

Caiazza Comments on Third Program Review October 2021

Introduction

I have been involved in the RGGI program process since it was first proposed prior to 2008. I follow and write about the [details of the RGGI program](#) in my retirement because its implementation affects whether I will be able to continue to be able to afford to live in New York. I have extensive experience with air pollution control theory, implementation, and evaluation of results having worked on every cap-and-trade program affecting electric generating facilities in New York including the Acid Rain Program, Regional Greenhouse Gas Initiative (RGGI) and several nitrogen oxide programs. The opinions expressed in these comments do not reflect the position of any of my previous employers or any other company I have been associated with, these comments are mine alone.

The purpose of these comments is to supplement my [initial comment recommendations](#) with additional information and to raise a new topic that I think would be appropriate for RGGI to consider. In my previous comments I mentioned that I expected that there would be calls to make the allowance cap “binding” that is to say force emission reductions to meet a particular emission reduction trajectory. As predicted, there were calls to not only make the cap binding but also to establish an emissions trajectory to zero by 2035. These comments look at a potential trajectory to meet that aspirational goal.

Earlier in October I submitted a comment to RGGI about market monitoring. I wrote to suggest that the secondary market reports needed to add a non-compliance entity category to specifically address people or organizations that have purchased allowances for offsetting purposes rather than investment purposes. I explain why RGGI needs to address this sooner rather than later.

Summary of Initial Comments

In my [initial comments](#) on the Third Program Review my overall recommendation was to make no changes and see how the RGGI allowance market plays out the transition to the unprecedented emissions trading situation in which the majority of the RGGI allowances are held by entities who purchased allowances for investment rather than compliance purposes. No one knows how the market and the compliance strategies will react so it is best to make no changes at this time.

I also showed that fuel switching is the primary CO₂ reduction methodology to date and noted that the total of the annual reductions claimed by RGGI in their annual [Investments of Proceeds](#) updates since 2009 is 2,818,775 tons while the difference between the baseline of 2006 to 2008 compared to 2019 emissions is 72,908,206 tons. Therefore, the RGGI investments are only directly responsible for less than 5% of the total observed reductions since RGGI began in 2009.

I explained that the most important consideration to keep in mind is that CO₂ control is different than other pollutants because there are no cost-effective controls available for existing facilities. As the data show, fuel switching is the primary reason for the observed emission reductions. Once a facility has changed to a lower emitting fuel the only options at a power plant are to become more efficient and burn less fuel that could only reduce emissions a small amount or stop operating all together. I believe

it is imperative that RGGI never tighten the cap so low that affected sources are unable to operate because allowances are unavailable to operate because that could threaten reliability.

Supplemental Comments

Previously I noted that I imagined that commenters would call on RGGI to force emission reductions to meet a particular emission reduction trajectory. Six of the eleven commenters at the 5 October 2021 Listening Session said that the emission caps should be tightened to reduce zero emissions by a date certain. None of the commenters who advocated for a zero emissions cap by 2035 to satisfy a political target have any responsibilities for keeping the lights on. It's easy for them to say and there are no personal consequences if their aspirational goals fail. However, RGGI does have a stake in electric system reliability and I believe the credibility of the program will be irreparably damaged if the emissions caps are so stringent that affected sources are unable to generate due to a lack of allowances.

This section looks at an example zero-emissions cap by 2035. Based on the third program review timeline I don't think a revised cap could be implemented before 2024. It makes sense to make that the implementation date because that is the start of a new compliance period.

In my [previous analysis](#) I argued that continued fuel switching could produce zero-emissions from the more carbon intensive sources by 2030 so I calculated a linear reduction to zero out those emissions by 2030 from all but natural gas and "other fuel" sources. For the zero emissions trajectory for the remaining sources by 2035, I calculated a similar trajectory of reduced heat input from those fuels and estimated and added an emissions trajectory to zero by 2035. If RGGI were to make its emissions caps consistent with those trajectories then the total allocations from 2024 to 2035 cap would have to equal the cumulative emissions in the fuel source type trajectories over that period minus the allowance bank at the end of 2023. A revised cap that reduces the allowance bank and the allowance allocations is shown in the revised cap column of Table 1, Eleven-State RGGI Projected Emissions and Allowance Margin for Zero-Emissions By 2035 Scenario.

In order to eliminate natural gas-powered generation, a total of 118,815,096 MMBtu of replacement energy must be found to displace its use every year between 2024 and 2035. Using the average of the last three years of EPA Clean Air Markets Division ratio data between heat input (MMBtu) and gross load (MWh) the natural gas displacement heat input is equivalent to 15,000,000 MWh. The average of the last three years energy output at the now retired Indian Point unit 3 was 8,594,967 or 57% of the displaced natural gas energy output. In 2020 New York had 1,985 MW of installed onshore wind energy that had a capacity factor of 25.2% and at that rate 6,780 MW (3.4 times) additional wind capacity would be needed to match the natural gas output. For new onshore wind with a capacity factor of 35% 4,881 MW per year of new generation would have to be built. Offshore wind with a capacity factor of 50% would only need to develop 3,417 MW but 8,543 MW of solar with a capacity factor of 20% would need 8,543 MW developed. In order for RGGI to go to zero emissions some set of these resources would have to be built each year for the twelve years between 2024 and 2035 to provide the energy needed to displace the RGGI affected unit output.

In addition, the generation from natural gas and nuclear is dispatchable so comparing the energy output between them is apples to apples. However, because wind or solar is not dispatchable a direct energy comparison is not appropriate which means that additional resource development and energy storage would also have to be included. A recent presentation by the [New York State Reliability Council](#) described how the New York electric system is operated to maintain reliability and some of the challenges presented when renewable energy sources are increased significantly. The presentation noted that the New York reserve margin will have to increase to over 100% relative to the current reserve margin of about 20%. In other words, in order to ensure that current reliability standards are maintained the resources listed in the previous paragraph would have to be doubled.

New Category in the Potomac Economics Market Monitoring Reports

Earlier in October I submitted a general comment about the RGGI program. In response, Cooper Tamayo encouraged me to share my comments for state consideration as part of the Program Review process. I am doing that but I recommend that this be considered separately from this process because the issue I have identified could become a problem during the current compliance period before this program review is implemented. Furthermore I don't think that both of my recommendations are necessarily a component of the review process.

I recently discovered documentation that at least one non-governmental environmental entity has purchased allowances and "will be retiring these allowances so that no power plant can use them to emit greenhouse gas". I submitted a comment to RGGI suggesting that this ownership entity should be included as a new category in the Potomac Economics market monitoring reports and that a surrender account be established for individuals and organizations that want to use RGGI allowances for offsetting purposes.

According to an [Adirondack Council press release](#), in June 2017 they purchased 2,000 allowances. They note that at that time they had purchased a total of 17,000 allowances. The release notes that:

"We offer a Carbon Reduction Certificate that allows donors to retire a ton of carbon from the market, while also supporting the development of a low-carbon economy in the Adirondack Park," said Janeway. "For a \$25 donation, we will retire a ton of carbon from the RGGI market in your name and send you a certificate commemorating the importance of the gift to the future of the Adirondack Park."

I believe that the "Carbon Reduction Certificate" is something that they made up for fund raising. Mr. Tamayo confirmed my understanding that RGGI does not have a surrender mechanism whereby the allowance tracking system can formally take allowances out of the trading system for this kind of offset mechanism. I think a surrender account would be appropriate for RGGI to consider as part of the third program review.

In order to understand the RGGI allowance market, given the complete lack of transparency regarding allowance ownership, it is necessary to rely on the Potomac Economics market monitoring reports. As everyone at RGGI knows, Potomac Economics categorizes three types of firms participating in the RGGI markets:

- *Compliance-oriented entities* are compliance entities that appear to acquire and hold allowances primarily to satisfy their compliance obligations.
- *Investors with Compliance Obligations* are firms that have compliance obligations, but which hold a number of allowances that exceeds their estimated compliance obligations by a margin suggesting they also buy for re-sale or some other investment purpose. These firms often transfer significant quantities of allowances to unaffiliated firms.
- *Investors without Compliance Obligations* are firms without any compliance obligations.

It has always been my understanding that all three categories include firms that own allowances would be willing to sell or use them to satisfy compliance obligations. This belief is supported by the label “investors”. While the size of the Adirondack Council allowance holdings certainly would not have an effect on the market, it does represent a category representing an investor willing to sell. If there are a significant number of allowances held by entities that wish to prevent affected sources using the allowances by withholding them for sale or use as compliance obligations, then it could affect market liquidity and compliance decisions.

I think that Potomac Economics should include a fourth category representing this type of allowance holder. Given the possibility that this category could materially impact market liquidity in the current compliance period when the “investors without compliance obligations” allowance holders own a majority of the allowances, a decision on this issue should not be delayed. If the number of allowance that entities hold for offsets are so small that it does not materially affect anything, then a note in the market monitoring reports stating that would be sufficient.

Conclusion

I have shown that the RGGI program was not responsible for all the emissions reductions observed since the inception of the program using RGGI’s own reports. These comments show that in order to replace RGGI affected source generation an extraordinary amount of wind and solar will have to be developed. It is absurd to claim that RGGI investments could fund those renewable resources so it is inappropriate to revise the RGGI emissions cap to zero by 2035 or any other date certain for that matter. If such a target is adopted it is likely that affected sources would be unable to run thus affecting the credibility of the RGGI program.

Pollution control programs for greenhouse gases are not effective tools for driving emission reductions because affected sources have few options for reducing emissions other than limiting operations. I conclude that the RGGI emissions cap trajectory should not be revised to 2030 unless state programs to reduce CO2 emissions and RGGI investments funding zero-emission energy sources reduce the cap beyond the current limits. Any revisions to the trajectory should be based on observations and not model projections.

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