

Fiscal Impact Review

Executive Directive 11 (2017)

SUMMARY OF FINDINGS

Pursuant to § 30-19.1:12 of the Code of Virginia, staff of the Joint Legislative Audit and Review Commission (JLARC) have reviewed the fiscal impact on state government of Executive Directive 11 (2017). ED 11 requires the Department of Environmental Quality (DEQ), in coordination with the Secretary of Natural Resources, to develop a proposed regulation to abate, control, or limit carbon dioxide emissions from electric power facilities for consideration by the state Air Pollution Control Board.

The fiscal impact of the proposed regulation pursuant to ED 11 on state government should be minimal. The impact is estimated to be negative in 2020 when the regulation takes effect and be approximately \$1.9 million (in 2017 dollars) in 2031, the last year for which information is available for developing an estimate. Nearly all of the impact is because of the impact to electricity costs for state agencies and public higher education institutions.

REVIEW OF EXECUTIVE DIRECTIVE 11

Governor McAuliffe issued ED 11 (2017) requiring DEQ to develop a proposed regulation to reduce carbon dioxide emission from electric power facilities and present it to the state Air Pollution Control Board no later than December 31, 2017 for approval for public comment. The directive requires that the proposed regulation include provisions to ensure that Virginia would be in a position to trade carbon dioxide allowances through a multi-state trading program. The directive requires that abatement mechanisms be established such that limits on carbon dioxide emissions correspond in their stringency to those imposed in other states with such limits. The directive also requires DEQ to develop a regulation that the Board can promulgate and adopt within its existing authority under the Code of Virginia.

DEQ developed a proposed regulation based on guidance provided by a regulatory advisory panel of representatives from electric power facilities, environmental organizations, and other stakeholders. Technical expertise was provided to DEQ and the advisory panel by the Georgetown Climate Center, a nonpartisan center that assists state and local communities to reduce carbon emissions. The proposed regulation was presented to the Board on November 16, 2017 and approved for public comment.

The proposed regulation, as it was presented to the Air Pollution Control Board, is reviewed here, but the final regulation and its impact may differ. Changes may be made during the public comment period and executive review. This review is limited to the financial impact of the proposed regulation and is not a review of the legal authority of the Board. (See official opinion issued by the Attorney General of Virginia, May 2017, on the authority of the Board to regulate greenhouse gases.)

Background on proposed regulation pursuant to Executive Directive 11

The primary purpose of the regulation is to reduce carbon dioxide emissions produced by electric power facilities in Virginia by imposing a declining cap on emissions and linking with a regional carbon cap and trade program—the Regional Greenhouse Gas Initiative (RGGI). Nine other states participate in the RGGI program (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont). The proposed regulation would ensure that Virginia is “trading ready” because it is based on the RGGI model rule, with some modifications.

The proposed regulation, if adopted, would take effect in 2020. The proposed regulation would impose an emissions cap for Virginia between 2020 and 2030. Additional regulatory action would be required to extend the emissions cap and other provisions of the regulation beyond 2030.

Electric power generators affected by regulation

The regulation would only apply to electric generating units in Virginia that generate an annual minimum of 25 megawatts of electricity using fossil fuels (natural gas, petroleum, coal, or any fuel derived from these materials) for at least 10 percent of their fuel mix. Entities that transmit or distribute electricity and do not meet the generation requirements would not be subject to the regulation. Industrial facilities that generate power for their own operations would not be covered by the proposed regulation. DEQ identified 33 electricity generators (operated by 12 companies) that would likely be directly affected.

Emissions cap

Emissions reductions would be accomplished by implementing a declining annual cap on carbon emissions statewide. The cap would be set at either 33 or 34 million tons starting in 2020 and would decline by approximately three percent per year to a cap of 23.1 or 23.8 million tons in 2030 (a 30 percent reduction). The Board is requesting input on whether the original cap should be set at 33 or 34 million tons in 2020 during the public comment phase.

Emissions allowances

The annual emissions cap would be divided into shares, known as allowances, that would be allocated to Virginia’s electricity generators. Generators could emit one ton of carbon dioxide for each allowance. For example, an electricity generator that received 100 allowances would be able to emit 100 tons of carbon dioxide.

DEQ would allocate allowances each year based on an evaluation that would occur every three years. Ninety-five percent of the allowances would be allocated to electricity generators. Their allocation

would be based on the evaluation of the electric output of each generator averaged over the most recent three years for which data is available. This allocation method (known as output updating) would allow DEQ to account for retiring or new generators in the allocation process. The remaining five percent of allowances would be allocated to the Department of Mines, Minerals and Energy (DMME) in order to monetize the allowances to make funding available for programs designed to help reduce carbon dioxide emissions.

Trading of allowances

Linking with RGGI would allow Virginia electricity generators to “trade” allowances with electricity generators in other states. The trading program is designed to incentivize electricity generators to reduce their carbon emissions so that they minimize the necessity to buy additional allowances above their allocation (reducing their costs) or can potentially sell excess allowances (increasing their profits).

Trading of emissions allowances would occur four times a year during quarterly auctions operated by RGGI, Inc., a nonprofit established to support the regional cap and trade program and administer the auction. Virginia’s electricity generators would participate in the auction by first consigning their allowances to the auction. Each generator would be compensated for the allowances it sold in the auction, based on the auction clearing price. This compensation would be used to repurchase the allowances that they need to hold to be in compliance. Only those generators that do not have sufficient allowances to cover their emissions would incur costs. Generators that have more allowances than emissions could obtain additional funding if they sell these unneeded allowances in the auction rather than hold on to them to use for future years.

Price of allowances

The price of the allowances would be determined by the clearing price (which should reflect the market price) of each quarterly auction. Once all bids (in lots of 1,000 allowances) are made and the auction is closed, the bids are ranked by descending bid price and the cumulative allowances in each bid are tallied. The bid price that corresponds with the bid that cumulatively reaches the total allowance allocation for that auction is identified (the marginal bid), and the price of the next bid is the clearing price at which all allowances in that auction would be sold.

The regulation would establish a cost containment reserve to prevent the clearing price from becoming too high. The cost containment reserve would hold additional allowances above the total annual allowance amount (equal to 10 percent of the annual allowance amount). These allowances would only be released into the auction if emissions costs are above the cost containment reserve “trigger” price.

The regulation also would have mechanisms to prevent the clearing price from becoming too low. The regulation would establish a reserve price each year that would serve as a price floor. Bids below the reserve price would not be accepted. An emissions control reserve would also be established to withhold allowances (10 percent of the allowance budget) from the auction when emissions costs are below the emissions control trigger price, indicating that the supply of allowances is too large. Restricting the supply of allowances could result in an increase in the final clearing price of allowances. The reserve prices and both of the trigger prices are adopted from the RGGI model rule and used by all member states.

Three-year compliance period

The regulation requires the electricity power generators to reach compliance on a three-year basis rather than annually. This could help to reduce compliance costs because it provides additional flexibility. Electricity generators only need to hold a minimum amount of allowances equal to 50 percent of their allowable emissions in the first two years of each control period to be in compliance but must hold allowances equal to 100 percent of their allowable emissions at the end of the third year in the control period. A single-year compliance period would be established in 2020, the year in which the regulation takes effect, and the first three-year compliance period would begin in 2021 to correspond with the established RGGI compliance periods.

Fiscal impact of Executive Directive 11

This review found that ED 11 should only have a minimal fiscal impact on state government. The fiscal impact of the proposed regulation pursuant to ED11 is estimated to be approximately –\$1.3 million in 2020, when the regulation would take effect, and be \$1.9 million in 2031, the last year in which information is available to develop an estimate. The fiscal impact would be borne broadly because all state agencies use electricity. If the fiscal impact reflects the state’s overall operating budget, 39 percent of the impact would be on general funds and 61 percent would be on non-general funds. These estimates include additional electricity costs for state operations because of the regulation, costs to DEQ for monitoring and compliance, and costs to DMME for administering allowances to assist DEQ in the abatement and reduction of carbon emissions. Nearly all of the impact is due to the impact on state electricity costs.

Estimated impact to state electricity costs

The impact of the proposed regulation to state agency electricity costs is estimated to be approximately \$1.9 million by 2031 (in 2017 dollars) or approximately one percent of state electricity costs in that year (Table). The majority of this impact would be due to an increase in electricity costs for public higher education institutions, which represent 70 percent of total electricity costs for state entities in FY17. Impacts are estimated as the difference between electricity costs under the proposed regulation pursuant to ED 11 and electricity costs if the regulation was not adopted.

Step 1: Project future electricity rates for state entities

Future electricity rates paid by state entities were projected based on the assumption that the rates per kilowatt hour (kwh) would increase by an average of 0.73 percent per year. This assumption is based on the annual change in rates paid during the past 10 years by state entities with metered accounts that use the state contract with Dominion Energy administered by DMME. This represents nearly all (92 percent) of the state’s electricity costs. Historical rates were inflated to 2017 dollars using the consumer price index for electricity.

Step 2: Calculate future cost of electricity, assuming no regulation is adopted

Future electricity costs assuming no regulation is adopted were estimated by multiplying the projected electricity rate (Step 1) in each year by electricity demand (2,039,018,345 kwh) for state entities under

the state contract in FY17. Electricity demand for state entities was held constant at 2017 demand so that the fiscal impact did not reflect changes in costs because of changes in demand.

Step 3: Calculate future cost of electricity, assuming proposed regulation is adopted

Future electricity costs assuming the proposed regulation is adopted (Step 3b) were estimated by increasing the electricity costs in Step 2 by the estimated impact to retail customer electricity bills in Virginia (Step 3a). These estimates were generated by the Analysis Group based on the impact to generators’ power prices (wholesale price of electricity and capacity costs) in Virginia estimated by ICF, both under contract with Georgetown Climate Center. (Analysis Group and ICF are consulting firms with expertise in energy and environmental economics and regulation.)

Both ICF and the Analysis Group analyzed the potential impacts of Virginia’s participation in RGGI between 2020 and 2031 on a variety of factors including electricity prices. Both consultants developed two estimates of the potential impacts of the regulation. The estimate presented in this review is based on their estimate of the impact on electricity prices using Virginia-specific assumptions about changes in electricity generation, emissions, fuel consumption, capacity, and transmission reported in the 2017 Dominion Energy Integrated Resource Plan. This estimate may more closely reflect the impact to the state because the vast majority of the electricity used by state entities is provided by Dominion Energy. The other estimate is based on typical assumptions used for modeling price changes for other states that participate in RGGI.

Step 4: Calculate the fiscal impact of the proposed regulation

The fiscal impact of the proposed regulation was calculated by subtracting the electricity costs in Step 2 (assuming no regulation) from the electricity costs in Step 3 (with regulation).

TABLE
Estimated impact of regulation pursuant to ED 11 on state electricity costs (2017 dollars)

Year	(Step 1) Projected rate (kwh)	(Step 2) Electricity cost (no regulation)	(Step 3a) Impact to retail electricity bills	(Step 3b) Electricity cost (with regulation)	(Step 4) Fiscal impact
2020	\$0.0641	\$130.7 M	-1.00%	\$129.4 M	-\$1.3 M
2023	0.0655	133.5	0.37	134.0	0.5
2026	0.0669	136.5	0.27	136.8	0.4
2029	0.0684	139.5	0.73	140.5	1.0
2031	0.0694	141.5	1.37	143.5	1.9

SOURCE: JLARC staff analysis of data from the Department of Mines, Minerals, and Energy and the Analysis Group.

NOTE: The fiscal impact is estimated to be negative in 2020 because it is expected that compliance will be easier in earlier years and electricity generators may hold or bank allowances that they do not need to reduce compliance costs in later years when the emissions cap decreases. The impact to retail electricity bills (Step 3a) is the average of the impact across residential, commercial, and industrial customers.

Additional analysis of fiscal impact

The fiscal impact could be higher if the future electricity rates paid by state agencies change at a rate more similar to the change in the monthly bills of retail customers, which is estimated to increase by 3.2 percent per year between 2020 and 2031, on average across customer classes in the Analysis Group assessment. Under this scenario, the fiscal impact of the regulation would reach \$2.7 million by 2031 (in 2017 dollars), approximately two percent of state electricity costs. There are several reasons why state agencies may experience different changes to their rates than the typical residential, commercial, or industrial customer. DMME is able to negotiate a favorable rate per kwh for state agencies (\$0.063 in FY17), especially compared to residential (\$0.124 in August 2017) and commercial (\$0.084 in August 2017) customers in Virginia. Industrial customers in Virginia pay a similar rate per kwh as state entities. It is also unknown how increases in costs to generators would actually be reflected in customer bills, which may vary by generator and by customer type.

At a maximum, the retail electricity prices in 2031 should not exceed eight percent (\$11.2 million in 2017 dollars) more than the estimated retail price without the regulation. Eight percent the estimated increase in generators' power prices in Virginia in 2031 because of the regulation. Increases in generators' prices should increase the retail price of electricity less than one-for-one because the generator's price only makes up a portion of retail customer bills, which also include distribution and transmission costs. Retail price increases could also be mitigated if electricity generators that have more allowances than necessary to meet compliance are able to sell the unneeded allowances.

Estimated impact to DEQ for monitoring and compliance

The estimated cost to DEQ for administering the regulation and the cap and trade program would be approximately \$95,000 per year to cover the salary and benefits for one staff position. This estimate is based on a fiscal impact statement prepared by the Department of Planning and Budget for HB 2018 (2017), a bill that would have required the governor to seek Virginia joining RGGI or another carbon trading program and DEQ to establish a carbon dioxide cap and trade program to reduce emissions released by electricity generators. DEQ staff reported the estimate is reasonable for purposes of administering the regulation pursuant to ED 11 because DEQ's responsibilities would be about the same as anticipated under HB 2018.

DEQ staff indicated that the anticipated responsibilities of this staff person would include collecting and analyzing information necessary to allocate allowances to electricity generators, participating in RGGI meetings and webinars, and managing all correspondence with RGGI. While monitoring and compliance should be handled automatically by the RGGI carbon dioxide allowance tracking system, this staff person would have responsibility for managing DEQ compliance actions for electricity generators that are substantially and consistently out of compliance. Additional resources could be necessary if there is frequent need for compliance action by DEQ.

Estimated impact to DMME for administering allowances

The estimated cost to DMME for administering the allowances it receives each year is approximately \$105,000 to cover the salary and benefits for one staff position, based on estimates provided by DMME. This position would be an upper-level program manager responsible for establishing a program inventory that would maximize emission reductions. This position would manage a contract

with a third-party administrator to sell the allowances (five percent of total allowances each year) and make the funding available for use in a variety of programs to help reduce carbon dioxide emissions.

Requested by: Chairman Wagner, Joint Commission on Administrative Rules

Prepared by: Ellen Miller, JLARC

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Authorized for release

A handwritten signature in cursive script that reads "Hal E. Greer".

Hal E. Greer, Director

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