

April 28, 2023

Andrew McKeon, Executive Director
RGGI, Inc.
90 Church St, 4th Floor
New York, NY 10007

Submitted via email to info@rggi.org

Re: Comments on RGGI Reference Model

Environmental Defense Fund (EDF) strongly supports the continued leadership of the RGGI states in placing binding limits on carbon dioxide (CO₂) emissions from electricity generation and is grateful for the opportunity to provide comments on RGGI, Inc.'s [proposed](#) modeling framework and assumptions. EDF is an international environmental advocacy organization with 2.5 million members nationwide, including nearly 750,000 members in the 11 RGGI member states, dedicated to finding innovative approaches to solving our most difficult environmental challenges. EDF has extensive experience with carbon market design: we appreciate the challenges and benefits of a regional framework for reducing carbon pollution through a market-based program, and we respectfully offer the following comments and recommendations for consideration on RGGI's modeling approach.

Policy Context

Now is a key moment for increasing climate ambition in the power sector by using pollution limits to help secure deep decarbonization to meet the United States' Nationally Determined Contribution (NDC) of economy-wide greenhouse gas (GHG) reductions of 50%-52% below 2005 levels by 2030. Over the past two years, the federal government has made significant investments to increase the deployment of clean energy technologies, primarily via two major pieces of legislation: the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA). By investing hundreds of billions of dollars of federal resources in clean electricity technologies, the IRA and IIJA have significantly reduced the cost of cutting power sector pollution. However, projected GHG reductions associated with incentives included in the IRA and IIJA maintain a high level of uncertainty, driven by the absence of national pollution limits, the sensitivity of clean energy incentives' impacts based on chosen assumptions, and the absence of binding emissions targets associated with the laws.

A key variable in determining whether the U.S. succeeds in capturing the full abatement potential of the IRA and IIJA is whether states and regions adopt strong, complementary regulatory policies to cut climate pollution. Doing so would both ensure deployment of technologies incentivized by the IRA and IIJA at the *scale* necessary to reduce economy-wide pollution consistent with the U.S. NDC and significantly increase the *certainty* of achieving those pollution cuts.

In addition to the incentives created by the IIJA and IRA, the federal Environmental Protection Agency (EPA) is expected to issue updated pollution control standards for power plants in the coming days. These standards are likely to cover emissions control technologies for subcategories of power plants, such as existing coal, existing natural gas, or new natural gas plants, and will not be a

federal sectoral limit on pollution. Accordingly, state pollution limits are critical to ensure the overall pollution outcomes are in line with the U.S. NDC. The subcategory, or plant-by-plant standards, will help facilitate meeting those goals by improving the system of emission reduction technology for fossil fuel generation. However, given that the expected lead time for these standards and their implementation will be long, and the fact that they will not directly limit pollution from the power sector, state limits are critical for increasing the certainty of curtailing pollution on the timescale required and minimizing cumulative emissions.

As RGGI considers the appropriate modeling framework to help inform its baseline and policy cases, as discussed during its March 29, 2023, public meeting, EDF encourages RGGI to consider the importance of assessing opportunities for RGGI to increase near-term ambition to support achieving the U.S. NDC while prioritizing ways for RGGI to support states' efforts to advance equity and environmental justice.

RGGI Proposed Reference Case Assumptions

EDF is supportive of many of the reference case assumptions and the general approach that RGGI has taken related to modeling the Third Program Review reference case to date. Many of EDF's constructive feedback and ideas fall within categories not currently under consideration (detailed in a separate section below). EDF would like to highlight specific assumptions and approaches that RGGI has taken to date that we strongly support, including:

Whether PA participates in RGGI makes a significant difference: The adjusted cap for the RGGI region with Pennsylvania for 2022 is approximately 137 million tons of CO₂. Without Pennsylvania, the adjusted cap is approximately 97 million tons of CO₂. In other words, when Pennsylvania is eventually included as part of the RGGI region (pending litigation), it represents just under 30% of the entire RGGI program. As a result, the impact of Pennsylvania's inclusion or exclusion from modeling reference cases during RGGI Program Review is substantial. If clarity on the question of Pennsylvania's participation in the program does not emerge in the near-term, and given the impact of that outcome, RGGI should model two reference cases: one with and one without Pennsylvania.

RGGI must prioritize modeling equity impacts: During its public meeting on March 29, RGGI, Inc. indicated EDF believes that RGGI, Inc. must seriously evaluate all opportunities to center equity and environmental justice considerations in its modeling assumptions and framework. In comments submitted in January 2022, EDF noted the need for more information on the localized impacts of the program, especially in communities disproportionately impacted by air pollution. We believe these needs persist, and to that end support recommendations from environmental justice groups and equity stakeholders to conduct additional analysis evaluating the impacts of RGGI at the community level.

Comments submitted by the Climate Justice Alliance (CJA) in December 2021 call on the RGGI states to commit to an ongoing, place-based equity analysis and report on the distribution of emissions reductions, including a cumulative burden analysis that considers the proximity of multiple power plants to overburdened communities, including facilities below the 25-Megawatt

threshold. We also support comments submitted in November¹ by organizations representing frontline communities in Pennsylvania, which call for ongoing annual analysis of the economic and air quality impacts of RGGI on low-income communities, communities of color, and frontline communities.

Finally, EDF supports comments submitted on April 21, 2023, by the Conservation Law Foundation and partners, which highlighted several key opportunities for RGGI, Inc. to center equity in its modeling, including the need to ensure environmental justice, Tribal groups, labor, and equity groups have the resources necessary to participate in the RGGI process, including to weigh in on modeling assumptions and approach. This includes, but is not limited to, the mapping exercise proposed by RGGI, Inc. similar to the New Jersey model. Participants should be able to discern covered entities, co-pollutants, air quality monitoring, emissions reductions, and other factors as simply and reasonably as possible.

Impacts of the IRA must be included in all RGGI modeling. The climate provisions in the IRA range from \$369 billion on the low end (as detailed by the [Congressional Budget Office](#)) to over \$1.2 trillion on the high end ([Goldman Sachs](#)). Accordingly, those tax credits and incentives should be included by RGGI in the reference case. Four incentives are particularly important:

- Production Tax Credit (PTC): New onshore wind and solar that begins production between 2023-2027 receives a credit of \$22.5/MWh for the first 10 years of production.
- Investment Tax Credit (ITC): 27% for clean resources 2023-2027, reduced to 9% in 2038 and onward (this does not include eligible bonus credits of domestic content and energy communities at 10% each).
- 45U / Nuclear Incentive: Economic retirements are prohibited until 2033.
- 45Q / CCS: New gas and carbon capture and sequestration that comes online by 2037 receives a credit of \$85/ton for the first 12 years of operation. This is not applied as a retrofit for existing facilities.

The overall effect of these incentive programs is to significantly reduce the cost born by RGGI states to reduce carbon emissions from the electricity sector. As such, effectively capturing the potential impact of these projects on cost and deployment of carbon-free electricity is essential. We also know that these projections are highly uncertain; as such, RGGI, Inc. should prioritize review of a wide range of impacts of the IRA.

Modeling a range of potential allowance supply scenarios is essential: The three modeled cap trajectories proposed in the reference case are a useful starting place for understanding the impact of allowance supply on emissions reductions and cost over time. We propose keeping two of these modeled caps and adding a third scenario focused on near-term ambition aligned with the U.S. NDC. Each proposed cap scenario is discussed in further detail below:

- BAU flat cap post 2030: This allowance supply scenario is inconsistent with achieving the power sector reductions consistent with the U.S. NDC and many RGGI states' own climate targets, or with deeper post-2030 pollution cuts on a trajectory toward net-zero emissions by mid-century. As such, we propose eliminating this option (or if necessary, keeping it and

¹ See https://www.rggi.org/sites/default/files/Uploads/Program-Review/2021_Comments/Session2/PA_Frontline_Communities_Public_Comment_2021-11-29.pdf.

adding additional scenarios) to enable focusing on a wider range of allowance supply scenarios.

- Extend current cap reduction rate to 2040: As with the current trajectory, this allowance supply scenario is inconsistent with the U.S. NDC and many RGGI states' own climate targets. However, we believe results from this reference case can help identify the change in cost and emissions reductions between no additional reductions post-2030 and sustained, linear reductions as proposed in this scenario.
- Zero by 2040 (and zero by 2040 starting in 2026 instead of 2030): This allowance supply scenario is significantly more ambitious than the first two, requiring deeper pollution cuts before 2030 on a trajectory toward zero emissions in 2040. We support modeling achieving zero emissions by 2040 and believe this is a useful case; however, we also note that this scenario is not likely to prioritize near-term power sector reductions needed to be consistent with the U.S. NDC and many states' economy-wide emission reduction targets. As analysis by [EDF](#) and [other researchers](#) has noted, power sector reductions of approximately 80% by 2030, relative to 2005 levels, are likely necessary to achieve 50% economy-wide reductions by that date.
- 80% by 2030 and zero by 2040 starting in 2026: A significant body of evidence suggests an 80% cut in power sector emissions by 2030 is necessary to achieve a 50% economy-wide cut by 2030 and align with the U.S. NDC. [Modelling of IRA impacts at the national level](#) has shown that an 80% reduction in power sector emissions compared to 2005 is a potentially cost-effective outcome. An 80% reduction is also [consistent with achieving the US NDC](#). Moreover, with existing state-level pollution cuts including New York's Climate Leadership and Community Protection Act (CLPCA) requiring zero-emissions in the power sector by 2040, and Massachusetts requiring 70% reductions in the power sector by 2030 (relative to 1990 levels), an appropriate upper bound cap for RGGI to consider as part of the reference case modeling is 80% reduction by 2030. This cap would also [align](#) with the Biden Administration's 80% clean electricity by 2030 on the way to 100% clean electricity by 2035 [goal](#).

Gas prices are key: Natural gas price impacts are one of the most crucial elements of modeling and assumptions. A broad range of pricing assumptions from the Annual Energy Outlook (AEO) are important to capture the potential cost and clean electricity deployment impacts of different natural gas prices. Additionally, given the spike in natural gas prices after the onset of war in Ukraine, sensitivities and analysis should be conducted to better understand the cost and pollution vulnerabilities RGGI states face with exposure to the natural gas market. The reference case should allow for a broad range of natural gas price inputs.

Additional Assumptions and Reference Cases to Consider

Analyze impacts of leakage mitigation: RGGI, Inc. should evaluate and better understand the impacts of leakage on emissions and costs in the RGGI region, and how mitigation strategies could increase integrity of the regional cap. To that end, the reference case should incorporate leakage and potential mitigation into modeling, considering possible solutions such as placing all electricity delivered in RGGI states under the cap, a carbon price on electricity imports, or other policy options.

Evaluate the impact of allowance supply on price: The reference case modeling should begin to consider the impact of greater stringency on allowance prices. Based on initial analysis performed by FACETS and supported by EDF, we have good reason to believe that IRA incentives mean that substantially increased cap stringency can be achieved without significant cost implications. The reference case should be used to help answer whether there is value in the certainty created by the cap that impacts allowance prices in a meaningful way, and if so, at what point along the way in achieving the cap price impact is determinative.

Deepen assessment of potential impacts of expanding RGGI participation: Understanding the impact of legacy RGGI states, as well as the impact that possible RGGI expansion in case other states in the region consider joining, would be a valuable addition to current modeling cases. Relatedly, RGGI should evaluate whether and how it might consider possible linkage to other carbon markets.

Consider Options for Incorporating Complementary State-Level Policies: RGGI should evaluate the impact of more ambitious state power sector policies – including limits on CO₂ pollution – on the RGGI market. The breadth and diversity of RGGI states are sources of strength for the program. However, given that some states have complementary pollution reduction laws and policies, RGGI should consider market designs that would accommodate the intended climate solutions associated with those more ambitious policies, such as modifying allowance supply to align with them.

Consider Modeling a Proxy for Proposed Federal Carbon Pollution Standard: EPA is expected to propose federal carbon pollution standards for power plants in spring of 2023. These standards will have implications for RGGI in terms of leakage, natural gas prices, generation mix, emissions, and more. RGGI, Inc. should consider whether it is feasible on its proposed modeling timeline to include a federal carbon pollution standard in some of its modeling runs to shed light on these issues, and if so should estimate the impacts this standard may have on different scenarios.

More modeling runs: The more modeling runs that are provided in the reference case, the better our understanding will be of differences between each case. This is particularly true in appropriately baselining sensitives like natural gas prices, leakage mitigation, cost, and stringency of the modeled cap. We also believe that modeling different scenarios for coal retirement schedules (i.e. low, moderate, and high retirement projections) could be informative. We encourage RGGI to model as many cases and incorporate as many runs with associated sensitivities for each case as is feasible to deepen our understanding of the value of various policy cases under a wide range of potential future conditions.

Conclusion

The energy landscape in the RGGI states is likely to change considerably in the latter half of this decade and into the 2030s. Achieving the level of emissions cuts needed to meet or even approach the US contribution indicated by the Intergovernmental Panel on Climate Change (IPCC) will require states to limit pollution from the power sector, prioritizing near-term action to achieve deep reductions by 2030 and increase cumulative emission reductions of CO₂, which will contribute to ongoing atmospheric warning for centuries.

Given that need, it will be important for stakeholders to be able to evaluate ways RGGI Inc. will operate over the next twenty years to meet those needs. We urge RGGI, Inc. to consider the full

range of scenarios as it conducts modeling for the upcoming Program Review. Although there are many components of modeling the reference case for the Third Program Review that differ from and are less certain than previous Program Reviews, regional- and state-level ambition remain essential to securing long-term decarbonization targets.

Finally, as equity and justice receive appropriate attention in environmental policymaking, they compel RGGI, Inc. to fully consider the interests of communities that have not been well-served by the energy policy of the past. Doing so can help inform the way the RGGI states – and carbon pricing more broadly – can better meet the needs of environmental justice communities.

Thank you for the opportunity to provide our feedback on the reference case, and we look forward to contributing our expertise and perspective as Program Review progresses this year.

Alex DeGolia, Director, State Climate Policy, US Region
Environmental Defense Fund