TESTIMONY OF ART GRAHAM

CHAIRMAN

FLORIDA PUBLIC SERVICE COMMISSION

Before the

COMMITTEE ON ENERGY AND COMMERCE

SUBCOMMITTEE ON ENERGY AND POWER

U. S. HOUSE OF REPRESENTATIVES

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The Florida Public Service Commission (Commission) is responsible for ensuring safe and reliable electric service at fair and reasonable rates for consumers in Florida. Within the realm of this responsibility, the Commission has been active in providing input during this development stage of the Clean Power Plan proposal. The Commission contends that any carbon regulation imposed on electric generators must allow flexible, cost-effective solutions and must not compromise reliability.[1] I recognize the need for and the role of environmental regulations at the state and federal level, and my comments do not take a position on environmental issues. Although the Clean Power Plan affects all aspects of the electric industry in Florida, my comments focus on two main concerns, a lack of fairness in Florida's requirements and the significant cost of compliance.

Lack of Fairness in Florida's Emission Requirements

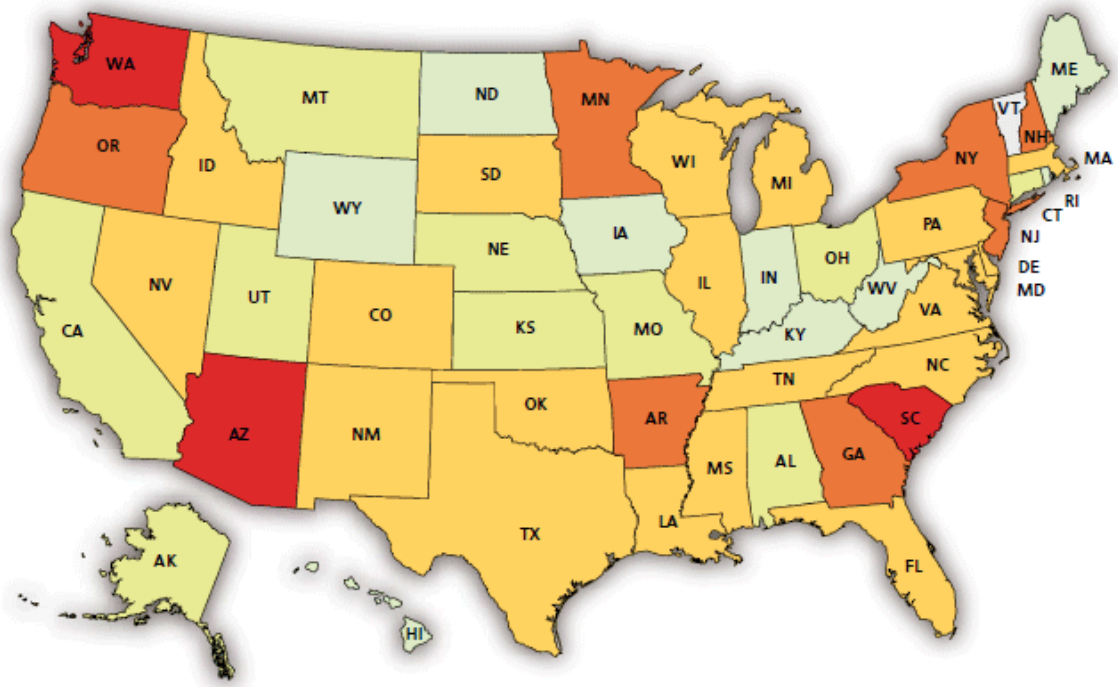
As discussed below, EPA's proposed methodology to set the Best System of Emissions Reductions (BSER) results in stringent emission performance requirements for Florida and varying interim and final goals among states. The proposal does not recognize the Florida-specific circumstances, such as prior actions and difficulties in complying with the proposal, that create large cost impacts on the ratepayers in our state.

Downward Trend in Florida's CO_2 emissions

Because of prior actions taken in Florida, the state has achieved declining CO_2 emissions. These actions include: (1) increased natural gas generation, (2) generation efficiency improvements, (3) nuclear power plant uprates, and (4) utility-sponsored conservation programs. As shown on

[1] The Florida Public Service Commission's comments to the EPA : http://www.floridapsc.com/dockets/federal/PDFs/Comments_EPA_12_1_2014.pdf

EPA's proposed carbon emissions rates for existing power plants (lbs/MWh)



Percent change (2012-2030)

11% - 20% | 21% - 30% | 31% - 40% | 41% - 50% | 51% - 72%

SNL

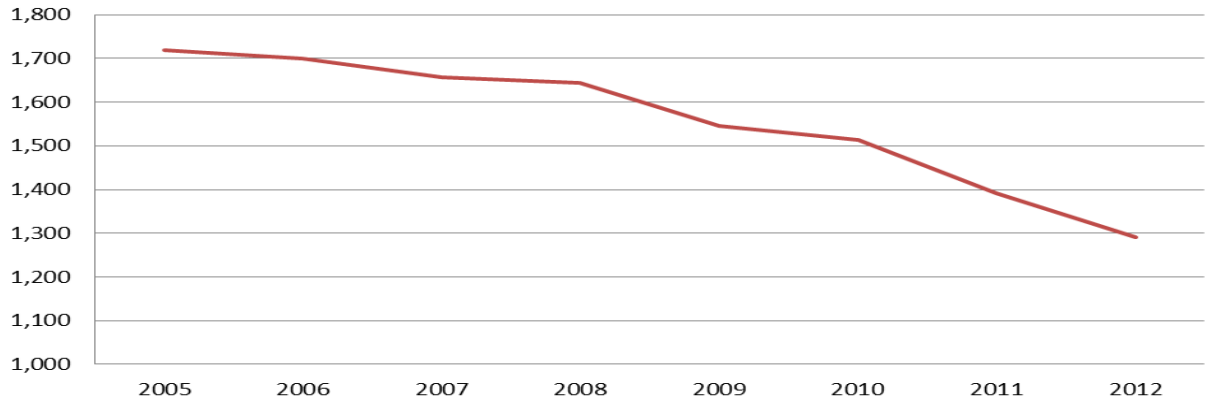
State	Historical emissions rate (2012)	Avg. interim emissions rate goal (2020 - 2029)	Final emissions rate goal (2030+)	Required change (2012-2030)
Alabama	1,444	1,147	1,059	27%
Alaska	1,351	1,097	1,003	26%
Arizona	1,453	735	702	52%
Arkansas	1,640	968	910	45%
California	698	556	537	23%
Colorado	1,714	1,159	1,108	35%
Connecticut	765	597	540	29%
Delaware	1,234	913	841	32%
Florida	1,200	794	740	38%
Georgia	1,500	891	834	44%
Hawaii	1,540	1,378	1,306	15%
Idaho	339	244	228	33%
Illinois	1,895	1,366	1,271	33%
Indiana	1,923	1,607	1,531	20%
Iowa	1,552	1,341	1,301	16%
Kansas	1,940	1,578	1,499	23%
Kentucky	2,158	1,844	1,763	18%
Louisiana	1,466	948	883	40%
Maine	437	393	378	14%
Maryland	1,870	1,347	1,187	37%
Massachusetts	925	655	576	38%
Michigan	1,696	1,227	1,161	32%
Minnesota	1,470	911	873	41%
Mississippi	1,130	732	692	39%
Missouri	1,963	1,621	1,544	21%

State	Historical emissions rate (2012)	Avg. interim emissions rate goal (2020 - 2029)	Final emissions rate goal (2030+)	Required change (2012-2030)
Montana	2,245	1,882	1,771	21%
Nebraska	2,009	1,596	1,479	26%
Nevada	988	697	647	34%
New Hampshire	905	546	486	46%
New Jersey	932	647	531	43%
New Mexico	1,586	1,107	1,048	34%
New York	983	635	549	44%
North Carolina	1,646	1,077	992	40%
North Dakota	1,994	1,817	1,783	11%
Ohio	1,850	1,452	1,338	28%
Oklahoma	1,397	931	895	36%
Oregon	717	407	372	48%
Pennsylvania	1,540	1,179	1,052	32%
Rhode Island	907	822	782	14%
South Carolina	1,597	840	772	52%
South Dakota	1,135	800	741	35%
Tennessee	1,903	1,254	1,163	39%
Texas	1,298	853	791	39%
Utah	1,813	1,378	1,322	27%
Virginia	1,297	884	810	38%
Washington	763	264	215	72%
West Virginia	2,019	1,748	1,620	20%
Wisconsin	1,827	1,281	1,203	34%
Wyoming	2,115	1,808	1,714	19%

Sources: U.S. EPA Clean Power Plan, CleanPowerPlanmaps.epa.gov
Map credit: Whit Varner

Figure 1, data from the Florida Department of Environmental Protection demonstrates that Florida's average CO_2 emissions profile, for power produced in Florida, decreased from 1,718 lbs/MWh in 2005 to 1,291lbs/MWh (before Clean Power Plan adjustments) in 2012, a 25 percent reduction in CO_2 emission rates. This downward trend was achieved through the application of long-term planning practices that identify the most cost-effective resources, while maintaining reasonable rates for Florida's consumers.

Figure 1: CO_2 Emissions from Power Produced in Florida (lbs/MWh)



Source: Florida Department of Environmental Protection

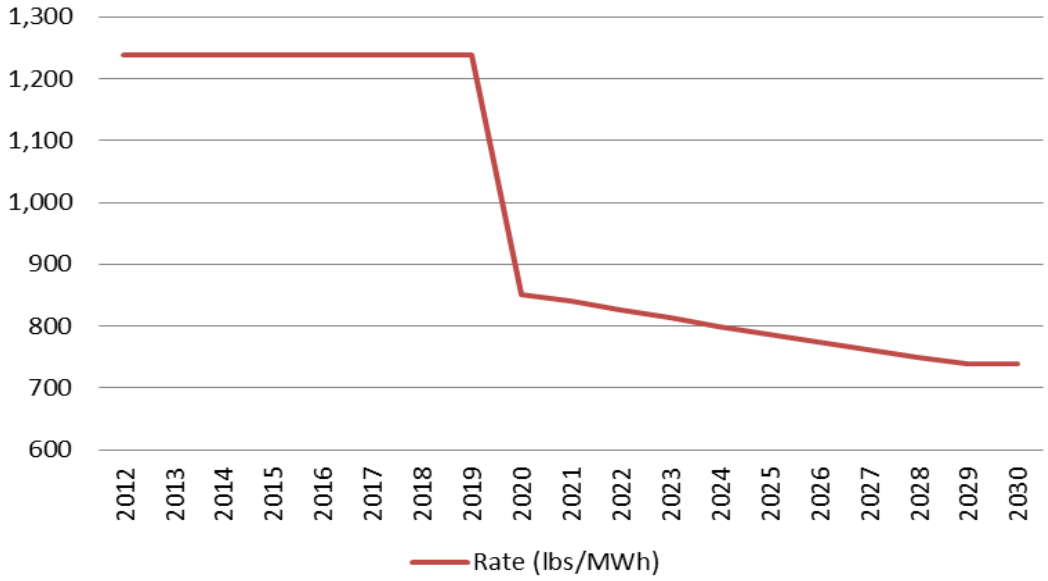
(Clean Power Plan adjustments not applied)

Level of Stringency in Florida's Requirements

EPA's proposed methodology, which imposes national assumptions on individual states, results in a 2020 interim target of 794 lbs/Megawatt-hour (MWh) for Florida, with a final target of 740 lbs/MWh by 2030. The final target represents an additional 38 percent reduction in Florida's CO_2 emissions profile relative to EPA's 2012 baseline year. It is important to note that these required reductions are in addition to the 25 percent reductions Florida achieved over the seven-years prior to 2012. To comply, Florida will have to more than double its past efforts within less than five years. I believe this requirement is unreasonable and unfairly penalizes Florida for

having taken actions that reduced CO_2 emissions prior to EPA's 2012 baseline year. Further, the proposed interim requirement for Florida is only marginally different from the final requirement, and requires a substantial proportion of the 2030 CO_2 emissions reductions to occur beginning in 2020. Figure 2 shows the dramatic expectations EPA proposed for Florida.

Figure 2: Florida's CO_2 Emission Rate Target



Source: EPA Goal Calculation Technical Support Document

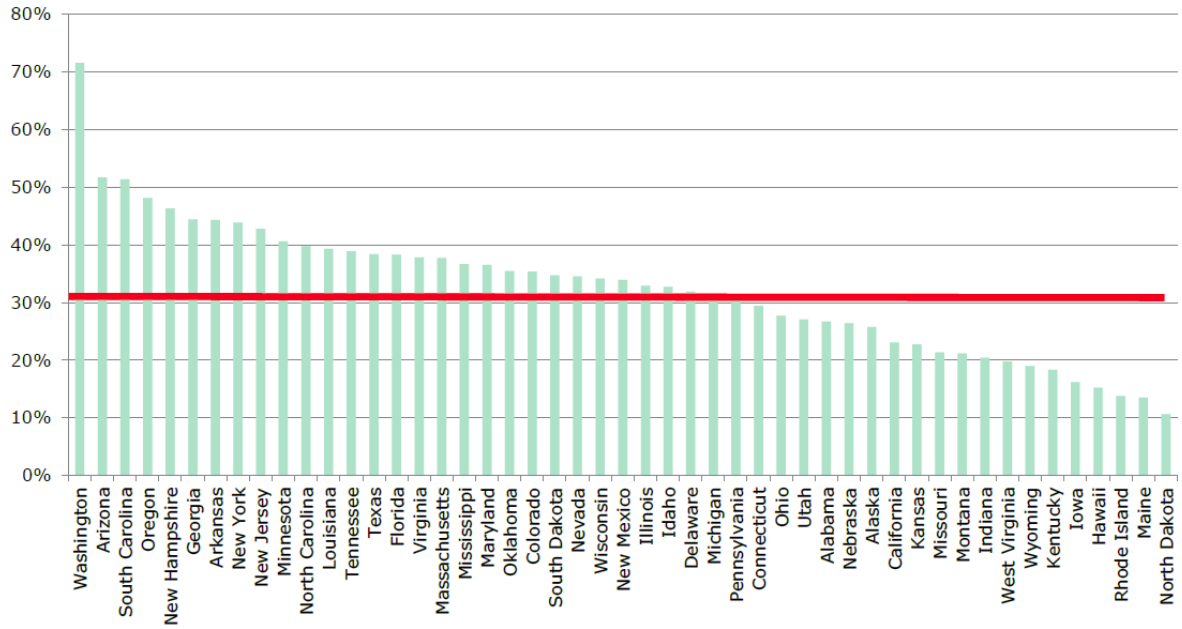
Additionally, Florida's final emissions target is lower than what is achievable by any fossil-fueled baseload plant. For example, if a utility wanted to add a new natural gas facility after 2020, there will be a requirement to offset excess emissions with non-emitting resources.[2] However, in Florida, apart from nuclear, there are no substantive and proven non-emitting baseload options. This means Florida's options to address aging baseload resources will be constrained and consequently costly.

[2] EPA's proposed CO_2 emissions standards for new natural gas combined cycles is 1,000 lbs/MWh, or 260 lbs/MWh higher than Florida's final target.

Florida's Targets Compared to Other States

EPA's issuance of statewide requirements using national assumptions results in different interim and final goals among states. Figure 3 shows the wide range of EPA's proposed targets across the states. These varying targets require some states to shoulder more of the reduction burden than other states. Florida's emissions reductions goal is 38 percent, while 19 states have an emissions reductions goal of 30 percent or less. Additionally, some states have no emissions reduction requirements. As a result, the targets set for Florida can place our state at a competitive disadvantage to other states due to the impact of compliance costs on Florida's electric rates. It is particularly discouraging that states like Florida that have already progressed toward a lower emitting fuel source, natural gas, have a more stringent target than other states that can continue to rely on coal as a primary generating fuel. A long-term plan that gradually results in switching from coal to other generation resources can be one of the lower cost options for reducing carbon emissions. Because Florida has already shifted to 65 percent natural gas generation options, to further reduce carbon emissions will be more difficult and costly for Florida than for states with less stringent requirements.

Figure 3: Percent CO_2 Reduction by State (2030)



Source: Sidley Austin LLP, *EPA's Existing Source Performance Standard for Greenhouse Gases June 9, 2014*

Geographic Challenges to Implementation

Florida's peninsular shape and distribution of load centers limits options to comply with the Clean Power Plan. Florida's transmission capability to import energy into our state from other states is limited to approximately 3,800 megawatts of transport capability into the peninsula. Florida's limited ability to import energy reduces its opportunity to engage in multi-state compliance options, and the associated cost reductions, compared to other states with more centralized geographies and neighboring states that may have diverse generation resources.

Further, Florida's coal-fired facilities and natural gas combined cycle (NGCC) facilities are not typically co-located nor generally located within the same utility system. This means the interconnecting transmission segments were not developed with the expectation that all NGCC facilities would permanently displace all or most of the baseload coal-fired facilities as

envisioned by the Clean Power Plan. Whether Florida can achieve such a transition by 2020 without compromising reliability is unknown and without precedent.

Heat Rate Improvement Requirement

EPA's Building Block 1 unfairly assumes that heat rate improvements are available at all coal-fired plants without consideration of any prior improvements. The national 6 percent heat rate improvement assumption does not account for Florida's history of heat rate improvements and promotes the unrealistic assumption that material further improvements remain unexplored.

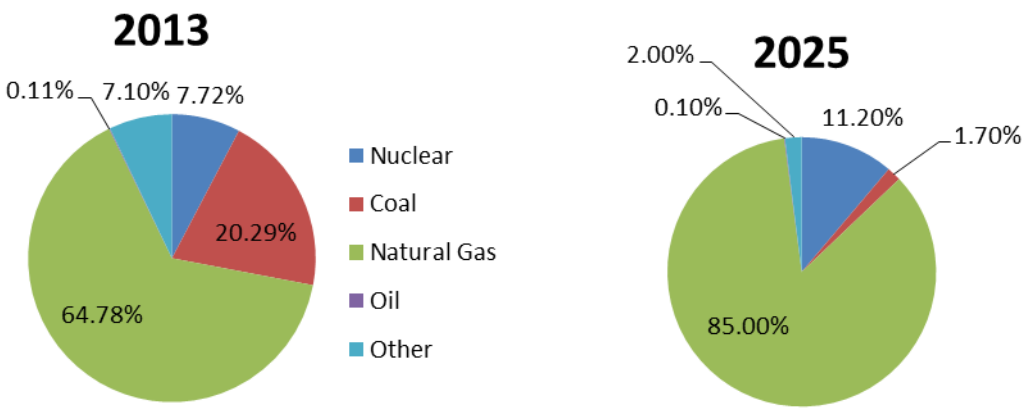
Florida has a long history of providing its investor-owned utilities a financial incentive to improve the operating efficiency of coal-fired power plants. The Commission's Generation Performance Incentive Factor is designed to encourage the efficient operation of electric baseload generating units. As a part of an annual proceeding, our Commission sets targets for electric generating utilities that include heat rate improvements. The Commission has the authority to approve financial rewards or impose penalties related to heat rate efficiency. Because this policy specifically encourages utilities to engage in supply-side energy efficiency improvements, many of our utilities have already invested in heat rate improvements. EPA's national heat rate improvement assumption for coal units fails to recognize Florida's efficiency improvements to its coal fleet due to this policy.

Redispatch of Natural Gas facilities

EPA's Building Block 2 assumes that all states will be able to average a 70 percent dispatch of natural gas combined cycles without consideration of site-specific circumstances that may hinder reaching this sustained level of utilization.

Florida's reliance on natural gas as a generation fuel has gradually increased. Currently, more than 65 percent of the electric power in Florida is generated from natural gas, while approximately 21 percent is generated from coal and oil. With the implementation of the Clean Power Plan, Florida's dependence on natural gas is projected to rapidly increase to 85 percent of statewide generation by 2025, as displayed in Figure 4. As Florida has no native natural gas production and limited storage options, this high dependency on natural gas generation unfairly exposes the state's ratepayers to the risks associated with excessive reliance on a single fuel source. History has demonstrated it is important for Florida to maintain a diversified generation fuel source mix. A diversified fuel supply enhances system reliability and significantly mitigates the effects of volatile fuel price fluctuations, extreme weather events such as hurricanes, and unplanned plant outages. The EPA proposal would require Florida to rapidly transition to even higher natural gas dependency which could preclude the development and implementation of adequate risk mitigation strategies, if any exist.

Figure 4: Historic and EPA Projected Florida Energy Generation by Fuel Type



Source: 2014 Florida Reliability Coordinating Council Load & Resource Plans and EPA Parsed File Option 1 State, 2025

Moreover, to reach the required high level of natural gas combined cycle plant utilization, EPA's modeling of the proposal shows a 90 percent reduction in coal-fired generation for Florida. Conversely, a review of the modeling results of some other states reveals little or no retirement of coal-fired units to achieve the higher natural gas capacity. This inconsistent treatment by EPA will result in a disproportionate economic impact on Florida.

Energy Efficiency Requirements

There are factors that affect the success of Florida's utility-sponsored energy efficiency programs that were not part of EPA's national assumption of possible savings in Building Block 4. For example, Florida's historical achievements in energy efficiency and the consequences of progressively more stringent appliance efficiency standards and state building codes are factors that limit expansion of cost-effective energy efficiency efforts. Over the last 33 years, the energy efficiency activities subject to the Florida Public Service Commission's oversight have reduced winter peak demand by an estimated 6,506 megawatts (MW) and summer peak demand by an

estimated 6,871 MW. The demand savings from these programs have resulted in the deferral or avoidance of a substantial fleet of power plants. These programs have also reduced total electric energy consumption by an estimated 9,330 gigawatt-hours. As a result of these prior actions Florida has a reduced potential for additional cost-effective energy savings.

Cost of Implementation

At this time, there is no certainty regarding the compliance cost of the Clean Power Plan. The Clean Power Plan is being revised and Florida has not adopted a compliance plan. However, a review of three different assessments of the impacts of the Clean Power Plan gives a picture of what is potentially in store. As explained below, each differs from the other with respect to the author's interests and analytical approach. Collectively these support a conclusion that Florida will incur significant costs in response to the Clean Power Plan.

NERA Economics Consulting (NERA)

NERA, in a study titled "Potential Energy Impacts of the EPA Proposed Clean Power Plan," presented estimates of compliance costs under various scenarios.[3] NERA evaluated potential energy market impacts due to the Clean Power Plan over the 2017-2031 period. The analysis modeled state compliance with the Clean Power Plan under a scenario where each state could use any of the four building blocks, and another scenario where states could not rely on Building Blocks 3 and 4 addressing renewable generation and energy efficiency programs. Based on its assumptions for these scenarios, NERA estimated that Florida's average electric bill may increase between 13 and 17 percent by 2030. The NERA study also noted concerns that costs were likely understated, particularly with respect to energy efficiency.

[3] http://www.nera.com/publications/archive/2014/potential-impacts-of-the-epa-clean-power-plan.html

Florida Electric Power Coordinating Group Environmental Committee (FCG)

The FCG represents investor-owned electric utilities, rural electric cooperatives, and municipal electric utilities on environmental issues affecting the electric utility industry. In 2012, five investor-owned electric companies, 35 municipally owned electric utilities, and 18 rural electric cooperatives collectively served Florida's 9.5 million customers.[4,5] The largest utility had over 4 million customers and the smallest had only 1,048 customers.[8,6] Consequently, the FCG's comments on the Clean Power Plan reflect a broad spectrum of circumstances and concerns in Florida's electric industry. [7]

The FCG noted that existing electric system investments are not sufficient to comply with the Clean Power Plan regardless of how those resources are used. The equivalent of 5,000 to 20,000 MW of new zero-emitting resources will be required, depending on actual resources chosen. For example, a primarily solar compliance plan would require approximately 20,000 MWs.

The FCG asserted that the Clean Power Plan did not consider stranded costs that are caused by a sudden limitation on otherwise usable coal-based generation. These prior investments have ongoing debt requirements and contract commitments even though, under the Clean Power Plan, these assets will not likely be used to generate revenues. Thus, the Clean Power Plan may likely require some utility customers to effectively pay twice; once for the assets in use and again for assets that cannot be used.

[4] http://www.floridapsc.com/publications/pdf/general/factsandfigures2014.pdf
[5] http://www.floridapsc.com/utilities/electricgas/docs/FRCC_2014_Load_Resource_Plan.pdf
[6] http://www.publicpower.com/stats/2012_florida_publicpower_utility_statistical_information.xls
[7] http://www.floridapsc.com/utilities/electricgas/EPAcarbonrules/index.aspx

While some Florida utilities may have less of an emission performance burden than others, it is also important to recognize that the cost impacts will not likely be uniformly distributed because smaller utilities tend to have limited options. The FCG concluded that the average utility rate increase may approach 25 to 50 percent depending on size and generating mix reflected in current rates.

The FCG assessment provides a local view without modeling what may occur in national wholesale markets. The FCG's approach is reasonable because Florida, especially the peninsular region that has limited external transmission interconnects, enjoys a long history of self-reliance that has been shown to perform well. Consequently, representation of potential increases of 25 to 50 percent in some retail electric rates is a credible estimate of the level of Florida's Clean Power Plan costs.

Florida Office of Public Counsel (OPC)

The OPC advocates on behalf of Florida's retail customers who are served by investor-owned utilities. Unlike other efforts, OPC calculated indicative Clean Power Plan compliance costs without the use of forecasting, market assumptions, and other econometric techniques.[8] Instead, OPC's approach conservatively calculated costs based only on EPA's assumptions, Florida 2012 statistics, and other public data to develop a cost scalar for Building Blocks 1, 3, and 4 of $1.15 billion, $16.8 billion and 8.6 billion, respectively.[9] The analysis did not attempt to account for major costs that could not be readily quantified with EPA's assumptions and published data.

[8] http://warrington.ufl.edu/centers/purc/purcdocs/PAPERS/TRAINING/events/Annual_Conf/2015_Annual_Conf/Where%20is%20the%20EPA%20Taking%20Us%20John%20Truitt.pdf

[9] The calculations and assumptions are shown in Attachment A.

In its comments to EPA, OPC asserted that the estimated capital expenditures totaling almost $27 billion are unreasonable. OPC's assessment serves to highlight the potential magnitude of costs to Florida, net of growth, escalation, and other possible future effects. The magnitude of OPC's estimate lends support that EPA should re-examine the electric industry and its costs.

Building Block 1 - $1.15 billion

Public Counsel's analysis says the EPA estimates the cost of implementing heat rate improvements at "relatively modest capital costs" of $100 per kW. Using Florida's 2012 coal capacity of 11,491 MW, Florida consumers would pay $1.15 billion for these heat rate improvements.

$100 per kW assumption: EPA asserted a range of 4 to 12 percent heat rate improvement would cost between $40 and $150 per kilowatt (Federal Register/ Vol. 79, No. 117 / Wednesday, June 18, 2014 / Proposed Rules 34861, paragraph c.)

> The EPA's most detailed estimates of the average costs required to achieve the full range of heat rate improvements come from the 2009 Sargent & Lundy Study discussed above. Based on the study, the EPA estimated that for a range of heat rate improvements from 415 to 1205 Btus per kWh, corresponding to percentage heat rate improvements of 4 to 12 percent for a typical coal-fired EGU, the required capital costs would range from $40 to $150 per kW. To correspond to the average heat rate improvement of six percent that we have estimated to be achievable through the combination of best practices and equipment upgrades, we have estimated an average cost of $100 per kW, slightly above the midpoint of the Sargent & Lundy Study's range.

11,491 MW assumption: Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, (Mar. 2014), page 2 graphic shows existing coal summer capacity as 12,026 MW and a proposed level of 11,093 MW. The graphic also provides detail on other generating capacity, allowing the percentage of coal (20.7%) calculation to be made. On a generation basis, coal-fired resources provided 20.3% of the total 2012 generation.

Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, (Mar. 2014), page 1 states Florida's combined utility and non-utility summer generating capability as of January 1, 2013 was 57,454 MW.

20% x 57,454 MW = 11,491 MW

Final calculation:

$100/kW x 1,000 kW/MW x 11,491 MW = $1,149,100,000 ≈ $1.15 billion

Building Block 2

Office of Public Counsel did not attempt to quantify the costs associated with Building Block 2.

Building Block 3 - $16.8 billion

Achieving 10% percent of Florida's 2012 generating capacity through renewables would require 5,745 MW of renewable capacity. In 2012, Florida had 1,400 MW of renewable capacity, so the state would need to add 4,345 MW of renewable capacity to reach the final goal.

Using the U.S. Energy Information Agency's most recent installed costs for utility scale photovoltaic of $3,873 per kW, the installed cost of 4,345 MW is $16.8 billion.

$3,873/KW assumption: The EIA document states the amount is in 2012 dollars and represents only the overnight capital costs for utility scale PV projects. See table 1 on page 6 at the following link. http://www.eia.gov/forecasts/capitalcost/pdf/updated_capcost.pdf.

4,345 MW assumption: Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, (Mar. 2014), page 1 states Florida's combined utility and non-utility summer generating capability as of January 1, 2013 was 57,454 MW.

Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, (Mar. 2014), page 2 graphic shows existing renewables totaled 1,400 MW and proposed were 2,436 MW.

Also, Review of the 2012 Ten-Year Site Plans for Florida's Electric Utilities, states 1,400 MW of existing renewable capacity on page 28.

57,454 MW x 10% = 5,745 MW

5,745 MW – 1,400 MW = 4,345 MW

Final calculation:

$3,873/KW x 1,000 kW/MW x 4,345 MW = $16,828,185,000 ≈ $16.8 billion

Building Block 4 - $8.6 billion

As under Building Block 3, 10% of Florida's 2012 generating capacity is 5,745 MW. In that benchmark year, the state's DSM programs achieved a reduction of 259.7 MW at a cost of $388 million. At that rate of $1.49 million per MW of avoided capacity, the 5,745 MW requirement would cost $8.6 billion

$1.49 million/MW assumption: The reference document is Florida Public Service Commission, Annual Report on Activities Pursuant to the Florida Energy and Conservation Act, (February 2014). On page 11, Table 4 shows that FPL, DEF, TECO, FPUC, and Gulf together incurred $387,932,327 for their respective DSM activities. On page 19, table 9, the summer MW reductions achieved during 2012 total 259.7 MWs by the five IOUs, JEA and OUC.

$387,932,327 / 259.7 MW = $1,493,771

5,745 MW assumption: Florida Public Service Commission, Facts and Figures of the Florida Utility Industry, (Mar. 2014), page 1 states Florida's combined utility and non-utility summer generating capability as of January 1, 2013 was 57,454 MW.

57,454 MW x 10% = 5,745 MW

Final calculation:

$388 million / 259.7 MW x 5,745 MW = $8,583,211,398 ≈ $8.6 billion