposal itself. EPA has outlined "four building blocks" that can be used by the states in their plan. These include:

- Block 1: Heat rate improvements at individual generating units;
- Block 2: Emission reductions at generating units with significant carbon emissions by increasing the generation at more efficient fossil burning units to offset the less efficient generation;
- Block 3: Reduction of emissions from high carbon generating units by substituting renewable energy or nuclear options; and

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Block 4: Improvements in demand side efficiency to reduce the use of electricity and the generation required.

Of the four building blocks, only the first is directed at reducing the rate at which an existing generating plant emits carbon dioxide. The other three building blocks essentially reduce carbon dioxide by reducing or eliminating the use of higher emitting units by substituting power from lower emitting facilities or reducing demand. To justify this approach, EPA argues that a "standard of performance" does not have to be directed at a single unit, but can be spread over a collection of sources. In essence, EPA argues determining the statutorily required best system of emission reduction requires only that the "system" be one that reduces emissions of the affected sources. Under this theory, EPA can propose a collective, statewide reduction and not an individual, unit specific performance standard. EPA's proposed approach has not been tested in court.

Ultimately, the states will be required to submit plans to meet CO₂ reduction goals. The plans must include requirements that are quantifiable and legally enforceable. Depending upon the approach Florida chooses, several different agencies will be involved. The question of whether these agencies currently possess the requisite statutory authority to proceed is unresolved.

Other legal issues will certainly arise as the analysis continues. The scope of EPA's authority to proceed under Section 111(d), the scope of Section 111(d) and how and under what specific authority Florida is to proceed are only a few of the issues to be resolved.

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2. Please provide comments you have on technical aspects of the Clean Power Plan or proposed standards of performance for Modified and Reconstructed Sources that you believe are important for the Commission to review.
- A. In addition to legal, fuel diversity and rate impact issues, technical aspects of the Clean Power Plan that the Commission should consider are as follows:
- EPA's proposal does not recognize bold and early action taken to reduce CO₂ emissions. For example, by repowering Tampa Electric's Gannon coal-fired units to a Natural Gas Combined Cycle system, five million tons of CO₂ reductions have been realized every year since 2005.
 - Over time the EPA has issued various emission rules or standards that have necessitated modifications of existing equipment, or the additions of costly equipment at Big Bend Station, such as Flue Gas Desulfurization and Selective Catalytic Reduction units. As previously noted the company took early action to address those EPA requirements and the proposed Clean Power Plan will essentially require the shut-down of these units well before the end of the useful life of these environmental capital improvements projects. This will force accelerated depreciation and/or write offs of this relatively new equipment prematurely. The shut-down or cycling of Tampa Electric's Big Bend Station by forcing an inefficient limited dispatch at one of the company's lowest cost generating plants will result in stranded assets, job losses and increased fuel and other operating costs that will not benefit Tampa Electric's customers.
 - EPA's proposal penalizes early action taken with regard to electric generating unit efficiency improvements already completed. EPA assumes that substantially more improvements can be made without accounting for the projects already completed. This would arbitrarily reward those who delayed maintenance on power plants until after 2012 and penalize early adopters.
 - EPA's proposal penalizes customers who have participated in the company's demand-side management programs offered since 1978 and are realizing the value of their investment via a lower power bill. The proposal would increase the power bill of these early actors potentially without a commensurate opportunity to make further efficiency improvements.
 - EPA's proposal for at-risk nuclear and regional potential for renewable energy is not supported by Florida-specific analyses. Attempting to meet the aggressive goals would likely result in a proliferation of renewable generators that would have adverse impacts on wildlife, land and water use, and grid stability.

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- EPA's proposal is unclear as to whether out of state power purchases apply towards the emitting state or Florida, or if renewable credits from out of state resources can be purchased to effectively reduce the purchasing utilities' emissions in Florida.
- The early retirement of Tampa Electric's Big Bend Station by 2025, as predicted in EPA's IPM modeling, will result in higher fuel and purchased power costs, accelerated depreciation expense and construction of new generation capacity. Additionally, the shut-down of Polk Unit 1, Tampa Electric's industry-recognized longest operating Integrated Gasification Combined Cycle ("IGCC") unit and one of the cleanest coal burning generators in the nation would result in eliminating the lowest cost unit in the company's generating fleet, increased fuel and purchased power costs, accelerated depreciation expenses and the construction of new generating capacity.

Additional technical aspects of the Clean Power Plan that should be addressed include the following points:

- The 2012 baseline year is an arbitrary snapshot in time and ignores significant reductions undertaken by Tampa Electric. The baseline calculation from which reductions are subtracted should recognize the substantial reductions in CO₂ emissions achieved prior to 2012 by repowering Gannon Power Station to Bayside Power Station.
- To prevent the cycling or inefficient operation of base load coal units resulting in stranded assets, EPA must recognize existing coal units need to operate at higher capacity factors than is assumed in the Block 2 goal development. This could be achieved by setting minimum coal unit capacity factors into Block 2 goal development.
- The baseline should also take into account past energy efficiency measures that customers have implemented resulting in substantial emission reductions. The current goal glide path to EPA's proposed 1.5 percent avoided electricity sales is not technically feasible for Tampa Electric. Additionally, updated federal appliance efficiency standards and building codes continue to reduce the ability of utilities to implement cost-effective demand-side programs.
- EPA's proposal sets a 6 percent renewable energy standard in 2020-2029 and 10 percent in 2030. Rather than develop a renewable standard based on a regional analysis, the proposal should defer to the states (or regions if chosen by states) to develop the Best System of Emission Reduction¹

¹ "Best System of Emission Reductions" is defined in Clean Air Act 111(a)(1) as follows: The term 'standard of performance' means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which

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("BSER") based on local considerations as required by the Clean Air Act. Currently, the EPA proposal would impose standards that could have adverse impacts on the environment as a result of increased land and water use and subsequent impacts to bird and wildlife habitats.

- More pipelines would be needed to meet the increased natural gas demand from electric generating units.
- A statewide dispatch approach to reduce the aggregate CO₂ emissions may require a significant investment in the state's electric transmission infrastructure.
- Environmental regulations related to fracking as well as the increased demand for natural gas could result in natural gas price spikes that are not currently contemplated in the EPA's economics.
- Assumptions used by the EPA related to the availability of Duke Energy Florida's nuclear units, Crystal River Unit 3 and Levy Units 1 and 2, are no longer valid.
- EPA has proposed a non-symmetrical treatment for purchases outside the state since emissions from nuclear sources do not appear to be eligible for the statewide targets.
- By-product revenues from the sales of gypsum and sulfuric acid associated with Tampa Electric's coal-fired units would decline due to the expected Clean Power Plan impacts, adversely affecting customer rates and increasing CO₂ emissions from more carbon-intensive replacement processes.

(taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

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- 3.** Please provide input on the assumptions EPA employed in setting the Florida-specific interim and final emission targets in the Clean Power Plan.
 - A.** Based on Tampa Electric's review of EPA's goal development technical support documents and discussions with EPA representatives, EPA's model did not take into consideration ramp rates, maximum and minimum load conditions, start-up times, or cycling frequency. However, those elements are critical for the reliable, safe and cost-effective dispatch and operation of generating units that make up the electric grid. The start-up times and ramp rates are the longest for solid fuel units due to the complexity of the integrated operating systems, including environmental equipment such as Flue Gas Desulfurization ("FGD") and Selective Catalytic Reduction ("SCR") systems to remove SO₂ and NO_x, which also prohibits the coal units to be operated as peaking resources. With respect to dispatch levels, EPA assumed a 70 percent capacity factor for natural gas combined cycle units. While this is theoretically feasible for these types of units, it is not feasible from a practical operating perspective. Tampa Electric's natural gas combined cycle units cannot operate at a 70 percent capacity factor due to the existing system load profile and load factor of 50 percent because of the operating requirements of the company's existing coal-fired base load generating units. The coal-fired units cannot be effectively cycled or run as intermediate or peaking units. The company is currently evaluating the impact on the generating fleet's actual performance and capabilities at peak, shoulder and low load hours and the operating requirements of the base, intermediate and peaking reserves. Regardless, a lower coal dispatch will diminish or eliminate EPA-assumed energy efficiency gains in Block 1. Finally, there is insufficient gas infrastructure in the state to support any significant impact from Block 2.

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4. Should the effects of actions implemented after 2005, which resulted in a lower CO₂ footprint, be included in the EPA's Clean Power Plan, and if so, explain how and why?

A. Although the focus of the question is on post-2005 reductions, it is the position of Tampa Electric that the EPA proposal should be modified to ensure recognition of pre-2005 reductions which are meaningful and tangible. Tampa Electric's customers have been and continue to pay for the reductions achieved prior to 2005. As previously stated in the company's response to Staff's First Data Request, No. 2, the repowering of coal-fired Gannon Station to a natural gas combined cycle system alone has resulted in a reduction of five million tons of CO₂ emissions per year. Tampa Electric's early actions to reduce CO₂ emissions are described in more detail below.

- Tampa Electric has undertaken major steps to dramatically reduce its air emissions through a series of actions, including technology selection, e.g., IGCC and conversion of coal-fired units to natural-gas fired combined cycle; a substantial capital expenditure program to add Best Available Control Technology ("BACT") emissions controls; implementation of additional controls to accomplish earlier reductions of certain emissions allowing for lower emission rates when BACT was ultimately installed; and enhanced controls and monitoring systems for certain pollutants. Through these actions leading up to 2005, Tampa Electric has achieved significant reductions of major air pollutants, including a 20 percent reduction of CO₂ from 1998 levels while maintaining a diverse fuel mix through the clean use of coal for the economic benefit of its customers. By repowering Gannon Station's coal-fired units to a natural gas combined cycle system, five million tons of CO₂ reductions have been realized every year since 2005.

In addition, Tampa Electric was an early member of the U.S. Department of Energy's Climate Challenge program and participated in the Chicago Climate Exchange ("CCX"), a voluntary but legally binding cap-and-trade program dedicated to reducing greenhouse gas emissions. Because of Tampa Electric's membership in the CCX and the Climate Challenge program, the company further committed to voluntarily reduce greenhouse gas emissions by six percent below the average of its 1998-2001 base line by 2010, the last year of the pilot program. EPA did not give credit for these reductions but could have accommodated credit in the Block 2 goal computation.

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- In 2008, Tampa Electric contracted with Separation Technologies, Inc. to provide fly ash beneficiation services and to market the ash for beneficial reuse. Each year approximately 250,000 tons of fly ash generated at Big Bend Station has been utilized by the cement industry. Each ton of fly ash used offsets approximately one ton of CO₂ that would have been generated to produce an equivalent amount of cement. EPA has not provided credit for by-product beneficial reuse in the proposed rule.
- Energy efficiency at Big Bend Station including neural network combustion control optimization, distributed control system combustion optimization, soot blower optimization, and conversion of four simple cycle peakers to combined cycle mode have not been recognized in EPA's proposal.
- Demand-side management and energy efficiency achievements in Tampa Electric's territory and throughout Florida have not been recognized in EPA's proposal. Tampa Electric customers have been participating in the company's sponsored energy efficiency programs that are approved by the Commission since 1978. This represents decades of early action taken not only by Tampa Electric's customers, but all Florida customers, to achieve significant demand-side management and energy efficiency benefits for themselves and the state. These prior and continued achievements, coupled with new appliance standards and state and federal building codes continue to reduce end-use energy usage as well as deferring the need for additional power plants. The EPA Block 4 goal as proposed is technically not feasible, as described in the company's response to Staff's First Data Request, No. 26. The EPA should work with Florida to adjust any goal that is proposed and ultimately enacted to ensure that the goal is technically attainable without putting severe financial stress on customers, especially low-income customers.
- Ignition and secondary fuel switch at Polk Unit 1 from oil to natural gas was completed in 2013. This conversion results in a reduction of 7,000 tons of CO₂ per year. A project to convert Big Bend Units 1-4 ignition from oil to natural gas is currently under construction and is expected to remove 7,000 tons of CO₂ per year. Additional reductions may be achievable depending on the extent that natural gas co-firing is practicable.

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- 5.** Please discuss the achievability of meeting EPA's proposed Florida-specific interim and final emission targets in the Clean Power Plan.
 - A.** The EPA proposed standards for Florida have been misrepresented to be mathematically achievable while disregarding many other critical considerations. Preliminary evaluations indicate that there are significant technical and operational challenges to overcome before demonstrating whether or not the targets and schedule are technically feasible. The EPA's Plan does not recognize limitations related to scheduling associated with permitting, siting and construction of nuclear, renewables, natural gas pipeline infrastructure and electric transmission infrastructure by the 2020 timeframe. The evaluations are in progress but are complex and will require iterations of analyses with incremental consideration of the layers of EPA reduction schemes. A characterization of the technical feasibility will be completed prior to closure of the comment period in October.