ADDENDUM

Stakeholder comments for

Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative

A Study Commissioned by the Maryland Department of the Environment

Center for Integrative Environmental Research
University of Maryland, College Park

in collaboration with
Resources for the Future
The Johns Hopkins University
Towson University

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1. STAKEHOLDER COMMENTS

1.1 Introduction

The University of Maryland RGGI project team recognized the importance of ensuring adequate stakeholder input into the study and modeling process. In an effort to maintain an ongoing dialogue between the researchers and stakeholders, the project team established opportunities for the public and stakeholders to submit formal comments to the RGGI project team leaders at key decision points in the research and modeling process. The final step in this process was to elicit comment from organizations and stakeholder interests on the final RGGI report that was submitted to the Maryland Department of the Environment. The deadline for submitting comments was February 22, 2005. A total of nine comments were submitted. The following addendum contains complete copies of each.
1.2 American Council for an Energy-Efficiency Economy (ACEEE)


[Contact coordinates: (202) 478-6365, or by email at jslaitner@aceee.org.]

Summary

ACEEE supports the overall findings of the study commissioned by MDE. We offer some specific wording changes for the report, and also suggest that the study would have been more robust had it included a scenario containing a set of complementary clean energy policies. In this context, the study’s findings should be viewed as conservative; the economic and environmental benefits of Maryland’s participation in RGGI, and of Maryland’s pursuit of complementary policies, are likely to be substantially larger than this study finds.

Introduction

The Maryland Department of the Environment (MDE) was charged with implementing the April 2006 Healthy Air Act (HAA). The legislation mandated reductions in three major pollutants from coal-fired power plants. These include nitrogen oxides (NO$_x$), sulfur dioxide (SO$_2$) and mercury. In addition, the HAA required Maryland to become a full participant of the Regional Greenhouse Gas Initiative (RGGI). This requires joining a consortium of Northeastern and Mid-Atlantic states which are prescribing a common policy for reducing carbon dioxide (CO$_2$) emissions from power plants through a market-based cap-and-trade program. In this regard, Maryland is the first state to adopt the so-called “four-pollutant” legislation. Moreover, it is the first state that derives most of its electricity from coal to commit to CO$_2$ reductions statewide.

Emissions reductions from the HAA will be carried out in two phases. The first phase requires the following reductions compared to a 2002 emissions baseline: 70 percent for NO$_x$ emissions by 2009, 80 percent for SO$_2$ and mercury emissions by 2010. The second phase will begin in 2012 for NO$_x$ and 2013 for other pollutants. If it achieves its stated goals when fully implemented, the Healthy Air Act will: (i) lower statewide NO$_x$ emissions by approximately 75 percent from 2002 levels, (ii) SO$_2$ emissions by 85 percent, and (iii) mercury emissions by 90 percent. As part of its RGGI obligations, MDE is required to study reliability and cost issues that may result from joining this climate change consortium. The analysis is to be done between July 1, 2006 and January 1, 2008. Moreover, the state is required to become a “full participant” in RGGI by June
The bottom line of this substantial research effort? The study indicates that joining RGGI would have a small but net positive impact on the Maryland economy. Over the entire forecast horizon established by the research team (2010 through 2025), CO\textsubscript{2} emissions will be reduced while energy efficiency investments (that are funded by CO\textsubscript{2} permit allowance sales) will slightly lower both electricity demand and electricity prices. This clearly is good news for both the environment and the Maryland economy. Moreover, the findings are entirely consistent with those from three dozen other studies completed since 1995 that have also evaluated the impact of energy efficiency investments on state level economies (Laitner 2006).

According to the UMD study, cumulative CO\textsubscript{2} emissions in the expanded RGGI region (including Maryland) fall by 26 million tons. This also includes offsets that reduce GHG emissions in other sectors by the equivalent of roughly 19 million tons. Maryland’s participation in RGGI should result of a small yet positive impact on the state economy with both Maryland gross state product and employment growing in all years to something just under 0.1 percent compared to the reference case forecasts. With Maryland participating in RGGI, statewide electricity bills should be reduced more than $100 million in 2010 and more than $200 million by 2025. About half of these savings would accrue to commercial and industrial users while the average residential electricity bill would see a modest decrease in their electricity bills of about $22 per year in 2010.

Comments on the Study

The approach developed by the research team appears to play to the strengths of each of the models used in the study. There is an orderly and thoughtful approach in addressing the research problem. The report begins with a compact but highly useful primer on climate change, the Regional Greenhouse Gas Initiative (RGGI), and the Healthy Air Act (HAA) in Maryland. Although conservative in its assumptions with respect to the positive impact that might be played by significantly greater investments in energy efficiency, the overall methodology used in the study seems both credible and consistent with economic theory.

In many respects the research team seems overly cautious in publishing its findings. For example, two sentences in the executive summary might be modified to highlight the small but positive benefits that might be expected to follow from Maryland’s participation in RGGI. For example, on page 4, one sentence might be amended to read:
“The main conclusions of this study indicate that, overall, joining RGGI would only have a limited but net positive impact on the economy and electric power markets in Maryland.”

Similarly, a subsequent sentence, also on page 4, might be amended to read:

“These demand reductions result from cost-effective energy efficiency investments.”

These minor concerns aside, ACEEE believes the study’s findings are consistent with its own research efforts. That is, there is substantially greater room for energy efficiency investments that are cost-effective, and that can be used to significantly reduce both greenhouse gas emissions and other criteria air pollutants in a way that substantially benefits employment and economic activity within a state.

While the results from the scenario approach used by the study team indicate a small but positive economic impact for Maryland, ACEEE also believes policy makers would have benefited from at least one scenario that explores complementary policy paths to meet or exceed the RGGI targets through energy efficiency and alternative energy technologies.

One of the key findings that emerged from the RGGI stakeholder process in which ACEEE participated was that power-sector cap-and-trade policies, when the cap is placed at the generation level, do not allow end-use efficiency measures to qualify for direct emission reduction credit. This is a paradoxical and counterproductive finding: even though efficiency was found in the RGGI modeling process to be the best way to make RGGI affordable, the cap-and-trade design was inherently incapable of engaging efficiency resources in the allowance trading system. This fundamental flaw must be addressed if energy efficiency is to be used effectively in carbon cap-and-trade policies.

In RGGI, this “indirect-emission-reduction paradox” for energy efficiency was addressed by requiring a minimum of 25% of allowances to be allocated for consumer benefit purposes, with the intent to spend the majority of allowance proceeds on energy efficiency. The RGGI Memorandum of Understanding also called for RGGI states to undertake complementary clean energy policies, such as energy efficiency resources standards, renewable portfolio standards, appliance efficiency standards, building energy codes. These complementary policies are needed because carbon allowance prices in RGGI are expected to be relatively low, and the revenue from consumer-benefit allocations would not be sufficient to support the level of efficiency investment needed to realized efficiency’s benefits for RGGI.

We therefore suggest that the U-MD study would have been more robust if it had modeled at least one scenario that included a set of complementary policies. Other studies often take this approach. For example, Elliott et al. (2007) explore the magnitude of the efficiency and renewable energy resources that are available to the State of Florida. More specifically, they examine 11 non-RGGI policies that could be implemented at the state level to reduce future electricity demands.
According to this new Florida study, if all the policies examined in the analysis were implemented in full, the state could reduce its projected future use of electricity from conventional sources (i.e., natural gas, coal, oil, and nuclear fuels) by over 45 percent in the next 15 years (over the period 2008 through 2023). Renewable energy accounts for about 60 percent of the total 153,595 million kWh of conventional electricity reductions, with the energy efficiency provisions accounting for the balance. Not surprisingly, the more aggressive market penetration of these efficiency and renewable energy reductions are not quite as cost-effective as the substantially lesser savings suggested in the Maryland study. Nonetheless, the findings continue to indicate net positive savings for Florida.

To put this suggestion into context, had an alternative RGGI policy scenario been implemented in a manner consistent with the Florida study, Maryland might see 17 times the cumulative GHG reductions than the magnitude envisioned by the RGGI process – likely at a net positive benefit to the state’s economy. With this complementary alternative scenario, we believe that policy makers would be given better insights with respect to both energy and GHG mitigation policies, or even a set of alternative or non-RGGI policies that might have enabled greater savings to be achieved. Should additional resources be made available through MDE, we urge the university research to consider the net benefits of a greater displacement of conventional electricity resources through these alternative energy efficiency and renewable energy investments.

References


1.3 Constellation Energy

February 22, 2007
Dwael Nee
Maryland Regional Greenhouse Gas Initiative Study
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Dear Mr. Nee:

Constellation Energy is pleased to offer the following comments on the final report from the University of Maryland on “Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative” which was released on February 1, 2007. While your solicitation for comments is geared toward your study, the attached comments also provide some additional Constellation Energy thoughts on Maryland’s implementation of the Regional Greenhouse Gas Initiative (RGGI) intertwined with comments on the study. One overall point in the study is that the assumptions utilized lead to very optimistic results. Deviations in pricing, efficiency participation rates, or other factors in the study could lead to critically different real-life outcomes. The areas of greatest concern to Constellation Energy on RGGI relate to the establishment of a baseline emission level, the percentage of allocations distributed to existing generators and the issue of leakage.

Constellation Energy is a Fortune 200 competitive energy company based in Baltimore and is the nation’s leading supplier of competitive electricity to large commercial and industrial customers. In addition, we are one of the nation’s largest wholesale power sellers and a major generator of electricity with a diversified fleet of power plants strategically located throughout the United States. Our heavy reliance on nuclear and other non-emitting technologies means that over half of our electricity generation results in no greenhouse gas emissions at all. Constellation Energy believes that it is imperative to slow, then stop and eventually reverse the growth of greenhouse gases going into the atmosphere. The company believes, however, that the effective solution set must be market-oriented, economy-wide, equitable among industries and — most importantly — national, and then international in scope. Therefore, we see RGGI as a demonstration project and a stepping stone and urge care to advance a program that leads to efficient transition to a more effective national program.

One of the main problems with the RGGI regional approach to reducing carbon emissions is that the area of regulated carbon constraint is not coincident with the area of electricity dispatch. Highlighting this misalignment are the maps in Figure 1 which highlight the PJM electric grid, the dispatch area that encompasses Maryland, and the area covered by the Regional Greenhouse Gas Initiative. So long as this misalignment continues, there will be an incentive to import additional power from regions not covered by RGGI (for instance, Pennsylvania and West Virginia) into the RGGI region, including Maryland. More electricity imports will increase the net carbon dioxide emissions into the environment, and will add further supply risk, especially to areas already experiencing congestion. The Maryland Public Service Commission’s Electric Supply Adequacy Report of 2007 discusses this issue in great detail. Ultimately the solution to these regional implementation problems is to deal with greenhouse gas emissions in a comprehensive national program.
I. Baseline
Maryland’s baseline emissions are not included in the regional RGGI Memorandum of Understanding (MOU). The baseline emissions level that Maryland will use is very important. The algorithm for development of the individual nine state baseline levels is unclear. They may have been loosely based on some average of several prior years’ emissions, but it has not been possible to replicate the methods used. Maryland should not short change itself with an unnecessarily restrictive view of baseline. Remember, Maryland has 28% imports; PJM projects a growth rate of 1.5% per year and several areas have documented supply constraints already. Maryland must ensure an adequate baseline to avoid unnecessary problems implementing RGGI.

II. Allocations
The RGGI Model Rule requires that at least 25% of allowances be used for Consumer Benefit and Strategic Energy purposes. The consumer benefit/strategic energy purpose allocation utilized for each RGGI state (including Maryland) in your analysis is 25% of total allowances with the full value applied to end use energy efficiency. The University of Maryland study determined that allocating the maximum 75% of the Maryland allocation of RGGI CO2 allowances to existing generators still resulted in substantial increased compliance costs, reduced gross margins, and a facility profit decline of 12 to 13%. This
result is due to the State's reliance on coal-fired generation. Maryland coal generation accounts for 55% of the State's total, more than any other RGGI state. This is an important finding since there has been some concern expressed that creation and allocation of allowances to existing generators will lead to an inappropriate "windfall profit". This is clearly not the case.

Based on these findings Constellation strongly urges Maryland to implement the allocation of allowances as modeled to minimize economic impact to the state and affected facilities. Going beyond the 25% auction in Maryland, with its significant proportion of coal-fired generation and over-dependency on electric imports, could result in severe financial impact to coal-fired plants and threats to the reliability of its electric supply.

A. Use of Consumer Benefit and Strategic Energy Set Asides

The regional MOU that Maryland will sign to formally join RGGI states:

"each Signatory State agrees that 25% of the allowances will be allocated for a consumer benefit or strategic energy purpose. Consumer benefit or strategic energy purposes include the use of the allowances to promote energy efficiency, to directly mitigate electricity ratepayer impacts, to promote renewable or non-carbon-emitting energy technologies, to stimulate or reward investment in the development of innovative carbon emissions abatement technologies with significant carbon reduction potential, and/or to fund administration of this Program."

Maryland has a very real opportunity to make sure that this 25% carve out becomes more than a tax to administer the program and/or to conduct public information campaigns. Energy efficiency programs contemplated would be funded by annual allowance auction revenues of $38 mm in 2010 increasing to $96 mm in 2025 according to the analysis. This is adequate funding for a major program and care should be taken to design the resulting program so that it obtains a meaningful benefit. The RGGI MOU is designed so that each state can apply the "Consumer benefit or strategic energy" allocation in a way that makes sense for them. This is an opportunity. Maryland can show progressive leadership by directing this "Consumer benefit or strategic energy" allocation to directly provide incentives to encourage energy efficiency measures and to advance "non-emitting technologies" that will directly contribute to the stated goal of the reduction of greenhouse gas emissions. Constellation Energy and its affiliates have broad energy and market expertise that can contribute to the design of an effective program with this goal. As one example, last month Baltimore Gas and Electric Company (BGE), an affiliate of Constellation Energy, filed its Smart Energy Savers Program with the Maryland Public Service Commission. This suite of energy efficiency initiatives is expected to reduce BGE territory residential energy consumption by approximately 10% over the next ten years. As a result, BGE expects this initiative will help reduce greenhouse gas emissions by an average of 2 billion pounds per year at coal-fired power plants over 20 years; the equivalent of the
emissions of 230,000 cars. Another affiliated company, Constellation New Energy, is a major retailer of energy efficiency and renewable credits nationally and helps customers around the country implement cleaner and more efficient efforts. Lastly, our generating fleet is 60% non-emitting now and our business plan is directed toward additional non-emitting investments, especially nuclear. We really do see ourselves as part of the solution.

B. Offsets
While there are no limitations placed on the quantity of offset allowances that can be created in RGGI, Budget Sources are limited to using offsets up to 3.3% of their reported emissions in any given compliance period. However, if allowance prices meet or exceed either of the two safety valve triggers ($7 and $10), CO2 Budget Sources may use offset allowances up to a limit equivalent to 5% and 10% respectively of their reported emissions in any given compliance period.

Constellation Energy continues to maintain that there should be absolutely no restrictions on the use of offsets. Carbon dioxide reductions derived through offsets are environmentally equivalent to reductions from a generating station in the RGGI region no matter the physical location of offset production. There is no environmental or economic basis to artificially superimpose any numerical or geographic limitation on offsets. RGGI’s proposed limits will only make it more expensive to comply and make it more difficult to reach RGGI reduction goals with no corresponding environmental benefits.

That said, Maryland should consider two areas as it looks to amend the regional MOU to include the State as a member of RGGI:

1. Advocate fewer restrictions on the use of offsets as part of the modifications to the RGGI MOU. Offsets use will be very important until additional non-emitting generation technologies, such as new nuclear facilities, become available.
2. Work with stakeholders and other State agencies to see if there are Maryland opportunities for offset production here in Maryland.

III. Leakage
Leakage was an important component of the regional RGGI process since their analyses found that significant out-of-region increases in emissions would occur as the result of imported electricity from non-RGGI regions. Maryland is already a net importer of generation and continued increases in demand and increased imports are anticipated. The study points out that Pennsylvania has excess capacity and could supply additional energy to Maryland but this would interfere with the primary goal of CO2 reduction and the viability of investment in supply resources in Maryland. Again, the imposition of a federal program would eliminate the concern over a net increase in emissions.

Leakage has potential reliability impacts. In January, the Maryland Public Service Commission’s conclusion that there are a number of electric-reliability related concerns in its Electric Supply Adequacy Report of 2007: Maryland is the fifth largest state in terms of
electricity imports. Supply adequacy in the State is marginal especially in the Baltimore-Washington region, southern Maryland, the Delmarva Peninsula, eastern and central Pennsylvania, New Jersey, and much of Virginia. About 4000 MW of new Maryland capacity are necessary according to the report and only about 800 MW are planned.

Resulting Maryland PSC recommendations include building additional transmission capacity, additional in-state generation and implementation of energy-efficiency and demand-side management initiatives. A reliability crisis is a potential outcome, if these recommendations are not followed. RGGI can assist with the energy-efficiency effort but additional state policies will need to be put in place to ensure the generation and transmission efforts can go forward and RGGI implementation should be such that it imposes no barriers to these efforts.

The University of Maryland study echoes the PSC finding of increased imports from outside of Maryland. Imports into Maryland will be about 4% higher than the baseline in 2015, and increase by 15% in 2025 in their predictions. Maryland is already importing 28% and these increases are additional.

In the end, the implementation of RGGI will increase generation imports and congestion and reduce the incentives to invest in new generating capacity. Reduced profits at existing generation facilities could lead to earlier retirements of older units when the higher costs of compliance with other HAA requirements are factored in. Any coal facility requirement would impact reliability. Maryland must maintain a close eye on reliability concerns as it implements RGGI and should intimately involve the Maryland PSC in technical analyses performed to support the implementation to ensure this vital aspect is protected.

IV. Additional Issues

A. Sunset Provision

Discussions of a federal program continue on a daily basis in Washington, D.C. and momentum is growing daily for a national program to address the issue. Maryland could be disadvantaged in the event that such a program develops and becomes an overlay rather than a replacement for RGGI in Maryland. Constellation Energy recommends that a sunset provision be included in the regional MOU as it is modified to include Maryland participation. It should clearly indicate that the participation will cease once a national program is in place. In the same vein, Maryland should include a provision allowing Maryland opt-out of the MOU should the RGGI policies developed and implemented to address “leakage” at the regional level disproportionately impact Maryland as a result of Maryland’s high electricity import rate.

B. Impact on Climate

The study does not include any analysis of environmental impact resulting from Maryland adoption of RGGI. In my opinion, an absolutely critical analysis required of your investigation is an analysis of the climate impact. While I realize that RGGI is a platform for future reductions rather than an end in itself, your analysis will not be complete without laying out the net benefit of Maryland implementation. Undertaken correctly, the impact of Maryland joining RGGI on global greenhouse gas concentrations, and even more so on local climate impacts, will be too small to quantify.
C. Modeling Advice
Maryland should consider conducting some additional modeling runs using the same modeling tools that the RGGI 9-state stakeholder process especially including the Integrated Planning Model and the Regional Economic Model. This would allow a direct comparison of impacts on the region's economy and electric supply using the same basis. We also respectfully request access to modeling output as was afforded in the more interactive regional process. Additionally, your nuclear generation assumptions are not stated. We would be very interested in the assumptions used in this regard. Certainly, nuclear generation will be part of the solution.

Thank you for the opportunity to comment on this important initiative. We look forward to working with you and the Department of Environment to further evaluate and implement all aspects of RGGI and assisting the State with its transition to the more desirable national program.

Sincerely,

[Signature]

*In addition to carbon, Maryland sources have lower emissions of SO2, NOx, and Hg emissions than neighboring non-RGGI states. Soon, after Maryland facilities invest the two billion or more dollars planned over the next few years to comply with Maryland’s 2006 Healthy Air Act, the emission advantage will be even more pronounced.*
1.4 Dominion Resources Services, Inc.

By Electronic Delivery
efc1@umd.edu and dnees@umd.edu

February 22, 2007

Mr. Daniel Nee, Director
Maryland RGGI Study
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Environmental Finance Center
4511 Knox Road, Suite 205
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Re: Comments of Dominion on the Study of Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative

Dear Mr. Nee:

We appreciate the opportunity to submit comments to you regarding the Study of Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative (RGGI) conducted by the University of Maryland (UMD) for the Maryland Department of the Environment (MDE). Dominion is one of the nation’s leading energy companies involved with electric utility and merchant generation, transmission and distribution of electricity and gas. Dominion has been a stakeholder in the RGGI process since its inception and will continue to participate as states evaluate its effects and/or consider regulations adopting the RGGI program.

Decisions regarding Maryland’s participation in RGGI will be based on the electric sector and the broader economic impact models. Therefore, the modeling efforts continue to be critical in accurately estimating consumer price impacts as well as electric supply impacts. Certain issues that were brought up in our September 2006 comments are incorporated by reference into these comments:

1. **Modeling Platforms** - We remain concerned that Maryland has chosen to use different models than what was used by the RGGI Staff Working Group. Thus, it may be difficult for UMD, stakeholders and ultimately the Maryland legislature to understand and explain differences in the results.

2. **Canadian Imports** - No information is given to justify the freezing of Canadian imports. In its Regional System Plan for 2006, ISO-NE\(^1\) identifies a combination of alternatives that would work together to meet New England’s critical system needs. These alternatives include, energy efficiency and demand response, dual fueled

peaking capacity, new coal technologies, wind (large % located in Maine – minimum of 1,000 MW), new nuclear technologies and additional Canadian imports. Eastern Canadian Premiers and Canadian utilities have announced a strategy to build significant surplus hydro resources (4,000 MW to 6,000 MW) by 2015 to sell to Ontario and New England in the summer peak load periods. Therefore, it does not seem logical for UMD to freeze Canadian imports in their modeling efforts. We request that the report elaborate on this decision.

New comments regarding the draft report include:

1. **Allowances and Offsets** – In section 6.3 of the report, it states that if Maryland joins RGGI, this increases the RGGI regional allowance pool by approximately one third and “availability of CO2 emission offsets (certified emission reductions) from outside the RGGI region that could be used in addition to emission allowances to comply with the regional cap-and-trade program.” These statements are confusing to the reader because there is not an additional statement regarding the increased compliance obligation that Maryland generators will be subject to. This increased compliance obligation may actually exceed that amount of allowances given to the state of Maryland, particularly if load growth between 2004 and 2009 is accounted for. Additionally, the 3.3% for offsets is a restriction on a budget source basis and the offset pool is only larger to the extent that offset projects actually are developed within that state. It may be more accurate to indicate that the “offset pool potential” is larger if Maryland joins RGGI.

2. **Emissions Counted** – We agree with the modeling approach used that emissions are counted only from electric power generation for sale to the market; meaning CO2 emissions associated with electricity for behind the meter generation are not counted.

3. **Alternative Model Run** – Since most states are discussing the potential 100% set aside for auctioning, we agree a model run should be done with this provision to examine the pricing, economic and reliability impacts. These runs should be done and results available publicly before Maryland makes a decision about joining RGGI.

4. **Allowance prices** – We find it interesting that the Maryland study predicts allowance prices to range from $4.50 in 2010 to $11.50 in 2020 (all prices are expressed in 2004 dollars), when the latest RGGI model runs predict roughly $2.00 in 2009 to over $5.00 in 2024.

Again, thank you for providing a forum for feedback. The reason to ensure that the modeling efforts are right is that it is essential for all interested parties to understand RGGI’s potential impacts to consumer electric prices and supply impacts. We have submitted many verbal and written comments to the RGGI SWG in order to support program that is reasonable, keeps prices down, ensures reliability of the electric system and ensures fuel diversity. We hope that UMD will consider these comments as it is formulating its final report, and request that we are informed of any future stakeholder meetings, conference calls or additional opportunities to provide comment. In that regard, we again request the following individuals
to your mailing list: paula.a.hamel@dom.com and leonard.dupuis@dom.com. Please feel free to call Paula Hamel (401) 457-9734 or Lenny Dupuis (804) 273-3022 if you have any questions.

Sincerely,

[Signature]

Pamela F. Faggert

cc:
J. Sanderlin - Dominion
L. Dupuis - Dominion
P. Hamel - Dominion
D. Weekley - Dominion
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February 22, 2007

Dan Nees
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Via email: dnees@umd.edu

Re: Comments on RGGI Study

Dear Mr. Nees:

On behalf of Mirant Mid-Atlantic LLC and Mirant Chalk Point LLC (collectively Mirant), I am submitting these comments on the draft RGGI study.

In commenting on the specific conclusions in the draft study, Mirant also wants to reiterate our position that climate change is an issue that cannot be reasonably addressed on less than a national level. Efforts to address climate change on state or even regional levels will simply penalize the impacted population while not achieving any measurable reduction in global greenhouse gases. Indeed, such efforts can be counter productive as they can drive investment – and emissions – to regions and countries with less efficient power production and greater rates of emissions.

Three specific comments should be emphasized:

1. The findings of the UMD-RGGI Study are in contradiction to the Maryland Public Service Commission’s Electric Supply and Adequacy Report of 2007. The PSC’s report (which is consistent with PJM predictions) finds that Maryland’s increasing reliance on imports leaves the state in a precarious situation with little margin for error in ensuring reliability.

2. The findings fail to detail the impact of the predicted decline in new generation investment on the price and availability of power if the hoped-for decreases in demand do not occur. This is significant since the findings, contrary to the predictions of the PSC and PJM, conclude that demand in the region will fall rather than continue to increase as they have historically.

3. The study simply assumes that sufficient new transmission will be made available to handle the predicted increase in imports. The study should, at a minimum, explain the impacts on reliability if local opposition or other factors prevent the construction
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In summary, we believe that the authors should explain where their findings contradict the predictions of the PSC and PJM and detail the consequences if the findings or assumptions prove incorrect.

Sincerely,

Robert E. Driscoll
1.6 *Mirant Mid-Atlantic, LLC*

**Comments on the CIER Study on the Economic and Energy Impacts from Maryland’s Potential Participation in the RGGI**

The findings of the UMD-RGGI Study are in contradiction to the Maryland Public Service Commission’s Electric Supply and Adequacy Report of 2007. The PSC’s report finds that -

1. Maryland’s increasing reliance on imports leads the state into a precarious situation and leaves little margin for error in ensuring reliability.
2. The transmission network feeding Maryland is currently insufficient to meet peak demand needs. Significant future expansions, which may be delayed, will largely be consumed by load growth in Maryland and states to the East.
3. In the long-term Maryland’s electric reliability requires the adoption of policies that encourage the construction of in-state generation capacity and more make efficient use of both existing and planned electric infrastructure.

The UMD-RGGI study’s findings contradict each of the above conclusions by recommending that the state promulgate regulations that increase the state’s dependence on imports and decrease the incentives to build new or maintain existing electric infrastructure within the state.

**Issue: Central Assumptions**

1. What assumptions does the study make in terms of new capacity additions in the long-term? What technologies and how many megawatts (MWs) of each technology type in specific years?
2. The AEO 2006 fuel forecast is a base case scenario under current conditions. What specific assumptions does the study make with respect to long-term fuel prices, particularly gas prices due to the impact of the RGGI regulations? How does the inclusion of Maryland in RGGI affect those assumptions? How do higher gas price assumptions affect the findings of the study?
3. How does inclusion of Maryland affect long-term emission allowance prices for SO2, NOx?
4. The constraint on CO2 prices increasing at a rate greater than interest rates seems artificial and unrealistic. CO2 clearing prices will be impacted by factors other than the banking of allowances as well, most notably the commercial availability of CO2 abatement technology. How is this factored into the analysis?

5. How is the Baseline case defined? Is the 2010 CO2 allowance cost of $4.51/ton applied to Maryland generating units in the Baseline?

Issue: Electricity Demand and efficiency gains

Study Finding:
A key benefit to consumers comes from energy efficiencies and demand reduction. The study also claims an immediate efficiency gain of 1.5% starting 2010 and another 1.5% spread over 15 years.

1. How does RGGI incentivize consumers to realize these efficiency gains or reduce demand if (as the study claims) prices go down anyway?

2. How are the 1.5% efficiency gains in 2010 realized immediately and why does it take 15 years to realize the next 1.5%?

3. The study does not explain the exact relationship between funding energy efficiency programs with the sale of allowances and the reduction in demand. How is this actually achieved especially given that a majority of commercial and industrial participants are already enrolled in Active Load Management programs?

4. The study fails to detail the consequences (increased energy prices and supply constraints) if the predicted increases in efficiency does not occur.

Issue: CO2 Leakage

The study contradicts itself on many occasions while addressing the shift of CO2 emission from RGGI states to neighboring non-RGGI states (pg. 5, Item 7; pg. 19, para 1; and pg. 21, para 2). While admitting that increased reliance on imports results in "CO2
leakage” the study concludes that leakage is insignificant. CO2 regulation forces participating RGGI states to increasingly rely on imported energy, which will likely be largely coal-based, thereby increasing the CO2 emission in neighboring non-RGGI states (Table 8.2). If this regulation is merely shifting emissions from Maryland into neighboring states, how does it achieve the goal of reducing CO2 in the atmosphere?

**Issue: Supply and Capacity markets**

The study concludes that as a result of CO2 regulation the investment on local generation would decrease by as much as 45% (roughly 1000 MWs).

1. How does the state of Maryland meet its load growth if no new capacity is added in the state?
2. What specific enhancements to the transmission system are contemplated in the study in order for the state of Maryland to meet its native energy needs through imports?

Study also claims that CO2 regulation would not impact the capacity price in the state of Maryland. This conclusion is supported by assumptions of minimal retirement of existing generation and substantial increments of transmission import capability.

There are several issues with the data used to support the conclusion.

3. Table F-1 lists estimated Unforced Capacity Obligation for SW-MAAC in 2010 at 15,746 MW. In fact, Unforced Capacity Obligation by PJM’s own estimate for 2009 delivery year is likely to be 16,319 MW. Taking load growth into account, one would expect 2010 obligation to be a higher value.
4. Table F-2 lists installed capacity within BGE & PEPCO zones at 13,671 MW. Existing generation in these two zones is closer to 12,000 MW. The study’s implied assumption that 1700 MW of new generation will come online by 2010 is not supported by data on active construction.
5. The study assumes that SW-MAAC generator forced outage rates would be similar to PJM RTO level. In fact, the age and composition of the capacity in SW-MAAC are likely to result in a much higher forced outage rate level. In addition, constraints placed on existing units by various environmental rules might further limit the ability of the existing fleet to perform at nameplate capacity.

Given the data used, the following questions remain.

1. How does the study conclude the economic viability of existing generation given falling energy prices and rising environmental mitigation costs with no uplift from the capacity market? Note that the age of the existing generation fleet in Maryland is over 40+ years.

2. How will the cost of additional transmission be funded and how is it incorporated into rates?

3. What capacity additions/retirements are contemplated outside the state of Maryland such that sufficient generating capacity is available for export to Maryland? How will such generation be funded?

4. The study must provide sensitivities showing the impact on the conclusions if the projected transmission expansions are delayed or cancelled.

5. Study notes that 75% of Maryland’s peak load reduction from efficiency programs will come from SW-MAAC (pg. 148). What will be the target of these programs given that much of large industrial and commercial load is already signed up for Active Load Management programs?

**Issue: CO2 Cost/Price of Electricity**

1. In the absence of commercialized abatement technology to control the emission of CO2, meaningful reductions in CO2 emission should come from shifting generation from coal burning units (higher CO2 emission rate) to gas burning units (lower CO2 emission rate) and by importing more energy from non-participant states. From Table 9.2 of the study it appears that a significant portion
The central conclusions of the analysis are lost in the detail presented in the one-hundred-and-seventy-seven page report that makes it difficult to understand how the researchers concluded what they did. We suggest that the report include all the assumptions and results of the study - notably fuel and emission prices, fuel basis and delivery charges, reserve margins - supply and demand balances by year, capacity additions and retirements by year, capital cost of new entrants, types of capacity additions, annual peak and energy growth assumptions, forecasted on- and off-peak wholesale power prices, forecasted capacity prices, forecasted on- and off-peak market heat rates, forecasted emission quantities for NOx, SOx and CO2 for all cases modeled.
1.7 Mittal Steel

Comments on the Center for Integrative Environmental Research Study Entitled
Economic and Energy Impacts from Maryland’s Potential Participation in the Regional
Greenhouse Gas Initiative

The study was commissioned by the Maryland State Legislature under the Healthy Air Act. The Center for Integrative Environmental Research (CIER) study was retained by the Maryland Department of the Environment to study the effects joining the regional Greenhouse Gas Initiative on Maryland’s economy and electrical power system.

The study was published in January 2007 for comment by stakeholders. The following are my comments on the report.

- Not specific to the report but a comment on the General Assembly’s requirement to join RGGI. It seems that joining and then doing the study of the effects is an exercise in backward thinking. It would seem reasonable to study the effects of joining before requiring the governor to join RGGI.
- CIER did not validate the data which was used in the model. To their credit they used generally accepted data. However, the data regarding the Mittal Steel power plant was incorrect. Since this data was incorrect, even though it was obtained from a source of generally accepted data one can imagine that there may be other data that was used that may be incorrect as well. Acceptance of the report without the knowledge that all data and assumptions used were correct would be foolish. There is too much riding on this.
- CIER stated that even though plant specific data was available it was not used.
- Rate decoupling was not considered in the report.
- In order to validate its models CIER should have looked at a state that was already in RGGI and run it through the modeling process to see if what was predicted actually occurred. However, neither time nor funding was provided for this so we do not know if the models actually work.
- During the briefing from CIER, held on February 16, 2007, we heard that the study scope was too narrow and that the time frame was too tight for CIER to do the kind of study that they wanted to do so as to more fully assess the impacts of RGGI on Maryland. Again, this is poor planning. The study scope should be broadened to study other things that may make an impact such as the rise in fuel prices which was not considered in the report.
- Also, during the briefing, we learned that a great deal of the benefits obtained by joining RGGI would be provided by increased efficiencies in the use of electricity. Astonishingly, there was very little information presented regarding what these efficiencies would be. CIER was asked to add a section to the report detailing their efficiency claims and they indicated that they would. However,

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1 Comment from Joe Dolan
one would have thought that since this efficiency was the linchpin of the RGGI gains it would have been fully explained.

• CIER claimed that joining RGGI would create 1,800 new jobs. However, when asked where these jobs would be and what types of jobs would be created the panel could not readily answer. It seems that if the models predicted 1,800 new jobs it should have been able to readily provide details about them. Further, the report states that coal firing plants would reduce output but they failed to mention what impact that this would have on the Maryland coal industry.

• The report claims that residential electricity costs will decrease by less that $2 per month as a result of RGGI. Is that sufficient to turn the power generation industry upside down?

• The report states that the population growth in Maryland will be higher than the national average but the increase in population will have no significant affect on the amount of power generation capacity needed. Again, due to energy efficiencies. Power company studies have shown that the people moving to Maryland are of higher income and, as such, can be counted on to be heavy users of electrical power. Again, we have a conflict in study results.

• The report does not adequately state an applicability requirement for who would be in RGGI. It seems to be geared toward power plants, however, other industries in the state that generate power could be affected by RGGI.

• The report does not give an adequate description as to the criteria for choosing the base year for RGGI.

• Page 6 – The report provides a primer on global warming that relies heavily on science that purports that global warming is a reality and immediate steps are needed to prevent catastrophic results. It totally ignores science that claims the complete opposite. A skeptic could say that this sets the tone for the report. However, this primer was not part of the charge made to CIER. Further, since it is editorial in nature it has no place in this report.

• Page 9 – The report states that selling emission credits would improve the bottom line. While this is true in the short run it may not hold in the long term for to sell the credit would put a limit on what a firm could produce thus limiting its long term profitability.

• Page 10 – The report states that total allocations of credits would be made by a political process. This could lend itself to favoritism and for credits to be given to those firms that are politically connected.

• Page 12 talks about offset credits but no mechanism is mentioned that would track such credits and make sure, in the long term, that the actions that were taken to secure the credits are being carried out.

• Page 28 states that, under the Maryland joins RGGI scenario that power imports would increase by 15%. If that power comes from a non RGGI state where is the benefit to global warming? Further, if other surrounding states become RGGI states will that increased power be available. This was not answered.
1.8 Natural Resources Defense Council (NRDC)

Mr. Dan Nees  
Stakeholder Coordinator  
Maryland RGGI Study  
Environmental Finance Center  
4511 Knox Road, Suite 205  
College Park, MD 20740  

Dear Mr. Nees,

On behalf of NRDC’s near 17,000 members in Maryland, we submit the following comments on the final report entitled “Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative” which was released to the public as part of the Maryland Regional Greenhouse Gas Initiative (RGGI) analysis process. NRDC would like to congratulate the study team on a very thorough, well-designed and well-executed analysis. However, NRDC would like to suggest that additional model runs/scenarios be analyzed in order to better inform future decisions regarding the implementation of the RGGI model rule. NRDC’s suggestions for additional analyses are as follows:

Additional Allocation Scenario:  
The report assumed that all RGGI states chose a 25% public benefit allocation except in the case of Vermont, where legislation has been passed to allocate 100% of the revenues to promoting energy efficiency and renewable sources of electricity. Many states, including Maryland, have now stated that they are considering a public benefit allocation of near 100%. In fact most recently, officials in both New York, New Jersey and Massachusetts have mentioned that they may chose 100% public benefit allocation. The general structure of the initial allocation is among the major policy choices that Maryland must address in implementing RGGI. It is therefore highly desirable for second round of the Maryland RGGI Study to inform decisions about this issue by modeling the impact of alternative policy designs. **We believe a secondary analysis could most simply address the question of the economic effects of alternative allocation designs by evaluating as an alternative scenario a 100% public benefit allocation in Maryland.**

Further Analysis on Effect on Gross State Product, Employment and Savings to Consumers:  
The analysis shows that lower electricity bills and stimulation of efficiency investments (about $400 million in 2020) greatly outweigh economic losses due to
impacts on electricity generators ($127 million). The gross state product rises by $270 million in 2020. In addition the study shows that by 2015, electricity bills fall by $66 million a year for residential customers and by $90 million a year for commercial & industrial customers, due to efficiency investments. For the average residential household this is about $29 a year. The analysis also finds that by 2020, the gains from lower electric bills (2,582 jobs) and higher activity in the efficiency sector (1,234 jobs) are about five times the losses in the electricity generation sector, so that the state has a net gain of 3,077 jobs. With 100% consumer benefit allocation these positive economic impacts will increase. In the 100% consumer benefit allocation scenario, NRDC recommends that the study groups provide additional detail on the types of efficiency projects executed and the economic benefits that result.

**Behind the Meter Exemptions:**
Currently there are two large industrial greenhouse gas sources in Maryland that generate power for their own usage: Mittal Steel and the Nupage paper mill. It is unclear whether these facilities will meet the exemption threshold authorized by the Model Rule. These are large electricity generating units and should be covered by a regulation designed to address emissions from power plants. NRDC would like to see a secondary analysis where these sources are included in your analysis of RGGI in Maryland.

**Accounting for Offsets:**
In estimating the allowance price under the RGGI program, it is important that the analysis account for the availability of low-priced greenhouse gas offsets, and the implications of Maryland’s joining RGGI on the availability of offsets and the price of allowances. The effect of activities within Maryland to generate offsets on Maryland employment and income should also be addressed in the economic impact study. A secondary analysis could be conducted to more accurately measure the benefit to the Maryland economy from the sale of offsets into the RGGI offset market.

Sincerely,

Elizabeth Martin
Climate Policy Specialist
Natural Resources Defense Council
1.9 *Pepco Holdings Inc.*

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**Wesley L. McNealy**  
Manager, Safety and Environmental

February 22, 2007

Dan Nees, Director  
Maryland RGGI Study  
Environmental Finance Center  
University of Maryland  
Preinkert Field House, Room 1102  
College Park, MD 20740

**RE: Economic and Energy Impacts from Maryland’s Potential Participation in the Regional Greenhouse Gas Initiative (“RGGI”)**

Dear Mr. Nees:

Pepco Holdings, Inc. (“PHI”) understands that the Maryland Department of the Environment (“MDE”) and the University of Maryland, through the Center for Integrative Environmental Research, welcomes review and comment on the study of the economic and energy impacts related to Maryland’s potential participation in RGGI.

PHI is pleased to provide you with its views on this issue. We submit these comments on behalf of PHI’s two Maryland utilities, Potomac Electric Power Company (“Pepco”) and Delmarva Power and its competitive energy generation, marketing and supply business, Conectiv Energy.

PHI is dedicated to conducting its business activities with respect and care for the environment. The companies of PHI clearly recognize the growing concerns regarding the threat of climate change, and we agree that stabilization of carbon dioxide emissions is a worthy goal. PHI and its family of companies produce sell and promote renewable or “green” energy. This energy comes from a variety of renewable energy sources such as wind, hydro, solar and biomass, including wood and solid waste. PHI provides a number of energy efficiency measures and technologies for its electricity customers in the states of Maryland, Delaware, New Jersey and the District of Columbia. PHI’s merchant fleet of electric generating facilities is comprised, in large part, by efficient, combined-cycle combustion technology and fueled primarily by clean-burning natural gas. In addition, PHI uses biodiesel fuel in 100 percent of the diesel powered vehicles in its Pepco operations in Maryland and the District. We believe that each of these efforts demonstrates our commitment to a reduction of greenhouse gas emissions.
We recognize a growing imperative to make even deeper reductions in greenhouse gas emissions while maintaining the reliable and reasonably priced electricity supply that is vital to our regional economy and our national security. However, our careful analysis of the RGGI study leads us to conclude that reducing carbon dioxide emissions from Maryland power plants will have little measurable impact on regional greenhouse gas emissions and virtually no impact on total global greenhouse gas emissions. Carbon dioxide is a national and international priority and needs to be handled in a coordinated manner to achieve any meaningful results. While PHI supports many of the concepts in RGGI as a model for a national program, we believe that the economy and the electric power markets in Maryland are better served should RGGI be superseded by a national program.

In regard to the RGGI study, our specific comments are outlined below and address each of the broad study categories and conclusions identified in the draft dated January 2007.

1. Energy Supply Study

PHI finds inconsistencies between the findings of the RGGI study with respect to energy supply, and the findings of the “Electric Supply Adequacy Report of 2007” released in January 2007 by the Maryland Public Service Commission (“PSC”). The PSC concluded that “the adequacy of Maryland’s electricity supply can perhaps be best characterized as fragile.” The PSC report establishes the fact that Maryland cannot meet its own electricity needs from internal resources, and has not done so for over 15 years. The PSC report notes that Maryland utilities, including Pepco and Delmarva, and the PJM are forecasting electricity demand to grow by between 1 and 2 percent per year over the next five to ten years. The PSC report goes on to conclude that “Maryland and other states in Eastern PJM appear to have little or no choice but to increase their levels of electricity imports, if the bulk transmission network permits it.” To the contrary, the RGGI study concludes that the effects of Maryland joining RGGI “reduces coal and natural gas-generation in Maryland as the state reduces exports to neighboring regions and slightly increases reliance on power imports from out of state.”

PHI recognizes that the RGGI study was completed under time and budget constraints, PHI is concerned that the project team may not have considered fully the complexities associated with the increased level of power imports into Maryland and potential emission leakage which will likely result from the implementation of RGGI. The report states that “depending on how they are grouped, states outside of RGGI could either see a reduction in carbon dioxide emissions when Maryland joins RGGI, or an increase. In general, this leakage will be small”. In fact, six of the RGGI states, Maryland, Connecticut, Delaware, Massachusetts, New York, and New Jersey are currently net importers of power. PHI believes that implementation of RGGI will likely amplify the potential for increased flow of power from outside the RGGI region. This may, in turn, increase the carbon dioxide emissions from neighboring states. For example, Pennsylvania’s carbon dioxide emissions alone are greater than the cumulative carbon dioxide emissions of the eight RGGI states. Pennsylvania has additional coal-fired generation under construction and is likely to increase its overall power supply capabilities. PHI suggests that the project team complete further analysis of the issue of electricity imports and emissions leakage -- specifically, the potential for increased power imports from the states of Pennsylvania, Ohio, Virginia and West Virginia.
Overall, PHI believes that additional time, effort and careful coordination with the Maryland utilities, PJM, the PSC and other relevant regulatory commissions, is necessary to fully gauge the impact of RGGI and other policies, incentives and administrative processes upon the adequacy of the electric supply in Maryland.

II. Generator Competitiveness Study

PHI believes it premature to conclude, as does the RGGI study, that Maryland joining RGGI will not amplify any potential market power in the region.

The RGGI study indicates that “profits of existing generators fall by 13 percent in 2010 and 12 percent in 2025, compared to the baseline.” The resultant decrease in revenues from participation in RGGI may indeed result in the exertion of market power. Should large power producers withhold or sell capacity in the non-RGGI region until a profitable power price occurs in the RGGI region, an increase in market power may result. Under such a scenario, small power producers may become price takers and electric generation operations will become less efficient in the RGGI region due to the decrease in generator liquidity. The less efficient generation could result in an increase in the price of electricity and in the amount of carbon dioxide emissions. In addition, the decreased revenues associated with Maryland’s participation in RGGI are expected to accelerate the retiring of generation facilities in Maryland and other RGGI states. As a result fewer generators may be supplying power to the RGGI region, again decreasing the liquidity and competitiveness of the RGGI generation.

The RGGI study included profit projections for generators (as referenced above) that were based on a 25% auction level for carbon dioxide emission allowances in the RGGI region with the proceeds applied to public benefit such as energy efficiency, clean energy technology and ratepayer rebates in accordance with the RGGI Model Rule. PHI notes that a 25% auction level would not fully compensate the generators to cover the increased costs of operating under RGGI. PHI further notes that some RGGI states have already proposed state specific versions of the RGGI Model Rule, and to date, two of these states, New York and Vermont, have proposed a 100% auction based allocation system. Such changes in the auction allocation may result in a significantly higher operating cost for generators to cover the cost of carbon dioxide allocations and/or emission offsets required to comply with RGGI.

PHI suggests the project team consider additional sensitivity analysis with respect to all of the RGGI states auctioning 100% of their RGGI allowances. PHI believes this analysis may provide a more clear and complete indication of future profit levels for generators, the price of carbon dioxide allowances, the cost of carbon dioxide emission offsets, and the allowance value that may be applied to public benefit or energy efficiency projects.

Overall, PHI believes that additional time and effort and close coordination with generators in the PJM region is necessary to fully understand the impact on generator competitiveness that may result from Maryland joining RGGI.
III. Electricity Reliability Study

PHI agrees with the finding of the RGGI study that institutions and policies are in place to ensure that electricity reliability is maintained. However, we think it premature to conclude, as does the study, that carbon dioxide regulation through RGGI is unlikely to affect electricity reliability.

Reliability, as analyzed in the study, was more concerned with generation investment and sufficiency than with transmission. Transmission infrastructure additions must be carefully considered as part of the analysis of electric system reliability. The PJM marketplace is the largest and most robust wholesale power market in the United States. PJM continues to evolve and has major planning activities of its own that address reliability of the electricity system. PJM is conducting its own planning exercise, focusing on providing significant long term transmission system enhancements. This process is likely to encourage major new transmission construction, including PHI’s proposed Mid Atlantic Power Pathway transmission line, which would connect the Delmarva Peninsula with other regions of PJM. The construction of major new transmission lines can have a very significant impact on the dispatch of generation sources in the various control systems in RGGI. For example, completion of the MAPP line could result in considerable reduction of congestion on the Delmarva Peninsula and in the Pepco region in and around Washington DC. The MAPP line will create opportunities for generation resources in the PJM region to be accessed by Pepco and Delmarva customers with little constraint. This would include some of the largest RGGI affected generation resources in Maryland. Completion of the MAPP project will provide tremendous benefits, including increased reliability to Pepco and Delmarva customers.

PHI suggests the project team consider additional sensitivity analysis with respect to the impact on electricity prices and emission leakage associated with each of the proposed high voltage transmission line projects presently being considered in the PJM region in and around Maryland.

Overall, PHI believes that additional time and effort is necessary to fully gauge the impact of RGGI and on the completion of the MAPP and other transmission enhancements in Maryland and the region.

IV. Electricity Rate Study

PHI agrees with the RGGI study finding that additional investments in energy efficiency, using the revenue generated by auctioning carbon dioxide emission allowances, will help reduce the demand for electricity. However, we think it premature to conclude, as does the study, that Maryland joining RGGI has virtually no impact of electricity rates in the state.

PHI recognizes that Demand Side Management (“DSM”) offers cost effective opportunities to reduce peak load and improve energy efficiency. The advent of smart metering will enable many DSM and conservation programs and enhance the effectiveness of many efficiency and load control programs.
PHI is well-positioned to provide DSM programs to its customers. PHI has more than 20 years of experience in the provision of DSM programs to its customers. Historically, PHI has offered its customers a wide array of energy efficiency programs, ranging from direct control peak demand reduction programs, to extensive energy efficiency loan, audit, and rebate programs. Both PHI and its affiliate company, Pepco, have recently offered to manage the provision of DSM programs to their Maryland customers. At this time, PHI’s affiliate company, Atlantic City Electric, currently manages the provision of approximately $9 million annually of energy efficiency to its New Jersey customers.

As one example, PHI’s potential future deployment of an advanced metering system is expected to significantly enhance customers’ willingness to reduce their electricity consumption during peak electricity demand periods through voluntary participation in electricity pricing options, whereby prices more closely track wholesale market electricity prices. Additionally, an advanced metering system can be integrated with demand response enabling equipment, such as smart thermostats, to automatically reduce energy consumption during periods of high energy prices. While PHI believes that adopting smart metering would greatly enhance the effectiveness of demand response programs and help customers to better control their electricity costs, we recognize that the cost of deploying such programs is significant.

PHI understands that large scale DSM programs require comprehensive planning, design, implementation, administration, and evaluation to be effective. We believe it is important to integrate the planning of large scale energy efficiency programs into the optimal design of electric distribution and transmission system operations. We likewise believe it prudent to consider the impact of utility incentives for DSM programs such as regulatory policies that decouple the sale of electricity from profits. PHI suggests the project team consider additional sensitivity analysis with respect to the impact of various regulatory policies on large scale DSM programs.

Overall, PHI believes that additional time is required for the relevant regulatory commissions to work with consumers, utilities, energy suppliers and other stakeholders to assess the impact of DSM and other aspects of RGGI on the price of electricity paid by rate payers in Maryland.

In closing, we appreciate the hard work that has gone into the RGGI study and we commend the project team for its efforts. We look forward to a continued role in the stakeholder process. Please feel free to contact me should you have questions.

Sincerely,
COMMENTS OF PUBLIC SERVICE COMMISSION OF MARYLAND STAFF ON CENTER FOR INTEGRATIVE ENVIRONMENTAL RESEARCH STUDY CONCERNING MARYLAND’S PARTICIPATION IN THE REGIONAL GREENHOUSE GAS INITIATIVE

Thank you for providing the opportunity for the Staff of the Public Service Commission (“Commission Staff”) to provide comments on the University of Maryland Center for Integrative Environmental Research’s (“CIER”) independent study (“Study”) of the economic and environmental impacts related to Maryland’s participation in the Regional Greenhouse Gas Initiative (“RGGI”). The Commission Staff appreciates the effort behind and thoroughness of the CIER Study, and is available to answer any questions on the comments provided herein.

The CIER Study requests review and comment on the final analysis for the stated purpose of adding value to the Study, which will be used as an input into decision making by the State of Maryland on RGGI membership issues. The Commission Staff hopes that the suggestions that follow are useful in fine-tuning the CIER Study and in any future evaluations of these subjects. The Commission Staff generally suggests that CIER conduct additional sensitivity analyses modeling the impact of changes to certain key assumptions built into the models on which the Study is based.

Due to the 2006 enactment of the Healthy Air Act, Maryland will be the first state that obtains most of its electricity from coal to adopt a four pollutant (nitrogen oxides, sulfur dioxides, mercury and carbon dioxide) approach to air quality. In Section 2 of the Healthy Air Act, the General Assembly directed the Maryland Department of the Environment (“MDE”) to oversee the development of a study of whether there will be an

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2 The Commission Staff has reviewed the report of February 1, 2007 as provided on the CIER web site and the materials provided during the briefing held on February 16, 2007 at the Maryland Department of the Environment in Baltimore.

3 Maryland is unique among the existing RGGI states, in that electric reliability in the State depends upon the burning of coal to meet its system peak. The original RGGI states (New York and the New England states) have sufficient excess capacity to meet their peak demand without burning coal, which is only 9% of their installed capacity. The PJM States of Maryland, Delaware, New Jersey, and Pennsylvania require coal, which is 34% of their installed capacity, to maintain reliability today and into the foreseeable future.
adverse impact to the State’s economy, the reliability of the State’s energy supply and the cost of energy for consumers as a result of the State’s entry into and continued participation in RGGI. The CIER Study was conducted in response to this mandate.

To ascertain the potential impacts of the State joining RGGI, CIER coordinated runs of three different models. It is important to note that the Study’s key findings are a comparison of the changes to the results of the three models when only one assumption -- whether Maryland does or does not participate in RGGI -- is changed. The Commission Staff believes that the unfolding of future events may undermine some of the Study’s other assumptions. Therefore, the Commission Staff thinks the Study would be improved if the models contained analyses of the potential impacts of other changes to the major assumptions built into the studies.

There are several major assumptions built into the models for which sensitivity analyses could prove enlightening. In no particular order, they are:

1. The models were run on the assumption that demand in Maryland will grow based on the national growth data in the 2006 Annual Energy Outlook. Maryland may realize significantly higher growth in demand and energy consumption due to the influx of jobs, businesses and residents due to the most recent round of changes from the federal Base Realignment and Closing (“BRAC”) process. It might be useful to re-run the models with the projected additions to base employment levels and the resulting influx of families and businesses supporting the new additions.

2. The models were run on the assumption that 25 percent of carbon dioxide (“CO2”) allowances are auctioned to generators. With that level of allowances subject to auction, the Study projects a 13 percent decline in profitability of coal-fired generation in the State. Retrofitting nitrogen oxide (“NOx”), sulfur dioxide (“SO2”) and mercury controls onto older, less profitable coal-fired generation already raises questions as to whether the owners of that generation can or will be able to afford those controls. Thus, a 13 percent decline in profitability due to RGGI allowance costs raises concerns, including potential plant closings. Since the RGGI membership memorandum of understanding (“MOU”) allows states to auction more than 25 percent of its baseline allowances, it would be helpful to rerun the models with an auction of 50 percent, 75 percent and 100 percent of allowances in case Maryland elects to auction more than 25 percent of allowances.

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4 See, CIER Study at p. 142.
5 In response to a request from certain Senators, the Energy Information Administration prepared a report that analyzes a national allowance cap-and-trade system similar to the system analyzed in
3. RGGI’s MOU currently determines baseline allowances and ultimately compliance measures based on the amount of CO2 produced by generation located within a member state. RGGI staff is currently evaluating a change to this construct such that RGGI states would need to obtain allowances not for CO2 produced by electricity \textit{generated} within the states, but instead for CO2 associated with the electricity \textit{consumed} within the state, regardless of where it is produced. This is of critical importance to Maryland because we are a net importer of electricity, and much of the electricity imported is produced by CO2-intensive coal-fired generation based in the Appalachian coal fields. The models should be rerun with the assumption that Maryland may need 30 percent more allowances than are currently under discussion to account for CO2 associated with those imported amounts of electricity.

4. The Study assumes that three major transmission lines currently being proposed will be built and operated in the timeframes proposed by the developers. These projects are necessary to accommodate projected demands for electricity in Maryland. However, the Commission Staff observes that transmission lines rarely are built as proposed and even more rarely within the timeframes projected by developers. For example, a recent 90-mile transmission line that American Electric and Power (“AEP”) proposed for rural West Virginia took 18 years to build and place in service, even though the applicant originally calculated it would take five or six years. The lines assumed in the Study generally are longer, more expensive, and traverse more populated areas than the AEP project. It might be useful to rerun the models with longer in-service dates for these projects, and maybe even conduct runs assuming that one or more of the projects never get built.

5. The Study assumes that Constellation Energy Group (“CEG”) will obtain siting authority for two nuclear generating units at Calvert Cliffs in a fairly short period of time. As of this writing no formal application for these units has been filed, and CEG may decide not to pursue these units at all. Additionally, no new nuclear units have been sited and constructed in the United States

since the Three Mile Island incident in 1979. It might be helpful to rerun the models showing the impacts of delays in project completion and/or one or both of the proposed units not being built at all.

The Commission Staff has additional observations concerning the Study. The Study assumes that increased energy efficiency measures in the State will offset a significant amount of the growth in demand for electricity that otherwise would occur. After reviewing the inputs to the models, the Commission Staff has questions whether joining RGGI will produce the Study’s assumed level of offsets from energy efficiency. Of course, if the reductions from the assumed energy efficiency measures are not realized to the extent modeled, or if demand for electricity grows due to other reasons in spite of demand-side management expenditures, or some combination thereof, joining RGGI will not result in the modeled relative reductions in the rate of growth in demand and reductions in ratepayer bills.

One of the Key Findings of the CIER Study is that under a decision to join RGGI, “electricity demand will decrease and the study sees consumers saving money”. A number of competing fluctuations are weighted in the CIER Study to arrive at this conclusion. The basic assumption is that consumers will shift from spending on energy consumption to spending on energy efficiency. Table 9.2 summarizes the Study’s Key Findings about this aspect of the future: RGGI demand reductions and efficiency savings are modeled at 1.1 billion kilowatt hours (“BkWh”) in 2010, increasing to 2.5 BkWh by 2025. Similarly, the Study predicts that, under RGGI, imports of electricity into the State are 2.23 BkWh higher in 2025, while exports are 3.14 BkWh lower.

What these numbers mean, of course, is that CIER is not projecting that if Maryland joins RGGI, the demand for electricity in the State actually and absolutely will decrease. Instead, CIER’s analysis suggests that the rate of growth in Maryland’s demand for electricity will be lower than it otherwise would be if Maryland joins RGGI. In other words, the numbers in the models do not support the literal wording of the finding.

Additionally, the Commission Staff observes that the Study’s conclusions that customers will save money may be susceptible to the Study’s assumption that 85 percent of efficiency spending would be spent as payments to in-state construction trades. Thus, the models seem to assume that consumer spending on energy efficiency investments largely will be an in-state phenomenon, an assumption that may be tested as dollars flow out-of-state to manufacturers of energy efficient appliances and other methods of increasing energy efficiency.

Another observation concerns the Haiku model’s output leading to the Study’s conclusion that Maryland joining RGGI does not affect electricity rates. Summarizing this result, the CIER Study states that “the supply curve shifts up and to the left at the

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6 The costs for these billion kilowatthours of energy efficiency savings rise from $38.8 million in 2010 to $96.7 million in 2025 (see Table 13.4).
same time the demand curve shifts down and to the left.” In other words, instantaneous response by suppliers and consumers to the increase in cost of electricity from the CO₂ cap and trade component of RGGI is expected to serve as the primary source of protection for Maryland consumers from rapid price changes. Essentially, the CIER Study assumes that the energy suppliers will increase prices as a result of the State joining RGGI, but that consumers will reduce the amount of electricity used in response to the price increases. Therefore, the Haiku model assumes that the cuts in demand due to RGGI-driven price increases and implementation of energy efficiency measures will result in decreased demand.

As noted earlier, this assumption seems to be overstated – what is actually predicted is that the rate of growth will be less with RGGI than without, not that demand actually will decrease. In any event, history shows that even significant price increases drive at most a temporary decrease in demand, followed by resumption in demand growth. The Haiku model should be rerun to include sensitivity analyses modeling historical reactions to price increases, and not rely solely on an assumed reaction that would be historically anomalous.

Another factor that has been deemed appropriate for modeling is that the transmission line construction costs required to support a 19BkWHr increase in imports may result in increased costs to Maryland consumers. The increase in demand for power in Maryland is largely to be satisfied by imports from more costly non-RGGI grid sources. These two factors, the construction of transmission facilities and the importation of more power, suggest an increase in the price of power to the consumer. The consumer impact findings rely heavily upon an expanded role for imports to meet the in-state demand in the future. The Commission Staff believes that further study of these costs may be necessary before relying on increased import capabilities provided by new transmission projects as a basis for policy recommendations.

The Commission Staff also wishes to comment on several other assumptions and findings. First, Figure 9.6 suggests the cost of a RGGI allowance grows almost threefold during the period. The CIER Study assumes that energy efficiency expenditures will shield electricity consumers from these cost increases. Contrary to this assumption, it is quite possible that these costs could exceed savings from energy efficiency programs, and be passed onto consumers.

Second, allowance costs, particularly those in the future, are very much an unknown. The Commission Staff suggests modeling at the allowance cost levels suggested by the RGGI “circuit breakers” to further test the sensitivity of the results to allowance prices.

Third, the narrative prior to Table 14.1 states that only natural gas is used in Mittal’s electrical production process and assumes that it has minimal impact on CO₂ production. Therefore, the Study presumes that exclusion of Mittal steel will have a minimal effect (p.79). It is unclear whether this is correct. This assumption disregards Blast Furnace Gas as a CO₂ contributor. Thus far, Mittal Steel’s electric power
production process relies predominantly on Blast Furnace Gas (“BFG”). BFG is a byproduct of using coke (a purer form of carbon derived from coal) as a major component of steel production. The BFG is then used to produce electric power that is consumed by Mittal.

Data obtained from EIA Forms 906/920 indicates that during 2004, the CO$_2$ output for Mittal was 2.3 million tons of CO$_2$ or approximately 7% of the total budget for CO$_2$ in Maryland. As such, Mittal Steel’s impact does not appear to the Commission Staff to be so minimal as to support the Study’s assumption that the market for purchasing state carbon credits will be limited to stationary, generation-for-profit sources rather than the full universe of CO$_2$ emitters, including Mittal Steel and other self-generators.\textsuperscript{7}

In conclusion, the Commission Staff is somewhat satisfied that the CIER Study is a starting point for the discussion of the impacts on the State from joining RGGI. The Study raises a number of areas for both further study and sensitivity analyses of not only the key findings but also the offsets assumed in reaching those findings. Additional detail regarding the Commission Staff’s insights and observations on transmission facility needs and the adequacy of supply can be found at the Commission’s web site at the following URL’s:

- Ten Year Plan (2006-2015) of Electric Companies in Maryland
  http://www.psc.state.md.us/psc/Reports/2006-10YrPlan.pdf

- Electric Supply Adequacy report of 2007

Thank you again for the opportunity to provide comments on the CIER Study of the potential impacts of Maryland joining RGGI. Please let us know if you have any questions about this material or would like additional information.

\textsuperscript{7} The Healthy Air Act applies to a specific enumerated list of sources and it is unclear whether legislation to implement the RGGI Model Rule may also be similarly limited to those sources.