April 9, 2018

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VIA ELECTRONIC SUBMISSION

Subject: Comments on Virginia's proposal to join the Regional Greenhouse Gas Initiative

Dear Ms. Sabasteanski:

The Institute for Policy Integrity at New York University School of Law[1] ("Policy Integrity") respectfully submits the following comments on Virginia's proposal to join the Regional Greenhouse Gas Initiative (RGGI).[2] Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity regularly conducts economic and legal analysis on pricing of greenhouse gas emissions, among other environmental and economic topics.

Including Virginia energy producers in RGGI will greatly expand the scope of the market, improving market efficiency, competitiveness, and lowering carbon abatement costs. Policy Integrity offers the following comments on Virginia's proposal to join RGGI:

- The Virginia Department of Environmental Quality should provide a thorough discussion of the forecast of state CO_2 emissions to help the public assess whether the initial permit allocation will match Virginia's expected emissions;
- Adding Virginia electricity generators to RGGI will improve electricity market efficiency. Virginia's State Corporation Commission should ensure that regulated power producers do not receive a windfall from Virginia's unique consignment auction process.

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[1] No part of this document purports to present New York University School of Law's views, if any.
[2] Proposed Regulation, Regulation for Emissions Trading Programs (adding 9VAC5-140-6010 through 9VAC5-140-6430), 34 Va. Reg. Regs. 924 (Jan. 8, 2018).

Introduction

By joining RGGI in 2020, Virginia will take an important step toward internalizing the environmental externality caused by emissions of carbon dioxide. Virginia will also substantially expand the scope and market size of RGGI, helping to improve market competitiveness and trading efficiency. Joining RGGI will likely also reduce the cost of CO_2 abatement by allowing the marginal cost of abatement to equilibrate across a larger set of emitters. The result will be a lower marginal cost of abatement, which will enable RGGI states to meet carbon emission reduction goals more cost effectively.

Reducing carbon dioxide emissions provides important economic and environmental benefits, as Virginia has shown in its cost-benefit analysis of the proposal to join RGGI. In that proposal, Virginia correctly calculated the value of joining RGGI by using the Interagency Working Group (IWG) Social Cost of Carbon to calculate the benefits of reduced carbon pollution.[3] The Social Cost of Carbon measures and monetizes the damage that results from emission of a ton of CO_2 into the atmosphere. The IWG's 2016 Social Cost of Carbon estimate is the best available consensus estimate for the external cost of CO_2 emissions.[4] IWG's methodology has been repeatedly endorsed by reviewers. In 2014, the U.S. Government Accountability Office concluded that IWG had followed a "consensus-based" approach, relied on peer-reviewed academic literature, disclosed relevant limitations, and adequately planned to incorporate new information through public comments and updated research.[5] Leading economists and climate policy experts have endorsed the Working Group's values as the best available estimates.[6] Also, in 2016, the U.S. Court of Appeals for the Seventh Circuit held that the Department of Energy's reliance on IWG's Social Cost of Carbon was reasonable.[7] Therefore, Virginia's decision to use the IWG Social Cost of Carbon to value the benefits of reduced carbon pollution is both reasonable and appropriate.

The details of how Virginia integrates itself into RGGI have the potential to affect the aggregate emissions, compliance costs for polluters in other states, and the competitiveness of generators in Virginia. Thus, some of the specific aspects of Virginia's

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[3] Economic Impact Analysis, Virginia Department of Planning and Budget, Town Hall Action/Stage: 4818 / 8130 (December 13, 2017), *available at* http://www.townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\1\4818\8130\EIA_DEQ_8130_v2.pdf (last visited April 6, 2018)

[4] For more on the Interagency Working Group on the Social Cost of Greenhouse Gases, its SCC, estimates, and the SCC's applications in state policy, *see* Iliana Paul et al., Institute for Policy Integrity, The Social Costs of Greenhouse Gases and State Policy 9-12 (2017), *available at* http://policyintegrity.org/files/publications/SCC_State_Guidance.pdf.

[5] Gov't Accountability Office, *Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates* 12-19 (2014). Available at http://www.gao.gov/assets/670/665016.pdf.

[6] See, e.g., Richard Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 Science 655 (2017); Michael Greenstone et al., *Developing a Social Cost of Carbon for U.S. Regulatory Analysis: A Methodology and Interpretation*, 7 Rev. Envtl. Econ. & Pol'y 23, 42 (2013); Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 Nature 173 (2014) (co-authored with Nobel Laureate Kenneth Arrow, among others).

[7] *Zero Zone,* 832 F.3d at 679.

proposal warrant careful attention to ensure that the highest possible welfare gains are achieved. In particular, Virginia should carefully estimate the number of permits offered and should ensure that the consignment auction process is truly revenue neutral for regulated power producers in the state.

The Virginia Department of Environmental Quality should provide a thorough discussion of the forecast of state CO_2 emissions to help the public assess whether the initial permit allocation will match Virginia's expected emissions.

When Virginia joins RGGI, the total emissions regulated by RGGI will rise by over 40%.[8] Thus, the choice of Virginia's emissions cap will substantially affect the total number of allowances available at each auction and may have a large effect on the stringency of the RGGI cap. Changing the stringency of the RGGI cap will, in turn, affect future permit prices, affecting all participants in RGGI auctions. In particular, power plants in other states will be able to purchase permits at a lower price, leading to less abatement. Therefore, the achievement of environmental goals by RGGI will also be a function of Virginia's cap choice.

A new state joining RGGI could either increase or decrease the stringency of the total emission cap.[9] These comments focus on the negative consequences of a potential loosening of the cap. The RGGI price is currently below the socially optimal price for a ton of CO_2, and the price ceiling in RGGI is also below this level, so a less stringent cap would result in lower social welfare when compared to a tighter cap. If Virginia's cap is set relatively tight, leading to a lower total number of allowances than required to maintain the RGGI's stringency, then RGGI permit prices will increase, possibly even hitting the price ceiling. This would not constitute an inefficiency from a social point of view. In 2020 the Social Cost of Carbon—the value for the external damage that occurs per ton of CO_2 emitted and therefore the price that should hold in a cap and trade market to fully internalize the CO_2 pollution externality—will be $49 in current dollars.[10] Even if the generators were

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[8] This follows from comparison of the Virginia's proposed base budget of either 33 million or 34 million tons of CO_2 allowances to RGGI's total carbon budget for 2020. *See* Proposed Regulation, Regulation for Emissions Trading Programs, *supra* note 2, at 927 and Regional Greenhouse Gas Initiative, 2016 Program Review: Principles to Accompany Model Rule Amendments, available at https://www.rggi.org/sites/default/files/Uploads/Program-Review/12-19-2017/Principles_Accompanying_Model_Rule.pdf.

[9] "Stringency of the cap" refers to how tightly the cap on emissions binds for all of RGGI. If the cap on emissions binds, then emissions allowances are scarce and they trade with a positive price. The stringency of the cap determines how scarce the allowances are. An increase in the stringency of the cap would push the price of allowances up, potentially to the price ceiling. A decrease in the stringency of the cap would make allowances less scarce, leading to a drop in the permit price. If the price drops all the way to the price floor, then the emissions cap would not be binding.

[10] U.S. Interagency Working Group on the Social Cost of Greenhouse Gases (IWG), "Technical support document: Technical update of the social cost of carbon for regulatory impact analysis under executive order 12866 & Addendum: Application of the methodology to estimate the social cost of methane and the social cost of nitrous oxide" (2016; https://obamawhitehouse.archives.gov/omb/oira/social-cost-of-carbon), *at* 16. Prices have been updated to 2016 dollars using the Consumer Price Index.

paying the full Cost Containment Reserve (CCR) Trigger Price, which in 2020 will be equal to $10.77, the permit price would still be too low to fully internalize the externality caused by carbon emissions.[11] By the same token, depressing the allowance price by decreasing the stringency of the cap would lower social welfare.

If Virginia chooses to issue allowances for more emissions than its generators would emit under a business-as-usual scenario (in other words, the "counterfactual emission level"), this will loosen the emission cap for all of RGGI.[12] Unless allowance prices are at the price floor, the price will go down, causing the aggregate emissions to increase compared to a scenario where Virginia does not join RGGI.[13] A fall in the permit price will also decrease the revenue that the other states receive from RGGI auctions. The magnitude of those adjustments will depend on the magnitude of the changes in RGGI's cap.

For a decrease in total emissions to happen, the number of permits issued in Virginia must therefore be set below the Virginia's counterfactual emission level. To achieve that goal, a reliable prediction of the future emissions path is required. However, various future developments that can swiftly and significantly affect Virginia's emission levels are highly uncertain, for example the rate of fossil fuel retirements and the additions of carbon-free renewables.[14] The Virginia Department of Environmental Quality (DEQ) should provide a thorough discussion of their forecast of state CO_2 emissions to help assess the likelihood that the Virginia permit allocation will be too high (or too low). Currently, little information is available about the assumptions underlying the forecasts[15]   Based on DEQ's predictions, Virginia's proposal is to set the CO_2 base budget at 33 or 34 million allowances (while putting an additional 3.3 to 3.4 million CO_2 allowances into the Cost Containment Reserve).[16] This proposal might turn out to be too generous, even when future declines in the budget are considered. For instance, Joint Stakeholder Comments submitted to RGGI (by, among others, Arcadia Center, Natural Resource Defense Council and Sierra Club)

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[11] Proposed Regulation, Regulation for Emissions Trading Programs, *supra* note 2, Table 140-1A at 933.

[12] As Virginia issues more permits than its generators would use in absence of any regulation, the demand for permits in Virginia will be less that the number of allowances. Consequently, the "surplus" permits occur in the amount equal to the difference between the cap and the Virginia emissions under business-as-usual scenario.

[13] This follows from laws of supply and demand – as permits' supply increases, their price will drop. See, e.g. PAUL KRUGMAN & ROBIN WELLS, MICROECONOMICS (Second ed. 2009), chapter 3.

[14] *See* Joint Stakeholder Comments Regarding Virginia's Potential Participation in RGGI Market (February 9, 2018), *available at* https://www.rggi.org/sites/default/files/Uploads/Participation/2018-01-26-Meeting/Comments/Joint_Comments_VA_Participation.pdf at 3-5. *See also* Comments on Virginia's proposal to join the Regional Greenhouse Gas, Initiative Institute for Policy Integrity (February 9, 2018) at 3-4, available at https://www.rggi.org/sites/default/files/Uploads/Participation/2018-01-26-Meeting/Comments/IPI_Comments.pdf.

[15] The emissions forecast is shown in the "Carbon Dioxide Trading Program (Rev. C17) Proposed Regulation" presentation by State Air Pollution Control Board http://www.deq.virginia.gov/Portals/0/DEQ/Air/GHG/C17-pro.pdf?ver=2017-11-20-153710-670 (Nov 16, 2017).

[16] As stipulated in Proposed Regulation, Regulation for Emissions Trading Programs, *supra* note 2, at 927.

suggest that 2020 baseline should be set in the range of 30-32 million short tons.[17] The choice of the initial budget needs a sound justification given its potential impact on the RGGI total pollution and the permit prices.

It is worth noting that the allowance price will decrease slightly even if Virginia sets the cap exactly equal to its counterfactual 2020 emissions or just below them. This effect operates through two channels. First, cheap, and until now untapped, pollution abatement possibilities may exist for Virginia's electricity generators that have already been implemented in the other RGGI states. Second, if the current RGGI cap is more restrictive for generators ("more binding") than the cap chosen by Virginia, the total effective cap will be less stringent than without Virginia joining the system.[18] However, the price decline will not be accompanied by an increase in total emissions compared to the scenario without Virginia's entry. Therefore, a falling permit price, by itself, will not be informative as to whether RGGI's expansion will decrease total CO_2 emissions.

As RGGI prices are already close to the reserve price, if Virginia enters RGGI with a loose state cap, this will increase the probability of the Emissions Containment Reserve (ECR) becoming operative.[19] In accordance with ECR, states can withhold up to 10 percent of the allowances in their base annual budgets in order to ensure additional emissions reductions if prices fall below the specified trigger prices.[20] As Maine and New Hampshire do not intend to implement the ECR and will thus not withhold allowances when the trigger price is reached,[21] this will create redistributional effects between the states.[22]

To maximize the gains to market efficiency from the addition of Virginia generators, Virginia should verify, to the extent possible, that the consignment auction process is revenue neutral

Adding Virginia electricity generators to RGGI will improve market efficiency for current RGGI-participating states and will help Virginia cost-effectively meet its carbon pollution reduction goals. Because of the unique consignment auction mechanism being used to

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[17] Joint Stakeholder Comments Regarding Virginia's Potential Participation in RGGI Market (February 9, 2018), *supra* note 13.

[18] For example, if in 2020 Virginia issues permits covering 100% of its emissions but other RGGI states auction off permits worth 97% of the counterfactual emissions, the total system would have permits equal to roughly 97*0.6 + 100*0.4 = 98 percent of emissions.

[19] The most recent RGGI permit auction settled at $3.80. *See*, Regional Greenhouse Gas Initiative, *Auction 38*, (Feb. 4, 2018), https://rggi.org/auction/38.

[20] Regional Greenhouse Gas Initiative, 2017 Model Rule, available at https://www.rggi.org/sites/default/files/Uploads/Program-Review/12-19-2017/Model_Rule_2017_12_19.pdf

[21] Regional Greenhouse Gas Initiative, 2016 Program Review: Principles to Accompany Model Rule Amendments, *supra* note 2.

[22] Assuming that all other states participate in the ECR symmetrically, the Maine and New Hampshire will increase their share in the total permit revenues.

distribute conditional allowances and RGGI proceeds in Virginia, the Virginia State Corporation Commission should ensure that all participants in RGGI are on an equal playing field to maintain market efficiency. One concern with the consignment auction is that some power generators in Virginia might be able to keep the revenue disbursed by RGGI, while, ideally, the consignment process should be revenue neutral for all compliance units.

Regulated power producers in Virginia will be required by the Virginia State Corporation Commission to pass all revenue from RGGI auctions on to state electricity consumers. The State Corporation Commission will be in charge of verifying that the consignment auction is indeed revenue neutral for those units.[23] Vertically integrated utilities could potentially gain revenue from the auctions by substituting RGGI-derived revenue for other customer support payments that they are currently making or plan to make.

For instance, if a state-regulated utility has a program to promote customer energy efficiency, then the utility could potentially remove that program and replace it with a program funded by revenue from the RGGI auctions. In that case, the producer would effectively receive a revenue windfall. A similar situation could occur if a power generator was already planning to pay for a customer support program but chooses to fund the program using RGGI auction proceeds rather than another funding source. Like the above example, if the generator chooses not to follow through on the original plan, then the revenue from RGGI would not result in truly additional customer support and the generator would receive a windfall relative to what it would receive in the absence of RGGI participation. In principle, only newly conceived customer support programs should be funded using RGGI revenue to ensure that the support is additional to any other support that the generator might have offered. The State Corporation Commission will need to be proactive in protecting Virginia consumers to prevent behavior by generators that results in windfall revenue.

Windfall revenues would place the producer at a long-run competitive advantage relative to electricity generators that participate in RGGI but that do not receive revenue from the auctions. Because conditional permits will be allocated based on electricity generation rather than CO_2 emissions, clean generators could even see their profits increase if they manage to receive revenue from RGGI.[24] This could happen for a generator that receives more conditional allowances than it needs to buy from RGGI to cover its own emissions, consequently receiving more revenue from RGGI than it spends at RGGI auctions.

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[23] Michael G. Dowd, Virginia DEQ, Virginia Executive Directive 11 and Proposed Virginia Carbon Dioxide Trading Rule (Jan. 26, 2018), available at https://rggi.org/sites/default/files/Uploads/Participation/2018-01-26-Meeting/VA_Presentation_2018_01_26.pdf.

[24] Proposed Regulation, Regulation for Emissions Trading Programs, *supra* note 2, *at* 947.

If non-regulated, private generators in Virginia subject to the proposed regulation do not have a revenue neutrality requirement, those generators will receive a revenue windfall in the form of proceeds from RGGI auctions.[25] Some of the cleanest private resources might even experience a profit windfall. As a consequence, this might create a competitive advantage for private generators over the regulated resources located in Virginia. This could send incentives for new private power generation to locate in Virginia rather than neighboring RGGI states.

However, even if these generators receive revenue from the auction, joining RGGI will improve market function relative to the current *status quo*. Right now, emitting generators in Virginia are receiving an implicit subsidy, as they are not paying for the environmental damage caused by their emissions. Internalizing this externality will eliminate the perverse incentives for high emitting generators to locate themselves in Virginia relative to other RGGI states.

The pass-through of the permit price from generators to customers will ultimately determine the extent to which generators themselves face the incentive to reduce carbon emissions. If the State Corporation Commission allows generators to increase their electricity rates in response to the costs of purchasing RGGI permits, then consumers will face an incentive to reduce their electricity consumption and invest in energy efficiency. At the same time, higher energy prices may slow down the rate of electrification of the automotive and heating sectors. To the extent that the State Corporation Commission wants the incentive for abatement of CO_2 to fall on the generators, it should work to limit the pass-through of permit prices to consumer electricity prices—either through limits on the approved rate increases by regulated generators or through volumetric rebates of RGGI proceeds to consumers. Similarly, if Virginia has a goal of increasing electrification of other sectors of the economy, it should prevent pass-through of permit prices to consumer electricity prices.

Importantly, electricity generators in Virginia will be incentivized to reduce CO_2 emissions whether or not the consignment auction is fully revenue neutral. A requirement to hold a permit for each ton of CO_2 emitted provides a marginal incentive to reduce emissions. This marginal incentive to abate will be present regardless of whether generators receive lump-sum revenue from RGGI. The RGGI-derived revenue would affect the long-run profitability of the generators if it is not fully distributed to consumers, so over time higher or lower emitting generators might be more likely to enter or exit the market. However, the marginal incentives to abate will be realized as long as the requirement to hold a permit to emit is in place. Moreover, were Virginia not to place any price on carbon, it would impede

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[25] All private producers who qualify under Proposed Regulation, Regulation for Emissions Trading Programs, *supra* note 2, *at* 938.

efficient market operation by implicitly subsidizing fossil power generators in the state. Therefore, including Virginia in the RGGI trading program will help improve market function and promote a level playing field between generators.

The way in which the revenue from the consignment auction is passed to consumers—for instance, volumetrically (based on electricity consumed), as a fixed payout notwithstanding energy consumption, or through energy efficiency programs—will also have important implications for environmental outcomes and final energy demand. If the consignment auction revenue is passed to consumers on a volumetric basis, consumers will see a lower per-kilowatt hour price for electricity, reducing the incentive to pursue energy efficiency but also preserving the incentive for electrification.[26] The design of the respective regulation needs to balance those trade-offs, considering Virginia's long-term goals.

Finally, the consignment auction mechanism also creates different incentives among the generators inside Virginia. Because the permit allocations and updates are based on net electricity output, the cleanest fossil fuel plants will have an extra incentive to expand their electricity generation compared to higher emitting generators. This added incentive should make the Virginia generation fleet even cleaner, leading to quicker decreases in emissions. In sum, adding Virginia generators to RGGI will increase environmental quality and improve market efficiency.

Respectfully submitted,

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[26] *See, e.g.* SAMUEL A. NEWELL ET AL., PRICING CARBON INTO NYISO'S WHOLESALE ENERGY MARKET TO SUPPORT NEW YORK'S DECARBONIZATION GOALS (2017) (showing that (i) in the context of New York State, a carbon charge on electricity generation would potentially raise prices for customers, affecting demand for energy efficiency as well as electrification, and (ii) that the price change and consumer response can be affected by whether the revenue from the policy is returned to customers volumetrically or lump sum).