State of Florida

Public Service Commission

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

DATE: September 3, 2014

TO: Art Graham, Chairman

FROM: Eduardo E. Balbis, Commissioner

RE: Comments regarding the EPA's Proposed Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units

On June 18, 2014, the EPA published the proposed rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units. The comment period for the Proposed Rule ends October 16, 2014. After reviewing the Proposed Rule, I have concerns with the Final Goal of 740 lbs/MWh of CO_2 and the methods and data the EPA used to reach the Final Goal.

Attached is a document drafted in comment format containing the minimum issues I believe the FPSC needs to address. As a brief summary, the Proposed Rule fails to take into account the unique geographic features of Florida and our limited interconnection with other states in the region. Furthermore, the Proposed Rule's assumptions for heat rate improvements (Block 1) and DSM reductions (Block 4) are not supported by the historic data from our review of our GPIF and DSM programs. The Proposed Rule's baseline assumption of the 2012 capacity factor for NGCC plants is incorrect, which creates a drastically inflated available reduction. Finally, the Proposed Rule's cost assumption for increasing renewable energy sources severely underestimates the installed cost of renewable energy sources according to the EPA's own numbers.

Based on the EPA's estimated costs and available data, the following are the estimated costs for the Building Blocks:

- Block 1 - $1.15 billion
- Block 2 – unknown
- Block 3 - $16.8 billion using the EIA's estimated installed costs for PV
- Block 4 - $8.6 billion using the historical DSM data for avoided capacity versus cost
- Total – at least $26.55 billion

Cc: Lisa Polack Edgar, Commissioner
Ronald A. Brisé, Commissioner
Julie I. Brown, Commissioner
Mark Futrell, Director, IDM

The Florida Public Service Commission (FPSC) ensures that Florida's electric utilities provide safe, reliable energy for Florida's consumers in a cost-effective manner. The Environmental Protection Agency's proposed rule entitled "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units" (Proposed GHG Rule) directly affects Florida's electric utilities. Section 366.015, Florida Statutes (2013), encourages the FPSC to participate in this type of agency rulemaking. Therefore, the FPSC appreciates the opportunity to provide comments to the Proposed GHG Rule.

The FPSC's jurisdiction covers the planning, development, and maintenance of a coordinated electric power grid throughout Florida.[1] Furthermore, the FPSC regulates the rates, operations, and safety of Florida's five investor-owned utilities, as well as the safety, rate-structure, and planning of Florida's municipally-owned and rural electric cooperatives.[2] The FPSC also determines rate relief for prudently incurred costs to comply with new environmental requirements.[3] Although the Proposed GHG Rule is clear in that the EPA is not mandating the method an individual state must use to reach the proposed CO_2 goals, it is clear that the proposed State target of a 38% reduction in CO_2 emissions, regardless of the method or combination of methods chosen by Florida, will impact the cost recovery/rate impact and reliability matters that are within the FPSC's jurisdiction. Of note, comments by EPA officials during press conferences indicate that, once a State incorporates the Final Goals into an EPA approved State Plan, the resulting targets will be inflexible.

The following comments will provide a basic background of the utility portfolio present in Florida, which will act as the basis for the specific comments that follow. After the

[1] § 366.04(5), Fla. Stat. (2013).
[2] § 366.04, Fla. Stat. (2013).
[3] § 366.8255, Fla. Stat. (2013).

background, the comments will address each of the EPA's building blocks. The comments for each building block will compare the actual Florida utility data with the assumptions used by the EPA in determining the reduction for each building block. The conclusion will then combine the individual building block analyses to address Florida's Final Goal contained in the Proposed GHG Rule.

Background

Florida's unique weather, customer base, and high reliance on electricity for cooling and heating dictate Florida's electricity usage. Florida has the highest number of cooling degree days of any state in the continental U.S. Residential customers comprise 89 percent of Florida's electricity consumers. Florida also has a large population of senior citizens on fixed incomes. Only 7 percent of Florida customers have access to natural gas service, and the vast majority relies on electricity to meet residential needs. This, combined with Florida's unique geography and climate, requires Florida to carefully examine all factors related to electricity generation to ensure cost-effective, reliable, electricity for all Floridians.

Florida is unique in its geographical location. As a peninsular state, Florida's interconnections and transmission capabilities are limited. As noted in our prior comments regarding the Proposed GHG Rule, transmission capability to import energy is limited to 3,800 megawatts (MW), or just 6.6 percent of Florida's summer capacity. This limited transmission capability forecloses many of the proposed regional options in the Proposed GHG Rule.

In 2012, the benchmark year chosen by the EPA, Florida ended the year with 57,454 MW of total generating capacity (summer).[4] Renewable energy sources comprised 1,400 MW, or 2

[4] Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, 1 (Mar. 2014).

percent, of Florida's total generating capacity.[5] Natural gas fueled 65 percent of Florida's electricity generation, while coal supplied only 20 percent of Florida's generation.[6] For 2012, CO_2 emissions from electric generation in Florida were 1,199 pounds per megawatt hour (lbs/MWh) of CO_2.[7] The Proposed GHG Rule establishes a Final Goal for Florida of 740 lbs/MWh of CO_2.[8]

Building Blocks

Although the Proposed GHG Rule expresses that states are free to choose the method or methods they will use to reach the proposed Final Goals,[9] the Proposed GHG Rule reached the proposed Final Goal by using a building block analysis to reach a 38% reduction. Therefore, the following block by block analysis will address each block individually using data from the 2012 benchmark year as well as historical data to illustrate trends.

Block 1

Block 1 addresses CO_2 reductions through heat rate improvements of coal-fired generating plants.[10] The Proposed GHG Rule claims implementation of best practices should result in a 4 percent improvement and additional technical potentials should result in another 2 percent gain, totaling in an overall heat rate improvement of 6 percent.[11] Should the improvements in Block 1 prove attainable, the EPA estimates a 30 lbs/MWh reduction in Florida's CO_2 emissions.[12]

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[5] Florida Public Service Commission, Review of the 2012 Ten-Year Site Plans for Florida's Electric Utilities, 27 (Dec. 2012).
[6] Florida Public Service Commission, *supra* note 4, at 2.
[7] U.S. Environmental Protection Agency, Goal Computation Technical Support Document, 25 (June 2014).
[8] *Id*.
[9] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830, at 34,837 (proposed June 18, 2014) [hereinafter Proposed GHG Rule].
[10] *Id.* at 34,859.
[11] *Id.* at 34,860-61.
[12] U.S. Environmental Protection Agency, *supra* note 7.

The EPA estimates the cost of implementing heat rate improvements at "relatively modest capital costs" of $100 per kilowatt (kW).[13] Using Florida's 2012 coal capacity of 11,491 MW, Florida consumers would pay $1.15 billion for these heat rate improvements. Although some of these costs may be offset by lower fuel costs per MWh, a fluctuation of fuel prices could also eliminate any savings. Moreover, Florida's investor owned utilities are incentivized to improve heat rate performance, and historical data shows sustained heat rate improvements are not easily achieved.

In 1980, the FPSC developed a generating performance incentive factor program (GPIF) for investor-owned utilities, which encourages utilities to maximize unit heat rate efficiency. Targets are set annually through a formal hearing procedure, and investor-owned utilities either gain rewards or suffer penalties based on the prior year's performance compared to the previously set annual targets. The GPIF program creates multi-million dollar incentives for utilities to maximize efficiencies at their fossil-fired units. In over 30 years of offering incentives, Florida has not seen consistent heat-rate improvements in the 6 percent range as suggested in the Proposed GHG Rule. In the last 5 years alone, heat rate efficiencies ranged from negative 8 percent to positive 4 percent, even with the GPIF program incentives.

Rather than relying on an across the board assumption of a 6 percent improvement to calculate a Final Goal, we propose a more state-specific analysis, which will take into account, not only potential for heat rate improvements (as verified through historical data under incentive programs like the GPIF program), but also steps already taken to increase efficiencies in the state's fleet. A state-specific fleet analysis is more reasonable in determining a state's Final Goal.

[13] Proposed GHG Rule, *supra* note 9, at 34,905.

Block 2

Block 2 addresses CO_2 emission reductions by increasing natural gas combined cycle (NGCC) plants to a 70 percent utilization rate.[14] Currently, Florida utilities use an economic model for dispatching their generation fleet. Daily and hourly fluctuations in fuel prices and other factors are included in their models to ensure that the demands are met with the most cost-effective generation. These cost savings are passed directly to the customers.

In the EPA's calculation of the Block 2 emission reduction for Florida, the EPA states that Florida's NGCC plants operated at a capacity factor of 51 percent.[15] Based on the EPA's calculations of a re-dispatch change from 51 percent to 70 percent of capacity, the EPA calculates a CO_2 emissions reduction of 287 lbs/MWh, or approximately 15.1 lbs/MWh per percent increase in re-dispatch where the re-dispatch to NGCC replaces coal-fired generation.[16]

The EPA's characterization that Florida's NGCC fleet operated at a "51 percent capacity factor" in 2012 is incorrect. While the EPA uses the phrase "utilization rate" in the Proposed GHG Rule,[17] the EPA uses the phrase capacity factor in describing the calculations used to reach the Block 2 reductions.[18] Furthermore, the EPA calculates the Block 2 reductions using 70 percent of the generating unit's nameplate capacity.[19] The EPA errs in using a generator's nameplate capacity in the capacity factor Block 2 calculations.

When discussing generator capacity, system planners and regulators distinguish capacity from nameplate capacity for important reasons that are ignored by the EPA's use of nameplate

[14] Proposed GHG Rule, *supra* note 9, at 34,864.
[15] U.S. Environmental Protection Agency, Data File: Goal Computation – Appendix 1 and 2, http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents (last updated June 26, 2014).
[16] The EPA fails to adequately address the inconsistency in using heat rate improvements in coal-fired units to calculate Block 1 savings, and then partially negating those saving by re-dispatching from those improved coal-fired units to NGCC units for the savings presented in Block 2.
[17] Proposed GHG Rule, *supra* note 9, at 34,864.
[18] U.S. Environmental Protection Agency, *supra* note 7, at 10-11.
[19] *Id.*

capacity. A generator's nameplate capacity is "the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer."[20] By contrast, the generator capacity is "the maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, adjusted for ambient conditions."[21] Effectively, nameplate capacity refers to a generator's maximum output under optimal design conditions; whereas, capacity is a generator's maximum output supplied to load under actual, real-world conditions, which is often referred to as net capacity when referencing both types to avoid confusion. When referring to capacity, system planners and regulators refer to the real-world, actually available capacity, not the theoretical, under perfect design conditions nameplate capacity used by the EPA. The EPA even states it wanted to use net generating capacity but asserts, incorrectly, that net capacity data was not readily available.[22] Therefore, the EPA chose to use nameplate capacity.[23]

Although the EPA errs in the use of nameplate capacity, the EPA states "we are proposing goals expressed in terms of net generation," because generators currently use net generation for reporting purposes.[24] The EPA should use the actually measurable net capacity instead of the theoretical nameplate capacity in calculating reductions under Block 2. Additionally, state regulators use net capacity incorporating summer and winter capacity ratings when determining reserve margins for planning purposes. For Block 2 calculation purposes, the

[20] U.S. Energy Information Administration, Glossary: Generator nameplate capacity, http://www.eia.gov/tools/glossary/index.cfm?id=G (last visited July 18, 2014).
[21] U.S. Energy Information Administration, Glossary: Generator capacity, http://www.eia.gov/tools/glossary/index.cfm?id=G (last visited July 18, 2014).
[22] U.S. Environmental Protection Agency, GHG Abatement Measures, 3-6 (June 2014). The U.S. Energy Information Agency's database of Forms EIA-860 contains summer and winter capacities for facilities across the U.S. The EPA even refers to Form EIA-860 elsewhere in the GHG Abatement Measures; therefore, it is inexplicable that the EPA chose to use the theoretical nameplate capacity over the known and modeled summer/winter capacities reported in the documents the EPA used to perform the Block 2 analysis.
[23] *Id.*
[24] Proposed GHG Rule, *supra* note 9, at 34,894.

EPA should use 70 percent of net capacity, because that accurately represents an achievable percentage as proven by real world testing as well as allows a reasonable reserve margin. An increase above 70 percent of net capacity decreases available reserve margins and could require additional capital expenditures to ensure system reliability.

By using the measureable and achievable net capacity of Florida's NGCC fleet as listed in Form EIA-860 for 2012[25] and the EPA's generation numbers from the Data File: 2012 Unit-Level Data Using the eGRID Methodology,[26] Florida's NGCC fleet operated at a 61 percent capacity factor for 2012, not 51 percent as used in the calculations for the Block 2 reductions. This difference in the benchmark data results in a reduction of 135.9 lbs/MWh under Block 2 instead of 287 lbs/MWh. A reduction of 135.9 lbs/MWh under Block 2 for Florida is more reasonable since it is based on the correct benchmark data and maintains a reasonable reserve margin to ensure system reliability without incurring additional capital expenditures. However, due to the volatility in fuel prices, the costs associated with maintaining this rate need to be calculated to properly estimate the compliance costs.

Geographic Re-Dispatching Issues

The Proposed GHG Rule limits re-dispatching to within a region's existing fleet.[27] The Proposed GHG Rule places Florida in a southeast region with Kentucky, North Carolina, South Carolina, Tennessee, Mississippi, Alabama, and Georgia. As discussed in the Background section above, Florida's import transmission capability is limited to approximately 3,800 MW, or 6.6% of total capacity. Florida's geographical location and corresponding energy import

[25] U.S. Energy Information Administration, Form EIA-860 for 2012, *available at* http://www.eia.gov/electricity/data/eia860/index.html (last visited July 18, 2014).
[26] U.S. Environmental Protection Agency, Data File: 2012 Unit-Level Data Using the eGRID Methodology, http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents (last visited July 18, 2014).
[27] Proposed GHG Rule, *supra* note 9, at 34,865.

limitations should minimize reliance on regional dispatch hypotheticals and confine Florida's re-dispatch increases (for Final Goal computation) to those within the State going from 61 to 70 percent as discussed above.

Block 3

Block 3 addresses CO_2 emission reductions by using less carbon intensive generating capacity. The EPA accurately states Florida's renewable energy generation capacity in 2012 was 2 percent of total generating capacity.[28] The Proposed GHG Rule bases the Final Goal on Florida increasing its renewable generation levels to 10 percent,[29] which results in emission reductions of 70 lbs/MWh for Block 3.[30]

The Proposed GHG Rule is unclear as to the measurement of renewable energy used to calculate the Block 3 portion of the Final Goal. First, the EPA references the renewable energy capacity in a state,[31] but then the EPA states that the 10 percent figure applies to total annual generation.[32] Given the difference in capacity factor for renewables, which are accepted to have a capacity factor significantly lower than the fossil-fuel fired generation they will replace, versus the total annual generation in MWh, the EPA should clarify that the 10 percent level equals 10 percent of a state's generating capacity. Therefore, using 2012 benchmark figures for determining the Block 3 portion of the Final Goal, renewable energy must account for 5,745 MW of generating capacity. In 2012, Florida had 1,400 MW of renewable energy generating capacity, so Florida would need a 4,345 MW increase of renewable generating capacity to reach the figures the EPA used to calculate the CO_2 emission reductions in Block 3.

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[28] *Id*. at 34,868.
[29] *Id*.
[30] U.S. Environmental Protection Agency, *supra* note 7.
[31] Proposed GHG Rule, *supra* note 9, at 34,866.
[32] *Id.* at 34,868.

Using the U.S. Energy Information Agency's most recent installed costs for utility scale photovoltaic (PV) of $3,873 per kW,[33] the installed cost of 4,345 MW of PV is $16.8 billion. When determining the need for new electric generating facilities, the FPSC always considers the utilization of renewable energy resources, but, by law, the FPSC must also consider cost-effectiveness.[34] As cost-effectiveness is a mandate under State law, the FPSC is concerned about the reasonableness of the cost of renewable energy technologies used to develop the Block 3 component of the Final Goal. The cost of achieving the CO_2 emissions reductions using a proposed 10 percent renewable energy component for calculating the Final Goal does not appear reasonable.

Reliability

Reliability is a very real and very significant concern due to Florida's limited interstate transmission capability. Furthermore, Florida's annual cooling degree days is the highest in the continental U.S. Due to these factors, Florida must rely on intrastate generating facilities capable of continuously meeting high levels of demand reliably. Thus, Florida relies heavily on a robust and dispatchable generating fleet. Many of the low carbon/zero carbon technologies the EPA uses to justify the 10 percent Block 3 calculation are intermittent, non-dispatchable, non-base load technologies. For example, in 2013, PV's capacity factor ranged from 13 to 22 pecent.[35] The low capacity factors of many low carbon/zero carbon technologies (excepting nuclear) combined with Florida's need for dispatchable generation means Florida would need to build additional natural gas-fired facilities and related infrastructure for use as stand-by units for

[33] U.S. Energy Information Agency, Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants, at 6 (Apr. 2013).
[34] § 403.519(3), Fla. Stat. (2013).
[35] U.S. Energy Information Agency, Electric Power Monthly (July 28, 2014), *available at* http://www.eia.gov/electricity/monthly/.

reliability purposes. The EPA errs in failing to account for these additional capital expenditures needed to ensure system reliability.

Block 4

Block 4 calculates CO_2 emission reductions based on a proposed increase in demand side energy efficiency. The Proposed GHG Rule suggests a final demand-side energy efficiency savings of 10 percent for calculating the Final Goal.[36] As with Block 3, the Proposed GHG Rule Block 4 analysis states both a 10 percent avoided capacity and 10 percent of annual sales.[37] The EPA should clarify whether the 10 percent applies to avoided capacity or the percentage of annual sales. The EPA used generalized historical data and EPA analysis to propose that an annual 1.5 percent reduction in capacity demand, culminating in a 10 percent reduction, is reasonable. Florida's historical demand-side energy management (DSM) data proves otherwise.

Florida's DSM program began in 1981. The Florida Energy Efficiency and Conservation Act (FEECA) declares the use of DSM programs to be critical and directs the FPSC to adopt goals and approve plans to implement DSM programs in Florida.[38] Since 1981, Florida consumers have paid more than $5.7 billion for DSM programs.[39] Florida Statutes require that the FPSC establish conservation goals at least every 5 years after a careful analysis of technical potential, cost-effectiveness, and other factors.[40] FEECA utilities then submit compliance plans that are reviewed and considered by the FPSC to ensure they do not result in an undue rate impact. Additionally, Florida has been aggressive in developing building codes and other methods to achieve cost-effective conservation. In the benchmark year of 2012, DSM programs

[36] Proposed GHG Rule, *supra* note 9, at 34,873.
[37] *Id*.
[38] § 366.81, Fla. Stat. (2013).
[39] Florida Public Service Commission, Annual Report on Activities Pursuant to the Florida Energy and Conservation Act, 11 (February 2014).
[40] § 366.82, Fla. Stat. (2013).

achieved a reduction of 259.7 MW (0.45 percent of total capacity) at a cost of $388 million, or $1.49 million per MW of capacity need avoided by DSM. The Proposed GHG Rule's use of 10 percent DSM avoided capacity, which equals 5,745 MW for the 2012 benchmark year, will cost an estimated $8.6 billion each year. Although DSM programs remain critical to the Florida energy mix, the FPSC suggests the EPA's proposal of a 10 percent reduction for purposes of calculating the Final Goal as unreasonable both in terms of proposed cost and achievability based on Florida's actual historic data. Setting an arbitrary goal without considering the technical potential or the cost-effectiveness of the programs to achieve the goal is contrary to Florida Statutes.

Conclusion

The Proposed GHG Rule has the potential for significant rate and reliability impacts on Florida's consumers. The capital expenditures totaling almost $27 billion to reach the reductions proposed under Blocks 1, 3, and 4 are unreasonable. Furthermore, Florida's unique peninsular geography and limited import transmission capabilities isolate Florida in such a manner that a reasonable Final Goal for Florida must be determined using Florida-specific data rather than national or regional data.

Fortunately, Florida implemented programs to incentivize heat rate improvements and demand-side energy efficiency more than 30 years ago. Thus, there is a lengthy historical record for both the cost/benefits analysis and reasonableness of Blocks 1 and 4. The historical data does not confirm the reasonableness of a 6 percent heat rate improvement nor a 10 percent demand-side energy efficiency capacity avoided. Furthermore, using the U.S. Energy Information Agency's current capital cost estimates, the cost of increasing renewable energy capacity by the amount presented in Block 3 for Final Goal calculations for Florida is not reasonable. Also, the

lack of clarity as to whether the Proposed GHG Rule addresses percentage of capacity or percentage of annual generation for determining the Final Goal numbers for Blocks 3 and 4 creates confusion. Finally, the capacity factor used to calculate the emission reductions under Block 2 is inaccurate, resulting in an unreasonable Block 2 calculation for purposes of the Final Goal. The EPA should use net capacity based on reported summer and winter capacity factors to ensure adequate reserve margins and system reliability.

The issues listed above result in an unreasonable proposed Final Goal for the State of Florida. Alternatively, the EPA should establish achievable state goals based on a state-specific analysis conducted by the relevant state agencies using best system of emission reduction methods achievable at the source. Additionally, all data inputs for the analyses should use accurate and historical state-specific data when available.