

April 9, 2018

Comments for Virginia on the CO2 Budget Trading Program

Dallas Burtraw

Prepared in response to Public Notice regarding the
Carbon Dioxide (CO2) Budget Trading Program, Part
VII of 9VAC5-140 (Regulation for Emissions Trading)

1616 P St. NW
Washington, DC 20036
202-328-5000 www.rff.org





RESOURCES
FOR THE FUTURE

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Submitted by:

Dallas Burtraw, Resources for the Future, 1616 P Street, Washington DC 20036
202-328-5087 / burtraw@rff.org

These comments respond to the invitation for comments in the Public Notice regarding the Carbon Dioxide (CO₂) Budget Trading Program, Part VII of 9VAC5-140 (Regulation for Emissions Trading). The comments address the following topics:

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1. Consignment Auction Design in Virginia

Virginia’s proposed regulation will distribute most of its allowances to compliance entities without charge. However, the allowances have conditional value that cannot be realized and the allowances cannot be used for compliance until they have been submitted on consignment to auction for sale. The state proposes to link with the Regional Greenhouse Gas Initiative (RGGI) and the consignment to auction would be integrated as part of the RGGI auction.

The compliance auction is a good option for Virginia if the state decides that it cannot directly auction allowances. Under the compliance auction, Virginia compliance entities that were the original holders of the conditional allowances will receive the auction value of their consigned allowances, once sold, in proportion to their original allowance shares. Those entities can purchase the allowances they need for compliance in the auction or in the secondary market.

Virginia’s consignment auction is not unique. Previous experience with consignment in emissions markets include the sulfur dioxide trading program established under the 1990 Clean Air Act

Amendments. In that program the emissions allowances were initially distributed without charge to compliance entities, but those entities were required to submit a fraction of their allocation under consignment to an auction held by the Environmental Protection Agency. In retrospect, economists describe that consignment auction as an important element of the overall program's marked success. Currently, the Western Climate Initiative runs an auction that is very similar in its basic design to the RGGI auction. In that auction, allowances that have been initially distributed to investor-owned utilities in California must be consigned for sale in the auction, with the revenue returned to the utilities on a proportional basis. The California auction also has a price floor and a cost containment reserve, and the program has worked without a problem.

This approach, with Virginia compliance entities required to consign their allowances to the RGGI auction, should integrate seamlessly with the existing auction in which allowances are submitted for sale by the RGGI states. The auction outcome does not depend on whether the sold allowances are submitted by a state or if they are submitted by a compliance entity through consignment. From the perspective of other buyers and sellers including the other RGGI states, the auction works equally well in either case.

It is useful to note that consigned allowances from compliance entities in Virginia will also work seamlessly with other features of the RGGI program. The consignment auction approach in Virginia is a valuable feature of the state's program design because it enables the price floor, the emissions containment reserve (ECR), and the cost containment reserve (CCR), which are elements of the RGGI program, to function seamlessly with respect to the aggregate supply of allowances, including both the consigned and state-held allowances. The consigned allowances will be indistinguishable from state-held allowances in the auction, and these auction mechanisms will affect all the allowances in the same way. The same price floor and price points for the emissions containment reserve and the cost containment reserve can apply to the consigned and state-held allowances in like fashion.

The consignment approach in Virginia will exhibit several virtues. The consignment approach is transparent, in that all observers can witness the original holders of the allowances, as well as the flow of revenues back to the original allowance holders. This transparency has value to Virginia regulators and it enables evaluation of market performance that is regularly conducted by the RGGI market monitor.

Moreover, the consignment approach in Virginia creates a program design in the state that could seamlessly segue to a revenue raising auction if the state were to choose to move in that direction in the future.

2. The Distribution of Allowances as a Share of Electricity Output on an Updated Basis

The Regulation for Emissions Trading describes a CO₂ allocation methodology to distribute allowances among compliance units based on their share of total electrical output across all units that are eligible to receive an allocation. This approach, sometimes called "updating output based allocation," has been used in previous emissions trading programs including by some of the states in the nitrogen oxide (NO_x) budget program in the eastern U.S. This approach provides an ongoing incentive to reduce the emissions intensity of electricity generation. In this regard, it is far superior to an approach that would distribute the emissions allowances across compliance entities based on a static, historic measure of emissions or heat input. The proposed approach aligns incentives associated with the award of allowances with the overall program goals and can be expected to improve the cost effectiveness of the program.

An important motivation for using updating output based allocation is that it provides a production incentive, because the greater the production at a facility the greater the share of the emissions budget that would be awarded to that facility. Detailed simulation modeling using the Haiku model at Resources for the Future has shown that this approach to allocation can mitigate potential leakage of electricity generation from the state.¹ The term “leakage” refers to the potential decrease in generation in the state, with an associated increase in generation outside the state, due to the costs imposed by regulating CO₂ emissions. Because updating output based allocation provides an incentive to increase generation, it helps to mitigate leakage. Consequently, this choice of allocation method helps protect economic interests in the state while helping to achieve environmental goals. It also works well with the consignment auction.

3. Distribution and Use of Revenue under the Consignment Auction

As noted above, under free allocation with a consignment auction, the Virginia compliance entities that were the original holders of the conditional allowances will receive the auction value of their consigned allowances, once sold, in proportion to their original allowance shares.

Because most compliance entities are owned by companies regulated by the state, the value of the consigned allowances would contribute to meeting the revenue needs and thereby benefit electricity consumers. To strengthen this relationship between the source of revenues and their use, the state might require that some portion of the allowance value be invested in program-related efforts such as energy efficiency or renewable energy.

In Virginia, the value of consigned allowances returns to regulated companies, and because of state regulatory oversight that value is expected to accrue to the benefit of rate payers. This outcome is somewhat similar to the practice in some other RGGI states such as Maryland, where a portion of allowance value has been returned on the electricity bill. In the future, if the program were to become substantially more stringent either as a regional program or as a model for a national program, the return to rate payers would be more substantial. However, if the value reduces the consumer’s monthly electricity bill, then from the perspective on consumers, their cost of electricity would appear to not reflect the carbon price. In turn, this would deny consumers the information they need to make decisions about energy-efficient investments in household appliances and in their regular electricity consumption. As a result, the regulation may have minimal effect on overall electricity demand.

An alternative to returning the value of consigned allowances to the rate base and thereby reducing monthly consumer bills would be to return the value to electricity consumers on an equal and periodic (i.e. six month) per-customer-account basis. This way consumers would see higher prices in most months, reflecting the value of allowances, thereby providing an incentive to conserve energy. Periodically, they would receive a dividend that preserves distributional goals and provides a program feature that is likely to be popular with recipients, which in turn builds constituent support for the program.

¹ See “Using Production Incentives to Avoid Emissions Leakage,” 2017 (Dallas Burtraw, Karen Palmer, Anthony Paul and Hang Yin), *Energy Economics*, 68: 45-56; and, “A Proximate Mirror: Greenhouse Gas Rules and Strategic Behavior under the US Clean Air Act,” 2015 (Dallas Burtraw, Karen Palmer, Anthony Paul and Sophie Pan), *Environment and Resource Economics*, 62 (2): 217-241.

4. The Role for Directly Auctioning Allowances

The consignment auction preserves many of the benefits of a direct auction of allowances by the state or the Department of Environmental Quality; however, a direct auction has further advantages. A revenue-raising auction would provide state agencies with financial resources to make investments in carbon mitigation, to address distributional goals, or to address the consequences of a changing climate. Public finance economists suggest that in the long-run, great value is associated with a tax swap, with revenues from the carbon price used to reduce other taxes in the state and thereby to help attract economic activity to the state. Another option would be to use revenues to provide dividends that directly compensate households as the common property owners of the atmosphere. The state of Virginia should consider an approach that would directly auction allowances to raise revenue to address these pressing needs to address the challenge of climate change.

5. Emissions and Cost Containment in the Trading Program

Two important elements of the RGGI program are provisions to contain emissions and/or costs when changes in electricity markets lead to outcomes that are unanticipated. The emissions containment reserve constrains the quantity of allowances that would be sold in the auction when the auction price falls below a specific level. At an even lower price level, the price floor provides an absolute minimum price for the sale of allowances. As a complement, the cost containment reserve makes allowances available in addition to the intended cap if the auction price rises to a specific level. Together, these features make the supply schedule for emissions allowances responsive to the equilibrium price in the auction, which is a characteristic of commodity markets in general, but rare in environmental markets. Among other effects, this design helps to reduce price volatility in the allowance market.

Empirically, the more important of these provisions is the emissions containment reserve (and the price floor) because experience in emissions markets around the world shows a consistent tendency for prices to fall below expected levels. The emissions containment reserve automatically restricts the supply of allowances if the cost of emissions reductions falls importantly, and the cost containment reserve automatically expands supply if the cost increases. This feature helps boost confidence in the allowance market and reinforces the goals of the trading program in a transparent way by reducing emissions automatically when it is unexpectedly inexpensive to do so.

6. Market Dynamics and the RGGI Auction Bid Limitation

The RGGI auction has a bid limitation that limits the share of allowances that any one entity can purchase to 25 percent of all allowances that are sold. This bid limitation is a feature to guard against potential manipulation of the auction or the allowance market. When Virginia links to the RGGI program, the bid limitation in the auction might not make it possible for all the Virginia compliance entities to rely strictly on the auction to acquire their necessary allowances if they chose to do so. Virginia should work with RGGI to amend this rule by expanding the size of the bid limitation such that every entity has the possibility of relying on the auction for compliance. A change from 25 percent to 30 percent should be adequate. That change would be modest, and making that change will not create a meaningful possibility for market manipulation, because still, no single entity would constitute a sufficient share of demand in the auction to exercise strategic behavior. Further, the largest compliance entities in Virginia operate under cost-of-service regulation, unlike many other firms in the RGGI market that are independent power producers. A regulated company would not have the same potential incentive for possible manipulation as would competitive companies because advantageous rewards would be expected to flow to rate payers rather than shareholders; this may lessen the incentive for

strategic behavior and mollify potential concern. Nonetheless, the RGGI market monitor should remain vigilant about market disruptions due to manipulation or strategic behavior; however, the concentration in the market held by the largest entity after Virginia begins to participate in RGGI is not sufficient to increase that concern and the expanded size of the market overall should reduce concern.

7. Considerations in Setting the Base Budget

Given that Virginia's regulatory design is very complementary to the RGGI program, the only substantial issue deserving attention by all parties is the relative emissions budgets of Virginia and RGGI when Virginia enters the program. Virginia and the RGGI states will want to look for the right balance among costs incurred by all the states. Indeed, one of the reasons why the states conduct modeling is to anticipate this type of issue and plan for eventualities. Virginia and RGGI's actions to date to model this and explicitly address forecasted emissions is the right process to provide analysis that can support decisions that enable the reduction of emissions on a broad regional basis. However, the assumptions in the modeling will directly influence the results and it appears that the scenarios that were modeled took a very cautious approach, meaning that they lead to forecasts for emissions that are greater than are likely to occur.

Several factors should be considered in this decision. One is the expectation for electricity demand. On a national basis, the demand for electricity fell during the Great Recession but it has remained nearly level since then, reflecting a decreasing energy intensity of economic activity. In Virginia, demand has fallen and subsequently risen, where most of that rise has been associated with large data storage facilities. That increase is more than adequately represented in even the most modest forecast of demand growth by the Department of Environmental Quality.

A second factor is the emissions intensity of electricity generation in the state. Over recent years there has been a substantial growth in natural gas generation that has a lower emissions rate than coal. Much of the new natural gas has reduced imported power, but it has also reduced the use of coal for electricity generation in the state and that trend is expected to continue, and to result in the retirement of coal-fired capacity over the next few years. At the same time, a substantial growth in renewable energy resources is anticipated. Indeed, some of the companies associated with the recent growth in electricity demand for data storage are advocates of renewable energy and have pledges to their customers to link their consumption to expanded renewable generation.

In summary, these secular changes appear to indicate that the state of Virginia is on a pathway that will see declining emissions soon. At present, Virginia is considering two alternative annual base budgets of either 33 million tons per year or 34 million tons per year. The considerations I discuss point to the 33 million ton value for the base emissions budget; although a compelling case could be made that the budget could be lower still.

Summary

These comments address seven issues in the implementation of Virginia's CO₂ Budget Trading Program. I submit that the use of a consignment auction coupled with updating output based allocation for the initial distribution of emissions allowances is a strong design for the trading program. The value of allowances submitted to the consignment auction is expected to flow to the benefit of ratepayers, but as that value increases the state should consider separating the value from monthly electricity bills and return it to customers on an intermittent basis. There are additional benefits from directly auctioning allowances that could help the state address a variety of climate-related goals, and this should be

considered also. An especially important feature of the RGGI program design is the emissions containment reserve (and price floor), which Virginia should support. There is a provision in the RGGI auction design that limits the bid quantity by a compliance entity; this provision could be inconvenient for RGGI and should be considered further in collaboration with RGGI. Finally, I submit that the lower of the two emissions budgets is more appropriate given current trends in the industry in Virginia, and an even lower budget could be justified.

Thank you for the opportunity to share these views with the state of Virginia.

Sincerely,

A handwritten signature in black ink that reads "Dallas Burtraw". The signature is written in a cursive style with a long, sweeping underline that extends to the right.

Dallas Burtraw
Senior Fellow and Darius Gaskins Chair
Resources for the Future, 1616 P Street, Washington DC 20036
202-328-5087
burtraw@rff.org