

March 6, 2019

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Re: Comments on the Proposed Action to Develop Regulations to Reduce and Cap Carbon Dioxide from Fossil Fuel Fired Electric Power Generating Facilities (Rev. C17), 9VAC5 Chapter 140

Dear Ms. Sabasteanski,

The American Council for an Energy-Efficient Economy (ACEEE) welcomes this opportunity to provide comments to the Virginia Department of Environmental Quality (DEQ) on the above-referenced proposed action on the development of regulations to reduce and cap carbon dioxide (CO<sub>2</sub>) from the electric power sector ("Proposed Action"). ACEEE is a nonprofit research organization based in Washington, D.C. that conducts research and analysis on energy efficiency. ACEEE is one of the leading groups working on energy efficiency issues in the United States at the national, state, and local levels. We have been active on energy efficiency issues for more than three decades. In Virginia, we developed an energy efficiency potential study in 2008 covering electricity savings opportunities, and since then have provided technical assistance on energy efficiency topics to various stakeholders.<sup>1</sup>

ACEEE's comments herein seek to address the agency's request for comments to be considered in the development of a multi-state, market-based carbon dioxide (CO<sub>2</sub>) allowance trading program. Specifically, we comment on the following:

- I. Role of Energy Efficiency in an Allowance Trading Program
- II. Investing in Energy Efficiency Through DMME
- III. Recognizing the Multiple Benefits of Efficiency through Investing Auction Revenue

## I. Role of Energy Efficiency in an Allowance Trading Program

Energy efficiency is an important strategy to reduce emissions in the electric power sector. As it lowers electricity use, energy efficiency avoids emissions of CO<sub>2</sub> and other harmful pollutants, often at lowest cost.<sup>2</sup> ACEEE estimates that by implementing a suite of energy efficiency programs and policies, the Commonwealth could exceed the emissions reductions required

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<sup>1</sup> ACEEE. 2008. Energizing Virginia: Efficiency First. [aceee.org/research-report/e085](http://aceee.org/research-report/e085).

<sup>2</sup> ACEEE. 2016. How Much Does Energy Efficiency Cost? [aceee.org/sites/default/files/cost-of-ee.pdf](http://aceee.org/sites/default/files/cost-of-ee.pdf).

through the Proposed Action in 2030.<sup>3</sup> For example, regularly updating building energy codes and pursuing other efficiency programs that deliver electricity savings of at least 1% per year – either through ratepayer-funded programs, state-run programs, or some combination of the two – could result in cumulative reductions of over 80 million tons of CO<sub>2</sub>.<sup>4</sup> In an allowance trading program, CO<sub>2</sub> reductions from energy efficiency will help sources meet the Commonwealth’s CO<sub>2</sub> emissions limit by reducing electricity production.

These reductions in energy consumption can lead to big gains in public health. ACEEE found that reducing annual electricity use by 15% nationwide would prevent nearly 30,000 asthma episodes each year and save Americans up to \$20 billion through avoided health harms annually. Virginia ranked among the top 15 states that would see the largest avoided health harms - including heart attacks, respiratory illnesses and symptoms, premature deaths, and emergency room visits to treat asthma - from investing in energy efficiency and thereby reducing emissions in the electric power sector.<sup>5</sup>

While supplying affordable, reliable electricity to residents and businesses, energy efficiency is also a lowest-cost option to reduce CO<sub>2</sub> emissions. Research by the Lawrence Berkeley National Laboratory and ACEEE shows that at a range of about 2 to 5 cents per kilowatt-hour (kWh) and an average of 2.8 cents per kWh, energy efficiency programs cost two to three times less than generating power from traditional sources.<sup>6</sup> States that invest in energy efficiency can reduce emissions at a lower cost than is possible through other options. However, this does not mean that energy efficiency deployment will necessarily increase, even when it is more cost-effective than other CO<sub>2</sub> reduction options. Current market and regulatory barriers to investment in energy efficiency can hinder its use as a compliance strategy in a trading program.<sup>7</sup> DEQ should consider several strategies to encourage deployment of energy efficiency to help reduce energy use, energy bills, and energy-related emissions.

**ACEEE supports the role of energy efficiency in the Proposed Action and recommends that the Commonwealth further encourage and support the use of energy efficiency in an allowance trading program.** Below we recommend several strategies to further support energy efficiency.

## II. Investing in Energy Efficiency Through DMME

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<sup>3</sup> ACEEE. 2016. State and Utility Pollution Reduction Calculator Version 2 (SUPR 2). [aceee.org/research-report/e1601](https://aceee.org/research-report/e1601).

<sup>4</sup> Ibid.

<sup>5</sup> ACEEE. 2018. Saving Energy, Saving Lives: The Health Impacts of Avoiding Power Plant Pollution with Energy Efficiency. <https://aceee.org/research-report/h1801>.

<sup>6</sup> M. Billingsley, et al. 2014. The Program Administrator Cost of Saved Energy for Utility Customer-Funded Energy Efficiency Programs, Lawrence Berkeley National Laboratory. [emp.lbl.gov/sites/all/files/lbnl-6595e.pdf](https://emp.lbl.gov/sites/all/files/lbnl-6595e.pdf). See also M. Molina. 2014. The Best Value for America’s Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs. [aceee.org/research-report/u1402](https://aceee.org/research-report/u1402). See also A. Gilleo. 2017. New data, same results – Saving energy is still cheaper than making energy. <https://aceee.org/blog/2017/12/new-data-same-results-saving-energy>.

<sup>7</sup> ACEEE. 2013. Overcoming Market Barriers and Using Market Forces to Advance Energy Efficiency. [aceee.org/research-report/e136](https://aceee.org/research-report/e136).

In the Proposed Action, the Department of Mines, Minerals, and Energy (DMME) will be allocated “5.0% of the Virginia CO<sub>2</sub> Budget Trading Program base or adjusted budget allowances, as applicable...to be consigned to auction by the holder of a public contract with DMME to assist the department for the abatement and control of air pollution, specifically CO<sub>2</sub>, by the implementation of programs that lower base and peak electricity demand and reduce the cost of the program to consumers and budget source.” This will allow for a portion of allowances to be budgeted for energy efficiency programs, which ACEEE supports.

**We recommend that DMME use this set-aside to invest in energy efficiency projects that save energy and reduce utility costs for public and private sectors alike.** The following are some examples of projects that could be eligible to receive revenues:

- **Technical Assistance for the Industrial Sector.** A significant amount of energy savings opportunities exists for industrial facilities. While ratepayer-funded programs for residential and commercial customers in Virginia will ramp-up over the next ten years, large industrial customers will not be served by these programs. Opportunities exist for state agencies such as DMME to fill this gap. This can be done through ramping up investment in the Virginia SAVES program or through a new program offering. Technical assistance programs targeted at industrial customers can help identify potential energy efficiency projects and guide the implementation process. These programs typically offer no- or low-cost expertise and technical assistance to manufacturers on new technologies and practices, offer a platform to share analytical tools, and disseminate success stories and case studies. Several states have non-ratepayer-funded technical assistance programs for manufacturers, often leveraging university research centers. For example, the Energy Systems Laboratory at Texas A&M focuses on continuous commissioning and provides technical support to industry.<sup>8</sup> The Kentucky Pollution Prevention Center at the University of Louisville is a state-supported nonprofit that offers businesses engineering and efficiency services at no- or low-cost.<sup>9</sup> Industries of the Future at West Virginia University partners with industry to improve competitiveness by reducing energy costs, and grew out of a partnership with the U.S. Department of Energy (DOE).<sup>10</sup> DOE’s Advanced Manufacturing Office also worked with the Colorado Energy Office to develop the Colorado Industrial Energy Challenge, which offers energy assessments, training programs, and recognition to manufacturers that commit to greenhouse gas reduction goals.<sup>11</sup>

ACEEE also encourages DEQ to clarify that combined heat and power (CHP) and waste heat-to-power (WHP) projects are eligible for these funds. This will help ensure that potential project hosts are aware of this opportunity. Other states participating in the Regional Greenhouse Gas Initiative (RGGI) have used their auction revenue to support CHP deployment and can be used as an example for the Commonwealth.<sup>12</sup>

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<sup>8</sup> Texas A&M. Energy Systems Laboratory. [esl.tamu.edu/](http://esl.tamu.edu/).

<sup>9</sup> University of Louisville. Kentucky Pollution Prevention Center. [kppc.org/](http://kppc.org/).

<sup>10</sup> West Virginia University. Industries of the Future at West Virginia University. [iofwv.nrcce.wvu.edu/](http://iofwv.nrcce.wvu.edu/).

<sup>11</sup> Department of Energy. Colorado Industrial Energy Challenge. [energy.gov/eere/amo/colorado-industrial-energy-challenge](http://energy.gov/eere/amo/colorado-industrial-energy-challenge).

<sup>12</sup> Regional Greenhouse Gas Initiative, Inc. Investment of RGGI Proceeds in 2015.

[www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI\\_Proceeds\\_Report\\_2015.pdf](http://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2015.pdf).

- **Revolving Loan Fund.** DMME can leverage its experience operating the Commonwealth Energy Fund, using revenues to make loans to high growth potential, early stage Virginia companies focused on energy efficiency and pollution prevention. Another opportunity is for DMME to establish a new revolving loan fund (RLF) to finance energy efficiency investments at low interest rates for other markets, including public entities, residents or commercial businesses. Financing products could be paired with utility rebates in order to further spur investment.

Revolving loan funds have several benefits. For example, they can leverage private financing, allowing the Commonwealth to maximize set-aside revenues. An RLF can also be mission-driven and target underserved markets where private investment is lacking or nonexistent. If the RLF can demonstrate that lending to these markets is profitable, it might encourage private lending and create a market that no longer requires taxpayer or ratepayer resources. Many states currently operate revolving loan funds.<sup>13</sup> If well established, these programs are sustainable and can have considerable market impact. For example, Nebraska’s Dollar and Energy Saving Loan program was established in 1990 and since that time has invested more than \$322 million in funds into the clean energy market, supporting more than 28,000 projects for customers across all sectors. Of that amount, more than \$151 million came from the energy office’s revolving loan fund, with the rest funded by participating lenders and borrowers.

- **Advance energy efficiency in public buildings.** Virginia had a goal to reduce energy consumption in public buildings 15% by 2017. Through the Virginia Energy Management Program (VEMP), DMME helps state agencies, institutions of higher education, and public bodies reduce electric, gas, and water consumption by working with energy savings performance contractors (ESCOs). However, the Commonwealth is still working to collect these data from participating public buildings and, consequently, has faced difficulty measuring progress. In parallel with VEMP, Virginia also offers the \$6 million Clean Energy Development and Services (CEDs) program to provide grants and loans for energy efficiency, renewable energy, and alternative fuel projects in state and local agencies. In spite of these efforts, the state has only met about one-third of this energy savings target.<sup>14</sup> We recommend that DMME use the set-aside to expand energy efficiency offerings for public buildings, whether through VEMP and/or deeper incentives as part of CEDs. Continuing these efforts to lead by example would align with the 2018 Virginia Energy Plan recommendations that Governor Northam should establish a goal of reducing energy consumption in state buildings 20% by 2022 and continue to proactively pursue energy savings performance contracting.<sup>15</sup>

### III. Recognizing the Multiple Benefits of Efficiency through Investing Auction Revenue

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<sup>13</sup> National Association of State Energy Officials. State Energy Financing Programs. [www.naseo.org/state-energy-financing-programs](http://www.naseo.org/state-energy-financing-programs).

<sup>14</sup> Virginia Energy Efficiency Roadmap, report forthcoming. A description of the project purpose can be found here: [www.dmme.virginia.gov/de/LinkDocuments/GEC/3VA\\_EE\\_Roadmap\\_FactSheet.pdf](http://www.dmme.virginia.gov/de/LinkDocuments/GEC/3VA_EE_Roadmap_FactSheet.pdf).

<sup>15</sup> DMME. 2018. Virginia Energy Plan. [www.dmme.virginia.gov/de/VirginiaEnergyPlan.shtml](http://www.dmme.virginia.gov/de/VirginiaEnergyPlan.shtml).

While investing in energy efficiency can reduce emissions at a lower cost than is possible through other options, there are also significant ancillary benefits, such as improving air quality and human health, and enhancing community resilience.

An analysis by Abt Associates assessed the public health impacts associated with changes in air quality due to RGGI implementation from 2009 to 2014.<sup>16</sup> The results estimate the program avoided 300 to 830 premature deaths, realized \$5.7 billion in health savings and other benefits, and avoided more than 8,200 asthma attacks.<sup>17</sup> The analysis highlights the impact of energy efficiency investments contributing to the high emission reductions and health gains in the start of the analysis period and targeting peak demand periods with high emissions. These findings underscore the significant health gains that can be achieved through allowance trading programs to combat climate change that include investments in energy efficiency.

Energy efficiency is also an ideal component of any resilience strategy because it aids emergency response and recovery, helps with climate change adaptation and mitigation, and provides social and economic benefits.<sup>18</sup> Many cities and municipalities lack the resources to prepare for and respond to threats like extreme weather, economic volatility, and aging infrastructure. Energy systems are particularly vulnerable because of their interactions with other systems that allow communities to function and thrive, e.g., transportation, housing, and business activity. By reducing energy demand in buildings, improving transportation efficiency, and deploying CHP, communities can experience important resilience benefits that reduce vulnerability and increase capacity to cope with the impacts of climate change.<sup>19</sup>

**ACEEE recommends the Commonwealth recognize these multiple benefits by investing auction revenue into energy efficiency programs.**

Proceeds from a revenue-raising auction can be reinvested in energy efficiency to further reduce emissions, as seen in the states participating in RGGI where energy efficiency accounted for 58% of cumulative investments through 2016.<sup>20</sup> RGGI states have invested more than half of the \$3 billion in revenue proceeds over the life of the program to fund a variety of energy efficiency programs. These investments are augmented by complementary policies in RGGI states, including energy efficiency resource standards, building energy codes, state government-led initiatives, transportation and land-use policies, and appliance standards.<sup>21</sup> The emissions reductions and economic benefits of energy efficiency can be amplified by implementing energy efficiency policies alongside an allowance trading program. Figure 1 shows investments of auction proceeds from compliance period 3 (2015–2017), with RGGI states dedicating 52% (\$572

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<sup>16</sup> Abt Associates. 2017. Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative. <https://www.abtassociates.com/rggi>.

<sup>17</sup> Ibid.

<sup>18</sup> ACEEE. 2015. Enhancing Community Resilience through Energy Efficiency. <https://aceee.org/research-report/u1508>.

<sup>19</sup> Ibid.

<sup>20</sup> Regional Greenhouse Gas Initiative, Inc. 2018. The Investment of RGGI Proceeds in 2016. [www.rrgi.org/sites/default/files/Uploads/Proceeds/RGGI\\_Proceeds\\_Report\\_2016.pdf](http://www.rrgi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2016.pdf).

<sup>21</sup> ACEEE. 2019. State and Provincial Efforts to Put a Price on Greenhouse Gas Emissions, with Implications for Energy Efficiency. <https://aceee.org/white-paper/carbon-tax-010319>.



million) of proceeds for energy efficiency programs, 18% for renewable energy programs, and 13% for direct bill assistance.<sup>22</sup>

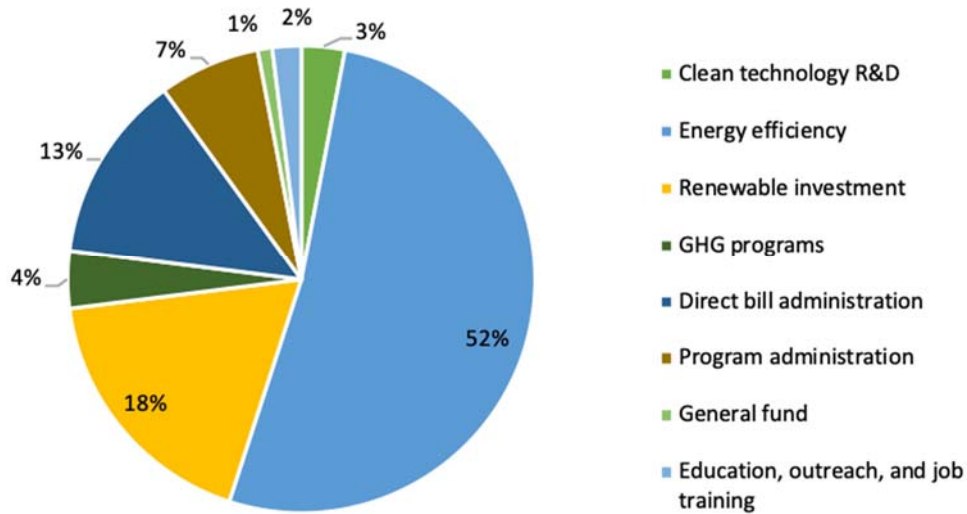


Figure 1. RGGI proceeds spending during compliance period 3 (2015–2017) for all RGGI states.

**ACEEE recommends the Commonwealth look to states participating in RGGI as examples of how to increase investment in energy efficiency.** Investments from RGGI reach a variety of customer types, including businesses, municipalities, and low-income communities. States invest much of the auction revenue in utility energy efficiency programs, state green banks, and/or programs run by state energy offices offering incentives, technical support, and financing. For example, Maryland allocates proceeds from the sale of allowances to the state energy office, the Maryland Energy Administration (MEA). The funds are directed through the State’s Strategic Energy Investment Fund (SEIF), a non-lapsing fund administered by the MEA, that has supported cumulative energy efficiency upgrades for 16,991 low- to moderate-income households and provided over \$2.5 million in grants to assist 42 commercial entities in enhancing efficiency through the Game Changer Competitive Grant Program.<sup>23</sup> In Vermont the funds from auctioning allowances are mostly allocated to Efficiency Vermont, an organization that operates efficiency programs throughout the state under the supervision of the state utility commission.

**Further, ACEEE recommends that utilities in the Commonwealth align their spending of allowance revenues to complement utility-funded energy efficiency programs set forth over the next decade.** Utilities could design energy efficiency programs to deliver new measures and serve new customer segments. For example, Dominion could offer comprehensive multifamily efficiency measures, incentivize the construction of energy-efficient homes, optimize energy

<sup>22</sup> Hibbard et al. 2018. The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States: Review of RGGI’s Third Three-Year Compliance Period (2015–2017). [www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis\\_group\\_rggi\\_report\\_april\\_2018.pdf](http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_april_2018.pdf).

<sup>23</sup> RGGI. 2017. The Investment of RGGI Proceeds in 2015. [https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI\\_Proceeds\\_Report\\_2015.pdf](https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2015.pdf).

performance for public and commercial facilities, and help hospitals deploy CHP. <sup>24</sup> In addition, utilities could offer measures that aim to mitigate indoor health and safety risks while saving energy for customers. For example, buildings can be treated for pests, and excessive moisture and mold growth can be remediated prior to sealing a building envelope. Investing in addressing health and safety measures can improve the health of residents while increasing participation in weatherization programs.<sup>25</sup>

Investing revenues in energy efficiency drives considerable energy savings and emissions reductions, helping to cut emissions beyond what a carbon price alone could achieve. In addition, these energy savings reduce the cost of carbon pricing to households and businesses.

## Conclusion

Energy efficiency is often the lowest-cost option to meet Virginia's CO<sub>2</sub> reduction goals, and DEQ can encourage its deployment through the allowance trading program. As DEQ develops a regulation to limit CO<sub>2</sub> emissions, ACEEE is available as a resource to discuss any of the issues raised herein or others DEQ may be considering regarding the treatment of energy efficiency. We have attempted to keep our comments succinct, but welcome the opportunity to provide further information.

Sincerely,



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Research Manager, Health & Environment  
ACEEE

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<sup>24</sup> ACEEE's recent presentation to the Dominion Energy Efficiency Stakeholder Collaborative contains additional energy efficiency program recommendations:

[www.slideshare.net/MaryShoemaker1/dominion-energy-efficiency-collaborative-presentation](http://www.slideshare.net/MaryShoemaker1/dominion-energy-efficiency-collaborative-presentation).

<sup>25</sup> ACEEE. 2018. The Next Nexus: Exemplary Programs That Save Energy and Improve Health.

<https://aceee.org/research-report/h1802>.