**Comments on the proposal to change the emission trading rule to remove Virginia from participation in the Regional Greenhouse Gas Initiative**

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## *I. The agency's March 11, 2022 rationale for revising the rule does not provide a justification for revising the rule*

Summary: The information the document provides is incomplete, inconsistent with state law, or irrelevant to RGGI

EO-09 requires DEQ to provide the Governor with a report "re-evaluating the costs and benefits of participating in the Regional Greenhouse Gas Initiative, Inc. in view of all available data..." DEQ's March 11, 2022 response "in coordination with The Secretary of Natural and Historic Resources" fails to carry out the mandate in EO-09 and largely reports a limited set of observations that primarily serve as a smokescreen for making conclusory statements unsupported by the data in the document. Furthermore, the document carefully avoids making any estimates of the benefits that arise from Virginia membership in RGGI. In many respects, the data presented would likely lead most observers to conclude that staying in RGGI is the most beneficial outcome although the "conclusions" presented are the opposite.

It is a tedious but instructive exercise to go through the DEQ document and ask for each "conclusion" drawn, what data or analysis in the document support that conclusion. Many of the "conclusion" statements are unrelated to the content of the document or irrelevant to the question of the costs and benefits of Virginia remaining in RGGI. Most of the "conclusions" are either unsupported, irrelevant, or obviously wrong. I will also highlight areas where the report fails to address the potential benefits of RGGI.

For each conclusion given in the March 11, 2022 document, I have repeated the conclusion and provided my response just after. Virginia electricity data is from the US Energy Information Administration.

Conclusion 1: RGGI operates as a direct tax on households and businesses because all fees paid to the RGGI Board are passed through to the ratepayers per Virginia Legislation. Since the utilities are allowed to increase their rates due to the costs associated with their required participation in the RGGI auction process, there is little correlation to emission reductions. By design the utilities are not penalized for failure to meet RGGI CO2 emissions since they can pass on the costs to the ratepayers.

Response: The "direct tax" language is rhetorical fluff. Virginia policy limits the damages from $CO_2$-induced climate change (which Virginia law requires to be valued at the social cost of carbon) by restricting $CO_2$ emissions and requiring generators to purchase on the market the emission allowances needed to cover their emissions. This is the same mechanism that is used for fuel use by generators. To call this mechanism a direct tax is an odd use of the word, at best. The policy requires generating firms to purchase, at market prices, the limited number of

pollution allowances being made available. The pollution is being limited to protect the health and safety of Virginians. As described later, this is a well-documented strategy for minimizing the cost of achieving emission reductions. Do generations have to purchase fuel? Yes. Do they have to purchase the right to dump stuff into the air? Now they do.

The revenues from auctioning RGGI allowances are returned directly to Virginia families in two ways, for lower-income families to purchase energy efficiency improvements and for communities subject to increased flood risks due to climate change to invest in reducing future flood hazards. The revenues are not going to a "RGGI Board". A miniscule fraction of the revenues (a fraction of a penny per year) are used to operate this program.

The last part of this statement is not just misleading, it is inaccurate and in a very important way. The report claims (here and elsewhere) that, because RGGI allowance costs are passed through to electricity customers, the utilities lack incentive to reduce emissions. This is nonsense, and DEQ knows it. As a member of the PJM independent system operator, each Virginia utility must bid each day to sell electricity into the PJM grid interconnection. The bids that generators make for participating in the next day's generation must be close to the marginal cost of producing power. The main contributor to the marginal cost of generation is fuel costs. RGGI allowance requirements add an increment to the marginal cost of generation. For example, at a price for natural gas of $3/thous. cu. ft., modern natural gas plan in Virginia uses about $22 worth of gas to generate one megawatt hour. At $13/metric ton of $CO_2$, RGGI allowances add about $9 per MWh to the operation of a natural gas plant and coal adds just over $13 per MWh because of coal's higher emission intensity. The addition of the higher allowance cost for coal relative to natural gas gives a distinct advantage to natural gas over coal in the PJM day-ahead energy auction. Note that non-emitting resources such as solar, wind and nuclear have $0 cost for $CO_2$ emissions. In this way, RGGI pushes utility generation towards lower emitting generation regardless of whether the generator can pass through its operating costs.

Furthermore, to suggest that utilities won't care about costs because they can pass them through to consumers is a bit odd because this applies to fuel costs as well as other reasonable operating costs, which are, under Virginia law, passed through to customers. This would imply that utilities have no incentive to conserve on fuel costs. As DEQ knows, this is part of the regulatory contract in regulated utility states; it is why we have the State Corporation Commission auditing utility costs of generation. If our regulated utilities were to routinely choose to run coal plants when cheaper natural gas or solar plants were available, the SCC has authority to take corrective action to keep electricity rates from being raised unnecessarily. It is not true to say that, because utilities can pass through fuel costs, they have no incentive to keep fuel costs low. The same logic applies to emission allowances.

Conclusion 2: Consumers are unable to avoid the pass through of these costs because they do not have the opportunity to switch electric providers – Dominion and other providers are monopolies in most regions of Virginia.

Response: This statement is false. Consumers have many options for avoiding the passthrough of allowance costs. They can make more efficient use of electricity, they can use substitute technologies for providing energy services, they choose green power tariffs to avoid emission costs, or they can even generate their own electricity, as increasing numbers of households and

businesses are doing. Many of these responses require up-front capital investment, which is precisely why the General Assembly required that 50% of RGGI revenues be spend to help lower income families reduce their energy costs by improving energy efficiency.

Conclusion 3: Other states participating in the RGGI program designed their systems to provide rebates to their ratepayers, in Virginia the program operates as a hidden tax in which the legislature then disburses the funds through grant programs. Virginia consumers were originally told that the program would not increase their energy bills.
Response: Again, the "hidden tax" language is rhetorical fluff. There is nothing "hidden" about RGGI. Virginia has chosen to "rebate" its RGGI revenues via support to low income families and support for communities subject to increased flood risk. DEQ makes no attempt to examine why one or the other of these approaches would be better. That said, the General Assembly determined that this method would be the mechanism used in Virginia. If DEQ believes that this method is particularly damaging, then it should be under obligation to provide analysis demonstrating this. The document makes no effort at all to examine the relative impact of these alternative rebate mechanisms.

Conclusion 4: The original RGGI auction approach was designed to return the proceeds to the ratepayers but this was not how Virginia implemented the program. The original analysis, conducted prior to the adoption of RGGI by the legislature, showed little impact on electricity prices to the consumer because of the anticipated return of the proceeds to the ratepayers.
Response: This statement is true. The General Assembly had this information when it chose a different path. DEQ has provided no analysis as to why it disagrees with the conclusion of the General Assembly on this point.

Conclusion 5: The costs of compliance with the trading rule and participation in RGGI are materializing in higher electricity rates for all ratepayers, as identified in the Dominion rate case filings. The first of these rate increase requests by Dominion Energy has been approved and went into effect on January 1. Future rate increases due to RGGI are expected and will be tied to the allowance prices which are difficult to predict.
Response: Let's examine how RGGI allowance costs affect rates. As DEQ points out, average Virginia residential rates in 2020 were about $0.12/KWh (in $2020). For electricity generated with non-emitting sources, RGGI allowances add $0 to rates. In 2022, non-emitting generation amounted to 38% of generation and 26.5% of sales (sales includes imports). For natural gas, allowances at a price of $13/metric ton of $CO_2$ cost about $9/MWh or $0.009/KWh for electricity produced using natural gas. We won't include an analysis of coal, since it is disappearing as a fuel in the electricity sector, amounting to about 2.6% of electricity sales in 2022. Natural gas generated electricity, as a share of all electricity sales, fell from 53.4% in 2020 to 38.7% in 2022. (Note: natural gas as a share of *generation* in Virginia fell from 60.1% to 55.4%. Most of this decline can be attributed to increased solar generation.)

With this data, we can estimate that RGGI allowance costs will be needed to cover less than 50% of electricity sales. (Recall that the share of generation covered by allowances will fall each year as non-emitting generation increases. And imports do not have an allowance requirement.) This means that, a $13 allowance price translates to well less than $0.0045/KWh

for an average bill. RGGI prices have fallen somewhat from the high of $13.50 and now sit at $12.32 (all in $2022). As the cap declines, allowance prices may rise, although how much will depend on how rapidly non-emitting generation is added. At the same time, the fraction of generation needed to be covered by allowances will shrink accordingly. There is no reason to believe, *a priori*, that the net effect will be an increase in costs of emissions over time. In fact, in 2050, the cost of emission allowances will be close to zero because the allowance budget goes to zero. Much of the available modeling suggests that allowance prices may fall as the federal climate programs ramp up. In the past two years, since Virginia joined RGGI, utility-scale solar generation has reduced imports of expensive natural gas in the amount of $114 million and $257 million in 2021 and 2022 respectively. Being a member of RGGI adds incentives for increased additions of non-emitting generation in the future, which feeds back into future savings on both natural gas and emission allowances.

Conclusion 6: RGGI emissions allowance prices have increased over time and substantially in the last year. In fact, in Auction 54, the clearing price rose from $9.30 to the cost containment reserve trigger level of $13.00. The allowance price rose again slightly in Auction 55 to $13.50, an all-time high for the program. Future allowance price predictions will continue to be uncertain, but by design will continue to increase.
Response: There is nothing particularly inaccurate about this statement, although it is dated, as I have already noted. RGGI prices may indeed rise, as the cap on emissions falls over time. This result is not guaranteed. The reserve price in the RGGI auction is slated to rise over time, albeit slowly. What happens to the market price depends on the interplay of emission reductions and the cap. What we do know is that emitting generation will fall rapidly as a share of all sales. This means that *expenditures* on RGGI allowances will fall as non-emitting sources are added; and allowance costs must go to zero once the budget is exhausted around the year 2050.

It is worth noting here that the price of natural gas has been considerably more volatile than the price of RGGI allowances. Since volatility in rates is of concern to consumers of electricity, then the use of RGGI to encourage the transition away from natural gas as our primary fuel for generation adds yet another consumer benefit to being in RGGI, reduced rate variance. Add to this that the revenues from RGGI allowance sales are recycled into Virginia's economy, while the payments for imported natural gas are not. Since solar-generated electricity has a lower levelized cost of energy in Virginia, replacing imported natural gas with cheaper, domestically produced electricity increases employment and net income in Virginia.

Conclusion 7: In Virginia over the last 10 years energy generation has increased substantially while the $CO_2$ mass emissions has remained fairly constant. This is due to fuel switching and efficiencies, which is signified by the decreased emission rate. In 2010 the state produced 1,200 lbs/month of [sic] $CO_2$ per MWh compared to 679 lbs/$CO_2$ per MWh in 2020, prior to RGGI taking effect. Overall, $CO_2$ emissions in Virginia have fallen substantially since 2005, demonstrating that Virginia has been reducing their CO2 emissions without regard to RGGI.
Response: So? What is the point here? From 2007 through 2020, Virginia has transitioned away from coal towards natural gas. Since natural gas has much lower emission intensity, this has reduced the average emission intensity of the electricity supply. Now that we have pushed coal down to 3.5% of generation (and it will all but disappear in 2024), emissions cannot fall further

unless emission intensity falls. However, the emission intensity of natural gas has been quite steady for 10 years and cannot fall much below its current level. *The only way that the emission intensity of Virginia generation can continue to trend downwards is to substitute new, non-emitting technology for existing natural gas generation.* This is precisely what has happened since Virginia joined RGGI. Of the generation taking place in Virginia since 2020, the natural gas share has started to fall for the first time. It is being displaced by increased generation by solar. For this trend to continue, investment in non-emitting generation must accelerate to match sales growth or imports must increase.

That emissions fell without RGGI, reflects a shift in the relative cost of generation as between coal and natural gas. The effect of lower natural gas prices starting in 2006/2007 has now played out. To continue reducing emissions requires including the social costs of $CO_2$ emissions being included in generation costs, which, in turn, leads to increased future reliance on non-emitting technologies. To add the social cost of carbon (at least $50) as a factor in fuel choice, a choice the General Assembly has made, must have a much larger effect than the RGGI price (now under $13). As I will discuss briefly, emissions trading under a cap is known to be the least-cost approach to reducing emissions because it maximized compliance flexibility.

Conclusion 8: RGGI is a bad construct that taxes consumers without providing incentives for change to the electricity producers. The program was not implemented in the way it was originally sold, and simply results in increased pricing to consumers out of the marketplace.
Response: "RGGI is a bad construct..."? The analytical foundation for a "construct" like RGGI are the same as the foundation for markets themselves. When feasible, we can maximize social gains of the resources available to us by using a system of ownership and exchange for allocating goods in an economy. The idea of the possibility of using market instruments like "cap and trade" programs for replacing costly, direct emission regulations dates at least as far back as the 1970s. The first emission market as scale was chosen by President George H.W. Bush to be part of the 1990 amendments to the Clean Air Act. This program to reduce acid rain saved billions of dollars in compliance costs compared to the regulatory programs that preceded it. Economic analysis of the RGGI program has repeatedly shown net benefits to the member states, as have studies of similar emissions trading programs elsewhere.

As I have already pointed out, the statement that there are no "incentives for change to electricity producers" is dead wrong, and anyone with even a passing familiarity with electricity markets knows this. This statement also ignores the long-run effect of encouraging the faster buildout of new, cheaper, non-emitting technology, solar in particular. Added non-emitting generation insulates consumers from both emission costs and fuel costs. As I have already noted, replacing expensive imported fuel with cheaper domestic energy resources has broad economic benefits. It is also true that the spending and jobs that go with the construction of new solar facilities occur disproportionately in lower income localities in Virginia, providing a steady stream of tax earnings once completed.

DEQ originally chose to implement RGGI with a grandfathering and consignment approach because it lacked legal authority to require auctions for revenue. The General Assembly specifically chose to change this. That the program was "originally sold" in some other form is utterly irrelevant. This is the adjustment to the original program that was chosen by the General Assembly. Period.

As I have demonstrated, any increases in electricity payments will be very modest, and whether this is a good approach or not requires a fair assessment of the increased spending on reduced energy costs for low income families and on reduced flood risk for Virginia communities. This document has made no effort to weigh these two program elements and has ignored the likely benefits of the program. Lower income communities also receive a disproportionate share of the benefits of lower emissions from fossil-fired generation and from the investments in renewable energy technologies. It is not enough to say that this program will increase electricity rates.

## *II. The agency "Mandate and Impetus" section of Form TH-02 fails to provide any justification for the proposed action*

### Summary

The impetus for this action is Executive order EO-9 directing that the Department of Environmental Quality and the Secretary of Natural and Historic Resources initiate action to repeal 9-VAC5-140. The only substantive reason given in the executive order was that the RGGI rule will result in cost passthrough to electricity customers. EO-9 also states that the benefits of RGGI have not materialized, a conclusion for which no evidence is given or argument is made. As a general statement about RGGI, this statement is at odds with all of the available evidence. As a statement about Virginia's membership in RGGI, it is a conclusion at odds with directly observable facts.

EO-09 requires DEQ to address the costs *and benefits* of membership in RGGI. DEQ has failed to satisfy the terms of EO-09 by only addressing factors it perceives as costs of being in RGGI. It completely fails to address the many benefits that arise from being part of RGGI. These benefits will be discussed later in this comment. At the most trivial level, DEQ fails to point out that RGGI revenues are not retained for general government expenditures; they are to be spent on populations in the state disproportionately affected by energy costs and by the increased costs of flooding that is a consequence of $CO_2$ additions to the atmosphere.

### Every item in this document is either wrong, incomplete, inconsistent with state law, or irrelevant to RGGI

Except for the repetition of the language in EO-9, every other statement made in the "Mandate and Impetus" section of Form TH-02 is either incomplete, mistaken, inconsistent with current state law, or is irrelevant to the question of Virginia membership in RGGI. As such, TH-02 fails to provide a justification for an action to change the rule and, furthermore, fails to provide any rationale for an emergency rule.

The first two paragraphs on Page 2 of TH-02 make the obvious point that natural gas prices rose dramatically at the end of 2022. This is actually an argument in favor of the state policy, of which RGGI is a key part, of gradually weaning Virginia from dependence on fossil fuel as a major source of energy for generating electricity. The solar generation now operating in Virginia is saving well-over $10 million per month in state expenditures on imported natural gas. During August of 2022 alone, solar generation saved over $35 million in expenditures on natural gas. These savings have a number of benefits. They reduce energy bills, reduce the variability of bills as world natural gas prices vary according to geopolitical events, and they

reduce imports to Virginia in favor of cheaper, domestically produced energy. This brings direct benefits to electricity consumers and indirect benefits to the state's economy due to increased net domestic product, which translates directly to increased jobs and personal income. Leaving RGGI reduces the incentive to invest in solar generation, and hence reducing the expected future benefits for the state economy. The fact that Dominion Energy is seeking rate increases to cover increased natural gas costs is definitely not a fact that supports leaving RGGI. On the contrary, it points to one of the key benefits of investing in cheaper, local energy sources rather than depending on imported fossil fuels that are necessarily traded at volatile global prices. As more solar is built in response to the price incentives built into RGGI, there will be increasing net benefits to Virginia's economy generally and to ratepayers in particular. RGGI provides incentives for cost effective, non-emitting generation above and beyond the specific goals specified in the VCEA.

Paragraph 3 on Page 3 of TH-02 mistakenly reports that "the average [annual household] energy consumption in Virginia has increased by 1.38% per year. This statement is incorrect. Residential sales per household in Virginia peaked in 2010 at about 15 MWh and, in 2002, stood at approximately 12.5 MWh. Improved efficiency has allowed many households to reduce their annual energy use while increasing the useful services obtained from that energy. This reduction in energy expenditures has been less available to lower income households because increased efficiency often requires up-front investments. This is precisely what the General Assembly intended to address when it chose to direct half of RGGI revenues to funding improved energy efficiency in disadvantaged communities. This funding will be eliminated by the repeal of the RGGI rule.

The next paragraph (paragraph 4, page 3 of TH-02) has an extended description of offshore wind development in Virginia and its costs. This entire discussion is irrelevant to the current question, since it has nothing to do with RGGI. The wind farm is being developed as part of a goal set in the Virginia Clean Economy Act and is not affected one way or the other by Virginia membership in RGGI. Maybe the Department believes that the General Assembly made a bad choice to encourage this new industry in Virginia. That opinion has nothing to do with this regulatory action.

Paragraphs 5 implies that energy prices show a tendency to rise faster than other prices. This can be true if you pick your data carefully so that it makes your point. However, these statement seem rather strange now that the price of natural gas for electric utilities (at this writing, March of 2023) have fallen to near record lows. (EIA, 2023) These prices spiked in response to supply disruptions caused by Russia's invasion of Ukraine, but those disruptions have now passed, and energy markets, volatile in the best of times, have fallen to near or even below pre-war prices. *This fossil fuel price volatility is not a reason to leave RGGI, it is a reason to stay in.* Increased incentive to produce domestic energy at lower cost and with lower price volatility is good for energy consumers and for the economy as a whole.

Paragraph 7, in a statement rich in irony, uses the economic distress of many Black and Hispanic families as a reason to oppose a policy specifically directed to disproportionately benefit just those populations. The paragraph inadvertently restates the need for RGGI energy efficiency funding for historically disadvantaged communities (including linguistically isolated communities) but gives this as a reason to oppose RGGI. The American Council for an Energy Efficient Economy is quoted to illustrate disproportionate energy burdens, which, incidentally,

have arisen from our fossil-based energy supply. ACEEE is in favor of retaining RGGI precisely because of the funds that will be made available to reduce energy burdens on lower income families.

Paragraph 8, aside from falling into somewhat inflammatory language, makes a critical misstatement. Utility ratepayers are not captive. Virginia has a regulated monopoly model for electricity service. The service monopoly combined with rate regulation by the State Corporation Commission is designed to provide consumers with cost effective and reliable service. That service is provided by regulated, monopoly providers is *bi design* and intended to provide the greatest benefit for consumers. But even in this context, consumers are not captive. For nearly all energy services in the home, there are many alternatives available to electricity consumers. And, in fact, increasing numbers of consumers are even generating their own electricity. For most, electricity is still the bargain resource for heating, cooling, cooking, etc. And any volatility due to RGGI allowance price passthrough is a much smaller share of consumer budgets than is the runup in energy costs due to volatility in fossil fuel prices.

Calling RGGI allowance revenues a "tax" is simply a rhetorical flourish devoid of meaning. Asking that producers pay a market price for the inputs they use in production has been recognized as a contributor to economic efficiency since Adam Smith and even before. Calling it a tax when you don't want to pay the price is almost as old a strategy, but it is a strategy for harming efficiency rather than improving it.

If the discussion in For TH-02 is all DEQ has to go on, it is a slender reed indeed. It means that this rule is not being changed based on evidence or logic but on some other grounds altogether. It is correct to note that the original emission trading rule was designed to avoid any allowance cost passthrough by grandfathering allowances to our regulated public utilities. (An approach that I personally agree with.) However, the General Assembly specifically chose not to retain this path and decided to auction allowances and use the funds for energy efficiency financing and for flood resilience activities. If DEQ or the Air Board disagree with this decision by our legislature, then the appropriate approach is not to work an end run around the specific choice of the legislature but to make a case for change in the legislation.

## *III. If the agency does not agree with the Law of Virginia, then the Governor may seek to obtain changes to that law from the General Assembly*

As long as the state is committed to a policy of reducing damaging fossil emissions, and there is very strong evidence that being part of an emission trading program like RGGI has considerable benefits for Virginians and that you cannot reduce the cost of achieving those reductions by leaving RGGI; you can only increase costs. There are several reasons for this.

First, tradable emission control policies, including RGGI, maximize the compliance flexibility of firm needing to reduce emissions. Trading moves emission control responsibility away from high cost reductions towards low cost reductions. And trading provides flexibility across time as well. Emission allowances will be used during periods when they are most valuable and not during periods when they are least valuable. In this way, emission trading operates exactly like markets for other goods. Firms that can make most efficient use of productive inputs buy them, other firms do not. Firms that can produce goods at lower cost sell more than higher cost firms. It is the same story. We have good evidence from existing emission markets like RGGI that these institutions do lower costs.

Second, trading among member states can only benefit members. If buying allowances from other states is cheaper than doing the reductions locally, then costs are reduced for Virginia consumers by being in RGGI relative to not being in RGGI. If, on the other hand, costs in Virginia are lower than costs in the rest of RGGI, then Virginia has a valuable export commodity to sell to other states.

Third, the expenditures of RGGI revenues substitutes for other public spending which would require funds raised by state taxes such as income and sales taxes. If communities do not receive RGGI funds for flood preparedness, then, on average, you will tend to see greater flood damage than if we did spend on community preparedness. Virginia government will respond to local flooding and risks of flooding with state aid. It is more costly to raise the money for addressing flood risks through auctioning emission allowances than it is through raising general taxes. There is a large body of economic evidence on this point.

Similarly, expenditures on low income energy efficiency with RGGI funds substitutes for paying for these things with general taxes on income and sales. If more households have lower energy expenditures due to investments in more efficient homes and apartments, then there is less call for energy assistance using state funds. Our best evidence is that raising money for these programs through payments for pollution allowances is better for the economy than raising the funds through general taxation.

Controlling $CO_2$ emissions has considerable value for Virginia's economy. Virginia is among the U.S. states expected to suffer the most damage due to sea level rise and salt water intrusion. And the associated fossil fuel emissions cause significant health damage, imposing substantial, additional costs, which disproportionately affect lower income families. Recent estimates of the economic damage from existing fossil fuel pollution from electricity generation are on the order of $150/ton of $CO_2$ controlled, not from the saved $CO_2$, but rather from reductions in $SO_2$, $NO_x$ and other emissions that occur when $CO_2$ emissions are reduced. This implies a social cost of around $100/MWh generated by fossil-fired plants. Even a quarter of this amount is greater than the current RGGI price.

## *IV. As long as Virginia intends to reduce its emissions, then RGGI is the least expensive approach to accomplishing it*

DEQ has not demonstrated that there is a benefit from leaving RGGI. As long as Virginia has a policy of reducing its $CO_2$ emissions, participating in RGGI saves money. It does so primarily by maximizing compliance flexibility. Under current state policy, the RGGI revenues are spent in a way that disproportionately benefits low income households. And the reduction in fossil emissions adds an additional benefit from reduced health costs from fine particulates and other emissions.

DEQ's one-sided analysis had not even attempted to assess the benefits of RGGI, which are considerable.

Virginia law requires the gradual phase-out of fossil fuel emissions from the electricity sector. As long as this is the case, there is a benefit to Virginia of remaining in RGGI.

Staying in RGGI is good for both Virginia's environment and its economy. This regulatory action is clearly at odds with both state law and good economic management.