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Proposed Regulation
Agency Background Document

Agency name	State Air Pollution Control Board
Virginia Administrative Code (VAC) citation(s)	Part VII, 9VAC5-140
Regulation title(s)	Regulation for Emissions Trading
Action title	Establish a new regulation to reduce and cap carbon dioxide (CO_2) from fossil fuel fired electric power generating facilities by means of an interstate trading program (Revision C17)
Date this document prepared	

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Order 14 (as amended, July 16, 2018), the Regulations for Filing and Publishing Agency Regulations (1 VAC7-10), and the *Virginia Register Form, Style, and Procedure Manual for Publication of Virginia Regulations.*

Brief Summary

Please provide a brief summary (preferably no more than 2 or 3 paragraphs) of this regulatory change (i.e., new regulation, amendments to an existing regulation, or repeal of an existing regulation). Alert the reader to all substantive matters. If applicable, generally describe the existing regulation.

The purpose of the re-proposed new regulation is, in accordance with Executive Directive 11 (2017), "Reducing Carbon Dioxide Emissions from Electric Power Facilities and Growing Virginia's Clean Energy Economy," (i) ensure that Virginia is trading-ready to allow for the use of market-based mechanisms and the trading of carbon dioxide (CO_2) allowances through a multi-state trading program, and (ii) establish abatement mechanisms that provide for a corresponding level of stringency to CO_2 limits imposed in other states with such limits. The re-proposed regulation includes a base budget of 28 million tons, which will determine, based on a 3% annual reduction, the annual budgets and allocations for future years. In accordance with ED 11, the report of the Executive Order 57, and a formal determination by the Office of Attorney General, these requirements apply to fossil fuel-fired electric generating facilities.

The original proposal, which underwent public comment from January 8 through April 9, 2018, included two options on the base budget of 33 and 34 million tons. DEQ proposed and the board approved a new base budget of 28 million tons based on new modeling and other information. Other substantive changes include the recognition of offsets from other participating states, exemption of fossil fuel units that co-fire

with biomass from CO_2 accounting, a more detailed description of exempt industrial sources, a more detailed description of how the cost containment reserve will be managed, a new section allowing for participation in a non-consignment auction, and a new section requiring program monitoring and review. The proposal was also updated to reflect the latest version of the RGGI model rule.

Acronyms and Definitions

Please define all acronyms used in the Agency Background Document. Also, please define any technical terms that are used in the document that are not also defined in the "Definition" section of the regulations.

CO_2 - carbon dioxide
CPP - Clean Power Plan
CSAPR - Cross-State Air Pollution Rule
DMME - Department of Mines, Minerals and Energy
EGU - electric generating unit
ED 11 - Executive Directive 11
EO 57 - Executive Order 57
EPA - U.S. Environmental Protection Agency
GHG - greenhouse gas
IRP - Integrated Resource Plan
MW - megawatt
NGCC - natural gas-fired combined cycle
PJM - PJM Interconnection
PSD - Prevention of Significant Deterioration
RGGI - Regional Greenhouse Gas Initiative
SCC - State Corporation Commission

Mandate and Impetus

Please identify the mandate for this regulatory change, and any other impetus that specifically prompted its initiation (e.g., new or modified mandate, petition for rulemaking, periodic review, board decision, etc.). For purposes of executive branch review, "mandate" has the same meaning as defined in Executive Order 14 (as amended, July 16, 2018), "a directive from the General Assembly, the federal government, or a court that requires that a regulation be promulgated, amended, or repealed in whole or part."

The mandate for this regulation is Executive Directive 11 (2017).

Legal Basis

Please identify (1) the agency or other promulgating entity, and (2) the state and/or federal legal authority for the regulatory change, including the most relevant citations to the Code of Virginia or Acts of Assembly chapter number(s), if applicable. Your citation must include a specific provision, if any, authorizing the promulgating entity to regulate this specific subject or program, as well as a reference to the agency or promulgating entity's overall regulatory authority.

Section 10.1-1308 of the Virginia Air Pollution Control Law (Title 10.1, Chapter 13 of the Code of Virginia) authorizes the State Air Pollution Control Board to promulgate regulations abating, controlling and prohibiting air pollution in order to protect public health and welfare. Written assurance from the Office of the Attorney General that the State Air Pollution Control Board possesses the statutory authority to promulgate the proposed regulation amendments is available upon request.

Promulgating Entity

The promulgating entity for this regulation is the State Air Pollution Control Board.

State Requirements

Executive Directive 11 (2017), "Reducing Carbon Dioxide Emissions from the Electric Power Sector and Growing Virginia's Clean Energy Economy," directs the Director of the Department of Environmental Quality, in coordination with the Secretary of Natural Resources, to take the following actions in accordance with the provisions and requirements of Virginia Code § 10.1-1300 et seq., and Virginia Code § 2.2-4000, et seq.:

1. Develop a proposed regulation for the State Air Pollution Control Board's consideration to abate, control, or limit CO_2 from electric power facilities that:

a. Includes provisions to ensure that Virginia's regulation is "trading-ready" to allow for the use of market-based mechanisms and the trading of CO_2 allowances through a multi-state trading program; and

b. Establishes abatement mechanisms providing for a corresponding level of stringency to limits on CO_2 emissions imposed in other states with such limits.

2. By no later than December 31, 2017, present the proposed regulation to the State Air Pollution Control Board for consideration for approval for public comment in accordance with the Board's authority pursuant to Virginia Code § 10.1-1308.

Additionally, on May 12, 2017, the Attorney General issued an official advisory opinion that concluded the board is legally authorized to regulate GHG: "The Board has the authority to establish a statewide cap on GHG emissions for all new and existing fossil fuel electric generating plants as a means of abating and controlling such emissions."

Purpose

Please explain the need for the regulatory change, including a description of: (1) the rationale or justification, (2) the specific reasons the regulatory change is essential to protect the health, safety or welfare of citizens, and (3) the goals of the regulatory change and the problems it's intended to solve.

The regulation is needed to control CO_2 emissions in order to protect the public's health and welfare. The proposed regulation is being developed in order to meet the direction of Governor McAuliffe's Executive Directive 11 (2017), "Reducing Carbon Dioxide Emissions from the Electric Power Sector and Growing Virginia's Clean Energy Economy," which states:

> There is no denying the science and the real-world evidence that climate change threatens the Commonwealth of Virginia, from our homes and businesses to our critical military installations and ports. Rising storm surges and flooding could impact as many as 420,000 properties along Virginia's coast that would require $92 billion of reconstruction costs.
>
> The challenges and costs of bolstering resilience and minimizing risk are too great for any locality to bear alone. While the impacts are significant, there are technologies in the clean energy sector that could help mitigate these impacts while simultaneously creating jobs in twenty-first century industries. The number of solar jobs in Virginia has grown by 65 percent in the last year alone, and Virginia is now the ninth fastest growing solar jobs market in the country. Revenue for clean energy businesses in Virginia has increased from $300 million in 2014 to $1.5 billion in 2016. Through state leadership, Virginia can face the threats of climate change head on and do so in a

way that makes clean energy a pillar of our future economic growth and a meaningful part of our energy portfolio.

With these considerations in mind, I issued Executive Order 57 (EO 57) on June 28, 2016. Under EO 57, I directed the Secretary of Natural Resources to convene a work group to study and recommend methods to reduce carbon dioxide emissions from electric power facilities and grow the clean energy economy within existing state authority. The group consisted of the Secretary of Natural Resources, the Secretary of Commerce and Trade, the Director of the Virginia Department of Environmental Quality, the Director of the Virginia Department of Mines, Minerals and Energy, and the Deputy Attorney General for Commerce, Environment, and Technology. This group facilitated extensive stakeholder engagement over the last year, including six in-person meetings and a ninety-day public comment period, before compiling its recommendations and submitting a final report to me on May 12, 2017.

Among the most significant recommendations from the group is the need to develop regulations limiting the total amount of carbon dioxide emitted from electric power facilities. Given the nature of the climate change threat and the promise of clean energy solutions, I agree with this recommendation.

Accordingly, pursuant to the authority vested in me as the Chief Executive Officer of the Commonwealth, and pursuant to Article V of the Constitution and the laws of Virginia, I hereby direct the Director of the Department of Environmental Quality, in coordination with the Secretary of Natural Resources, to take the following actions in accordance with the provisions and requirements of Virginia Code § 10. 1-1300, et seq. and Virginia Code § 2.2-4000, et seq.:

1. Develop a proposed regulation for the State Air Pollution Control Board's consideration to abate, control, or limit carbon dioxide emissions from electric power facilities that:

a. Includes provisions to ensure that Virginia's regulation is "trading-ready" to allow for the use of market-based mechanisms and the trading of carbon dioxide allowances through a multi-state trading program; and

b. Establishes abatement mechanisms providing for a corresponding level of stringency to limits on carbon dioxide emissions imposed in other states with such limits.

2. By no later than December 31, 2017, present the proposed regulation to the State Air Pollution Control Board for consideration for approval for public comment in accordance with the Board's authority pursuant to Virginia Code § 10. 1-1308.

Additionally, Executive Order 57 Work Group's "Report and Final Recommendations to the Governor" states that:

The Work Group received a number of presentations and written comments from stakeholders advocating for a regulation to limit carbon dioxide from power plants. These comments included recommendations that the Commonwealth join or participate in the Regional Greenhouse Gas Initiative (RGGI) or another regional trading program, that a price be put on carbon, and that Virginia strive to reduce its greenhouse gases by 30 to 40 percent by the year 2030. . . . Although many stakeholders provided feedback focused on specific in-state targets (such as 30x30), the Work Group believes that it is important and necessary that Virginia work through a regional model, like the established and successful RGGI, in order to achieve lower compliance costs and address the interstate nature of the electric grid.

The Work Group recommends that the Governor consider taking action via a regulatory process to establish a "trading-ready" carbon emissions reduction program for fossil fuel fired electric generating facilities that will enable participation in a broader, multi-state carbon market.

Substance

Please briefly identify and explain the new substantive provisions, the substantive changes to existing sections, or both. A more detailed discussion is provided in the "Detail of Changes" section below.

1. The primary purpose of the regulation is to implement a declining cap on carbon emissions. The administrative means of accomplishing this will be effected by linking Virginia to RGGI, which is an established emissions trading program. An allowance will be issued for each ton of carbon emitted by an electricity generating facility. The company must then decide if it will reduce carbon emissions and sell the resulting additional allowances, or if it will not reduce carbon emissions and make up the difference with purchased allowances. The original proposal included two options on the base budgets, 33 million tons and 34 million tons. The board selected 28 million tons, which will determine, based on a 3% annual reduction, the annual budgets and allocations for future years.

2. The mechanism for determining the cost of allowances will be a consignment auction.

3. A cost containment reserve allowance will be offered for sale at an auction for the purpose of containing the cost of CO_2 allowances in the event of higher than anticipated emission reduction costs. An emission containment reserve allowance will be withheld from sale at an auction for the purpose of additional emission reduction in the event of lower than anticipated emission reduction costs.

4. Monitoring, recording, and recordkeeping requirements will be implemented to track compliance.

5. Conditional allowances will be allocated to the Department of Mines, Minerals and Energy (DMME) in order to assist the department for the abatement and control of air pollution, specifically, CO_2.

6. In conjunction with program monitoring and review, impacts specific to Virginia will be evaluated, including economic, energy and environmental impacts, and impacts on vulnerable and environmental justice communities.

Issues

Please identify the issues associated with the regulatory change, including: 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions; 2) the primary advantages and disadvantages to the agency or the Commonwealth; and 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, include a specific statement to that effect.

1. Public: The primary advantage to the public would be health and welfare benefits associated with controlling carbon pollution. The program is designed to avoid any significant economic impacts.

2. Department: No significant advantages or disadvantages to the department have been identified. There may be a minor impact in terms of administering a new program.

Requirements More Restrictive than Federal

Please identify and describe any requirement of the regulatory change which is more restrictive than applicable federal requirements. Include a specific citation for each applicable federal requirement, and a rationale for the need for the more restrictive requirements. If there are no applicable federal

requirements, or no requirements that exceed applicable federal requirements, include a specific statement to that effect.

There are no applicable federal requirements. DEQ notified the Senate Agriculture, Conservation and Natural Resources Committee, the Senate Commerce and Labor Committee, the House of Delegates Agriculture, Chesapeake and Natural Resources Committee, and House of Delegates Commerce and Labor Committee of this regulatory action in November 2017.

Agencies, Localities, and Other Entities Particularly Affected

Please identify any other state agencies, localities, or other entities particularly affected by the regulatory change. "Particularly affected" are those that are likely to bear any identified disproportionate material impact which would not be experienced by other agencies, localities, or entities. "Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulation or regulatory change are most likely to occur. If no agency, locality, or entity is particularly affected, include a specific statement to that effect.

There is no locality that will bear any identified disproportionate material air quality impact due to the proposed regulation which would not be experienced by other localities. None of the affected sources is owned or operated by a locality, and it is the generation of electricity that is directly subject to the regulation, not its end users. The Department of Mines, Minerals and Energy (DMME) will be responsible for managing the 5% allocation set-aside required by 9VAC5-140-6430.

Economic Impact

Pursuant to § 2.2-4007.04 of the Code of Virginia, please identify all specific economic impacts (costs and/or benefits), anticipated to result from the regulatory change. When describing a particular economic impact, specify which new requirement or change in requirement creates the anticipated economic impact. Please keep in mind that this is change versus the status quo.

Impact on State Agencies

For your agency: projected costs, savings, fees or revenues resulting from the regulatory change, including: a) fund source / fund detail; b) delineation of one-time versus on-going expenditures; and c) whether any costs or revenue loss can be absorbed within existing resources	The Joint Legislative Audit and Review Commission (JLARC) estimates that the 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. The sources of department funds to carry out this regulation are the general fund and the federal trust (grant money provided by EPA under § 105 of the federal Clean Air Act or permit fees charged to affected entities under the permit program). The activities are budgeted under the following programs (codes)/subprograms (codes): Air Protection Permitting (513025); Air Protection Compliance and Enforcement (513026); Air Protection Planning and Policy (513028); and Air Protection Monitoring and Assessment (513029). The costs are expected to be ongoing, and any costs or revenue loss can be absorbed within existing resources.

For other state agencies: projected costs, savings, fees or revenues resulting from the regulatory change, including a delineation of one-time versus on-going expenditures.	JLARC estimates that the 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. The costs are expected to be ongoing.
For all agencies: Benefits the regulatory change is designed to produce.	To quote ED 11, "The challenges and costs of bolstering resilience and minimizing risk are too great for any locality to bear alone. While the impacts are significant, there are technologies in the clean energy sector that could help mitigate these impacts while simultaneously creating jobs in twenty-first century industries. The number of solar jobs in Virginia has grown by 65 percent in the last year alone, and Virginia is now the ninth fastest growing solar jobs market in the country. Revenue for clean energy businesses in Virginia has increased from $300 million in 2014 to $1.5 billion in 2016. Through state leadership, Virginia can face the threats of climate change head on and do so in a way that makes clean energy a pillar of our future economic growth and a meaningful part of our energy portfolio." It is expected that the regulation will address the health and welfare impacts of climate change in an efficient, cost-effective manner. RGGI has successfully reduced carbon emissions with no negative economic impacts; see https://www.rggi.org/rggi_benefits. Emissions trading programs have proven to be very effective--with both traditional pollutants such as NO_X, and with more recently regulated pollutants such as CO_2--and an affiliation with RGGI will enable Virginia to quickly take advantage of a proven trading program.

Impact on Localities

Projected costs, savings, fees or revenues resulting from the regulatory change.	The projected cost of the regulation on localities is not expected to be beyond that of other affected entities. Essentially, every individual and every organized entity--whether government or private-- uses electricity, and it is the generation of that electricity that is directly subject to the regulation, not its end users. Furthermore, none of the affected sources is owned or operated by any locality.
Benefits the regulatory change is designed to produce.	See the description of benefits as described under "Impact on State Agencies."

Impact on Other Entities

Description of the individuals, businesses, or other entities likely to be affected by the regulatory change. If no other entities will be affected, include a specific statement to that	Electric power facilities with a capacity of >25 MW that operate on some form of fossil fuel (coal, natural gas) will be directly affected by the regulation.

effect.	
Agency's best estimate of the number of such entities that will be affected. Please include an estimate of the number of small businesses affected. Small business means a business entity, including its affiliates, that: a) is independently owned and operated and; b) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million.	There are currently up to 31 electric power facilities with a capacity of >25 MW operated by 12 companies located throughout the state that will likely be directly affected by the regulation. None of these entities is a small business. There may be limited indirect impacts on small businesses in general as discussed in greater detail below.
All projected costs for affected individuals, businesses, or other entities resulting from the regulatory change. Please be specific and include all costs including, but not limited to: a) projected reporting, recordkeeping, and other administrative costs required for compliance by small businesses; b) specify any costs related to the development of real estate for commercial or residential purposes that are a consequence of the regulatory change; c) fees; d) purchases of equipment or services; and e) time required to comply with the requirements.	The primary purpose of the regulation is to implement a declining cap on carbon emissions. The administrative means of accomplishing this will be effected by linking Virginia to RGGI, which is an established emissions trading program. An allowance will be issued for each ton of carbon emitted by an electricity generating unit. It will then be up to the company to decide if it wants to reduce carbon emissions and sell its additional allowances, or or if it will not reduce carbon emissions and make up the difference with purchased allowances. Because there will not be a significant change to the allowance values RGGI already has in place, adding Virginia to the equation will not change compliance costs. The cost of allowances will be administratively managed by means of a consignment auction. In general, auctions have been known to decrease costs because the process is transparent (costs and prices are known), and the secondary market is not involved. Consignment auctions are revenue neutral, so the only actual cost to a facility would be the administrative cost of managing its consignment auction activities. Based on department experience with emissions trading programs and traditional auctions in the past (for example, under 9VAC5-140 for the NO_X Trading Rule, and CAIR), it is expected that these costs will be minor, unless a facility generates enough allowances to sell and realizes a profit from that sale. Generally speaking, wholesale electricity costs may go up or down depending on the price of allowances. Any impacts to residential consumers will be very small because wholesale costs are only a very small portion of a residential consumer's bill. Rates for commercial users may fluctuate more because wholesale costs are somewhat higher for commercial users, and industrial users, which pay rates close to wholesale, will experience the greatest of any potential impact. The most recent bill impact analysis on the re-proposed rule indicates that bills for all customers will slightly decrease as a result of the rule.

	It is important to note that Virginia's energy market is regulated. This means that the Virginia SCC is responsible for monitoring electric rates such that Virginia's consumers (whether businesses, institutions or individuals) are protected from any dramatic changes to the electricity market. Regardless of what business decisions the affected utilities make in the future to comply with the carbon cap, Virginia's utility structure is designed to accommodate this type of pollution control program. The RGGI program is designed to avoid dramatic fluctuations in consumer costs. Thus far, electricity rates for RGGI customers have been stable over the life of the program, and this stability is expected to continue. JLARC estimates that the fiscal impact (negative and positive) of the proposed regulation (in 2017 dollars) will be approximately $1.3 million in 2020, when the regulation would take effect, and $1.9 million in 2031. JLARC notes that the latter cost equates to approximately 1% of projected state electricity costs in 2031.
Benefits the regulatory change is designed to produce.	See the description of benefits as described under "Impact on State Agencies."

Alternatives

Please describe any viable alternatives to the regulatory change that were considered, and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the regulatory change. Also, include discussion of less intrusive or less costly alternatives for small businesses, as defined in § 2.2-4007.1 of the Code of Virginia, of achieving the purpose of the regulatory change.

Alternatives to the proposal are being considered by the board. The board has tentatively determined that the first alternative is appropriate, as it is the least burdensome and least intrusive alternative that fully meets the purpose of the regulatory action. The alternatives being considered by the board, along with the reasoning by which the board has rejected any of the alternatives being considered, are discussed below.

1. Amend the regulations to satisfy the provisions of the law and associated regulations and policies. This option is being selected because it meets the stated purpose of the regulatory action: to develop a carbon trading regulation in accordance with ED 11 (2017).

2. Make alternative regulatory changes to those required by the provisions of the law and associated regulations and policies. This option is not being selected because it would not meet the specific requirements of ED 11.

3. Take no action to amend the regulations and continue to not control carbon emissions via a trading program. This option is not being selected because it it would not meet the specific requirements of ED 11.

Regulatory Flexibility Analysis

Pursuant to § 2.2-4007.1B of the Code of Virginia, please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) establishing less stringent compliance or reporting requirements; 2) establishing less stringent schedules or deadlines for compliance or reporting requirements; 3) consolidation or simplification of compliance or reporting requirements; 4) establishing performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the regulatory change.

This regulation meets the requirements of Executive Directive 11. Any less stringent compliance requirements, any delays in adopting the standards, any different compliance or reporting requirements, any substitution of performance standards, and any exemption of small businesses from these requirements will not meet the minimum requirements of ED11. Any such changes would compromise the effectiveness of the regulation in protecting the health and welfare of the public.

Public Comment

Please summarize all comments received during the public comment period following the publication of the previous stage, and provide the agency response. Ensure to include all comments submitted: including those received on Town Hall, in a public hearing, or submitted directly to the agency or board. If no comment was received, enter a specific statement to that effect.

Commenter	Comment	Agency response
1. About 155 individual commenters	General support for the proposal was expressed.	Support for the proposal is appreciated.
2. About 415 emails, cards and petition sponsored by Faith Alliance for Climate Solutions and Interfaith Power and Light; petition sponsored by Virginia Chapter of the Sierra Club, 2717 signatures	Climate disruption poses increasing threats to Virginians' public health, national security, environment and economy. Virginia has joined states, cities and counties across the country that understand all levels of government must act on climate if we are to protect our communities in light of the Trump administration's continued attacks on environmental protections. I support setting the strongest possible standard to cut Virginia emissions from power plants through participation in a carbon market. This is a critically important step toward carbon pollution reductions. I request that DEQ use its authority to adopt and implement a final standard that caps and reduces carbon pollution as rapidly as possible, beginning as soon as possible. The 2020 base year should be less than 33 million tons. Cover carbon pollution from biomass, which can be worse than energy generated by fossil fuels. Set the expectation of continued carbon reductions after 2030. Monitor implementation in order to respond to disproportionate environmental burden experienced by front-line, low-income and vulnerable communities.	Support for the proposal is appreciated. Specific issues identified by the commenters are discussed in further detail below.
3. About 550 sponsored	I am thrilled to see that the board has approved draft regulations to cap carbon emissions. Without immediate	Support for the proposal is appreciated. Specific

Commenter	Comment	Agency response
emails and Town Hall comments	and bold action, climate change will present unprecedented challenges to our coastal communities and would harm communities of color at a much higher rate than others. I support a final carbon rule that has the strongest possible cap on carbon emissions from Virginia's power plants through a carbon market. I also support supplemental legislation that would allow Virginia to invest a portion of the carbon market revenue in coastal resilience. The 2020 base year emissions cap should be between 30 and 32 million tons. The cap should cover biomass facilities, which can be worse for the climate than fossil fuel power plants. Carbon emission reductions past 2030 should be addressed. The plan should address the needs of low-income and frontline communities by establishing implementation monitoring and rapid response guidelines that can detect any instances of disproportionate environmental burdens.	issues identified by the commenters are discussed in further detail below.
4. About 45 sponsored emails and Town Hall comments	I'm writing to voice my support of a regulation that cuts carbon pollution from power plants and allows us to trade carbon allowances with other states. With no help coming from the federal level in addressing climate change, it's up to Virginia to act. By cutting carbon emissions in Virginia, we have the opportunity to protect public health and safety while creating jobs in the carbon-neutral renewable energy and energy efficiency sectors. And because we're joining a coalition of other states with carbon caps, action we take in Virginia is greater than the sum of its parts. Carbon trading also creates the opportunity to bring revenue back to the state to aid in clean energy deployment and resiliency, money we shouldn't leave on the table or gift to our utilities. I urge you to proceed with a strong regulation that shows Virginia is a leader in addressing climate change and takes its responsibility seriously.	Support for the proposal is appreciated.
5. 4 emails	I support Governor Northam's Clean Energy Virginia Initiative. To address the threat of climate change to our coast and public health, the state must reduce pollution from fossil fuel-fired power plants and expand renewable energy. The initiative calls for a 30% reduction in carbon emissions by 2030 and will enable Virginia to trade carbon allowances with 9 other states, a market-based mechanism that will bring revenue back to Virginia while also cutting harmful air pollution. That is why I urge the board to adopt the plan to fight climate change, protect health, and create economic growth.	Support for the proposal is appreciated.
6. 5 emails	I am profoundly proud Virginia is preparing an initiative to reduce carbon and other toxic pollutants from utility power plants. Yet, how Virginia implements this program is critical to its success. And I expect success. A successful plan will: improve public health, expand clean energy development, save all electric customers money and improve our state's competitiveness, protect living creatures and reduce climate change burdens on future generations of Virginians, ensure Virginia is "carbon	Support for the proposal is appreciated.

Commenter	Comment	Agency response
	trading ready," and require that baseline measures of carbon emissions be real and annual reductions be real and ambitious.	
7. Petition sponsored by Natural Resources Defense Council (NRDC), 884 signatures	I urge DEQ to put a strong limit on carbon pollution and to reduce that pollution as rapidly as possible, in a way that grows the state's renewable energy economy and reduces energy bills through energy efficiency. Virginians are ready for strong action and we--along with future generations--applaud you for stepping up on climate and support your work to finalize a strong statewide carbon rule.	Support for the proposal is appreciated.
8. Petition sponsored by Virginia League of Conservation Voters (LCV), 1551 signatures	To address the climate change that threatens our coast and public health, Virginia must reduce pollution from fossil fuel-fired power plants and expand renewable energy. Governor Northam's Clean Energy Virginia Initiative is the solution for addressing climate change while growing Virginia's economy, reducing greenhouse gas (GHG) emissions, and protecting Virginias' air. The initiative calls for a 30% reduction in carbon emissions by 2030 and will enable Virginia to trade carbon allowances with 9 other states, a market-based mechanism that will bring revenue to Virginia while cutting harmful air pollution.	Support for the proposal is appreciated.
9. Petition sponsored by Environment Virginia, 207 signatures	From dozens of smog-ridden days to rising sea levels, Virginians are feeling the impacts of climate change. Virginia needs to move forward with plans to protect our communities from climate change and follow the steps that other states have taken to cut pollution while the federal government stalls. I request that DEQ adopt the strongest possible standard to cut carbon emissions by ensuring that Virginia cuts carbon pollution as quickly and as soon as possible. The 2020 emissions cap should be between 30 and 32 million tons. This cap should mirror the cap that states in RGGI, the nation's most successful regional climate program, are taking to reduce emissions 30% by 2030. The rule should set the expectation that carbon pollution will continue to be reduced after 2030. This standard should take into account Virginia's untapped energy efficiency potential and all planned renewable energy developments in Virginia.	Support for the proposal is appreciated. Specific issues identified by the commenters are discussed in further detail below.
10. Gianluigi Ciovati	I encourage a base budget of 33 million tons, and applicability to all fossil fuel power generating units. I request DEQ to include biomass into the fossil fuel category as recent expansion of such power generating units highlighted the issues of the long timeframe required to capture the emitted CO_2 by re-forestation and that, in order to meet increasing demand, not all the material used to make the fuel comes from waste but from an increasing fraction is coming from tree logging. The regulation should result in a greater economic benefit than cost: energy efficiency is the lowest cost resource to reduce CO_2 pollution while meeting energy demand. Dominion ranks 50th in efficiency efforts among the 51 largest electric utilities in the nation. Strong	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	energy efficiency policies would result in close to 40,000 new jobs by 2030. More jobs are predicted to be created by further increase in true renewable energy sources such as wind and solar. As the disruptive effects of climate change are becoming more evident, the risk and the cost of inaction on reducing CO_2 emission is too high and the regulation is a positive step in the right direction.	
11. Virginia Clean Cities (VCC)	Regulation of carbon emissions is critically important for Virginia, a coastal state with a wide distribution of energy sources. VCC is an alternative fuel vehicle coalition, working with governments at state, regional, local, and federal level with businesses and vehicle operators in an effort to reduce GHG emissions in transportation. While Virginia's largest source of CO_2 and GHGs is the transportation sector, we recognize the value of reviewing our existing electricity portfolio and working toward cleaner sources of domestic fuels. VCC strongly supports involvement in RGGI. Many RGGI states have advanced transportation projects to mitigate the significant GHGs from transportation. VCC include electric vehicles in our portfolio, as well as hydrogen, ethanol and natural gas vehicles all utilizing electricity from the grid in some manner. Further, by using cleaner domestic fuels such as biomass, natural gas, or renewable energy for Virginia's electricity, we can benefit our economy and move Virginia forward.	Support for the proposal is appreciated. Although the transportation sector is not directly addressed in this proposal, DEQ agrees that it is an important consideration in controlling carbon emissions.
12. B. Eli Fishpaw	It is a breath of fresh air that Virginia is embarking on an effort to reduce GHG from power production. Recognizing the measure of what causes climate change is essential to learning to live within the Carbon Cycle. Without active recognition that the license to emit carbon into the atmosphere must be limited, it is difficult to imagine meeting the challenge. We focus our efforts to address human caused climate change with an acceptance that excess carbon emissions (primarily CO_2) is the problem. Therefore, all solutions must have a goal of limiting carbon emissions to less than the amount that can be sequestered out of the atmosphere. Most human carbon emissions are sequestered by nature. These emissions are in the Carbon Cycle. Under a Net Zero Carbon Emissions Economy, human emissions would equal the amount that can be sequestered. At this level, we stop adding CO_2 concentration to the atmosphere. However, we are not reducing the CO_2 concentration either. When our emissions are higher than what nature can sequester, the over emissions are added to past years over emissions. We need to limit our emissions to less than what can be sequestered to live in the carbon cycle. This must be understood before the policies that can meet the challenge are combined with a determined effort by the public to meet this challenge. The license to emit CO_2 into the atmosphere should be shared fairly. Using the data from 2007 IPCC on natural and human emissions,	The information provided by the commenter is appreciated. The primary purpose of the regulation is to address carbon pollution via linking to RGGI in accordance with ED 11; therefore, no fee-and-dividend approach is being considered under this regulatory action.

Commenter	Comment	Agency response
	to achieve net zero (balanced budget) average per person emissions need to be limited to 2.6 tons CO_2/year. This would be a "Fair Share." At this level, all emissions are sequestered to achieve a Net Zero Carbon Emissions Economy. Cap and Trade allows emissions in exchange for supporting some activity that reduces CO_2 emissions, not from net zero, but from our historically high rate of emissions. In the proposal it provides financial support for high emissions electric production to reduce their emissions through technology. The cap and trade model for pricing carbon has the advantage of functioning in the background without asking sacrifice or understanding of the individual. Getting the public to understand that there is a demand by nature to limit to the amount of carbon emissions is essential to achieving it. Existing high emissions electric generation should not be rewarded by the entitlement license to emit that they can sell by reducing. I promote a continually escalating carbon tax with a rebate for the fair share of emissions and paying people to carbon capture and permanently store in the ground. A carbon tax can be similar to that proposed by Citizens Climate Lobby that charges a fee/ton CO_2 at the source and returns that fee equally to all citizens. By creating a modest fee, financial incentives are created for reducing energy and reward the development of renewable energy. As households and businesses evaluate future investments, their spreadsheets will show that investing in improvements offers the highest rate of return. This creates economic growth in the conservation, regeneration and renewable energy sectors. However, because all fees are redistributed equally, there is no money for sequestering carbon through technology. With a tax similarly structured, with a rebate for the tax on the Fair Share, creates funding for paying people to sequester carbon and preserving existing inventories of terrestrial carbon such as mature forest. Biochar is a way of permanently capturing carbon through pyrolysis. Adding the resulting charcoal to the ground increases retention of moisture, micronutrients and microorganisms. I propose that we pay people to create biochar at half the current rate of the carbon tax. This will insure a net reduction in CO_2 for the whole process. As promising as this is, biochar is not substitute for reducing emissions.	
13. L. David Roper	Deploying wind energy and solar energy in the U.S. can supply the demand. Using time-of-day availability of solar, on-shore wind and off-shore wind power in the four U.S. time zones and reasonable values of availability, wind and solar power can closely supply the time-of-day demand for electricity. Modest battery storage can fill in the small differences between solar/wind electricity	The commenter's remarks on renewable energy are appreciated. The specific suggestions for developing renewable technologies is not directly within the purview of the board or this

Commenter	Comment	Agency response
	production and demand. John Randolph of Virginia Tech has provided the following data about the economic favorability of renewable energy: Nuclear: $148/MWh; Coal: $102/MWh; Natural-gas-combined cycle: $60/MWh; Utility solar: <$50/MWh; Wind: <$45/MWH; Efficiency: <$25/MWh; Lithium-ion batteries: $209/kWh in 2017 and expected to be $100/kWh by 2025. Virginia has moderate experience with solar farms and no experience with wind farms compared to its neighboring states. Virginia would do well to study and emulate renewable energy development in North Carolina, which has similar topology to Virginia. Virginia's coal counties could lead in this. The major fossil-fuels state of Texas is way ahead of Virginia in solar energy and wind energy. It is not wise to depend on natural gas for electricity production over the long-term. Methane leaks from drilling sites and pipelines, over a 100-year period, is 34 times more potent that CO_2 at trapping heat. Extracting and burning methane may be as potent for global warming as mining and burning coal to produce electricity depending on the amount of fugitive methane. Increase the percent of electricity generation that AEP and Dominion allow for rooftop net metering. Do not charge for transmission for net metering because local solar generation greatly reduces the need for transmission lines. In fact, the price paid for rooftop solar should be greater than the cost of grid electricity. Allow communities to create solar farms or purchase from commercial solar farms that produce a given fraction of electricity for the community. Require power companies to build or buy more solar/wind energy, build community microgrids for grid resiliency, build battery backup in microgrids for renewable-energy smoothing and grid resiliency. Virginia needs to develop offshore wind farms.	regulatory action, although DEQ agrees that they are important tools for carbon control. The commenter's concerns about methane are acknowledged; however, as the specific purpose of this regulation is to enable linking to RGGI, methane is not addressed in this regulation.
14. Rees Shearer, Energizing Renewable Growth in Holston Valley and Emory Climate Collaborative; Hannah Ingram	I am pleased and proud that Virginia is preparing an initiative to reduce carbon and other toxic pollutants from utility power plants over time. How Virginia implements this program is critical to its success. Success means improving public health, expanding clean energy employment, saving electric customers money, improving competitiveness, protecting the creatures which share this land with us, and beginning to reduce climate burdens that we have been placing on the backs of future generations. In order to achieve success, DEQ must ensure that Virginia's carbon reduction regulation is trading ready by adopting a market-based approach. Joining RGGI is the best way to make this happen. DEQ will also need to prepare to auction carbon credits, if the General Assembly refuses to join RGGI. The baseline must not be inflated, and must include large industrial boilers. The 2020 base year emissions cap should be no	Support for the proposal is appreciated. DEQ agrees that energy efficiency and renewable energy are important tools for controlling carbon pollution, and the 5% set-aside is intended for this purpose. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	more than 32 million tons and initiate meaningful and deliberate carbon pollution reductions of 3% per year. To protect our forests, the program should include biomass burning facilities. Virginia is ripe for improvements in energy efficiency and solar energy. A 2015 study determined that if Virginia reduced carbon pollution by embracing energy efficiency and clean energy, households could save a yearly average of $415. Adoption of strong customer energy efficiency improvement standards benefits all customers, but especially those with low or moderate incomes. According to the Solar Foundation's 2017 Solar Job Census, Virginia could create over 50,000 new solar energy jobs. But that's if we adopt solar-friendly policies, sufficient to meet just 10% of residential electric load over the next five years. In 2017, Virginia already boasted 3565 jobs in the solar industry - already triple that of coal mining. In southwest Virginia we desperately need clean energy jobs to replace lost coal employment. But Virginia's utilities quietly thwart pro-clean energy policies and job growth. A current example is legislation that would allow power purchase agreements to finance and install solar facilities, but the bill excludes all residential, commercial and industrial customers. Only non-profit organizations would benefit. We have the resources to make clean energy bloom in southwest Virginia--a ready workforce of trained solar technicians graduating from our community colleges and a healthy number of experienced building contractors; developable unreclaimed mine lands and rural electric infrastructure orphaned by the coal industry; and communities accustomed to living alongside the energy industry. These resources offer prime opportunity for both dispersed and utility-scale solar development and employment right here. Systematically cutting carbon pollution cuts toxic pollutants from electric generating stations as well, offering a dividend in public health improvements. Enhanced public health makes the case for a program of utility carbon reductions by itself. A healthy carbon-cutting program also keeps physically vulnerable Virginians healthy. A strong carbon reduction program for Virginia, shows that we are doing our part to slow the ravages of sea level rise, storm volume and intensity, drought, heat wave, habitat loss, and disease spread, all of which are the marks of a changing climate.	
15. Pam Clough, Environment Virginia	I am concerned about climate change because it threatens our environment and health. My family and friends have experienced extreme weather events that were likely made worse by climate change. Though this is a national and global problem, change starts at home. I support setting the strongest possible standard to cut	Support for the proposal is appreciated. The commenter's concerns about climate change and discussion of the health benefits of RGGI are well

Commenter	Comment	Agency response
	Virginia emissions from power plants and join RGGI, the most successful regional climate and clean energy program in the country. We can work across party lines to cut pollution and protect our climate while the federal government stalls on climate action. RGGI states have seen pollution decrease by half since 2005 and consumers have saved over $773 million on their energy bills. I request that DEQ adopt and implement a final standard that cuts carbon pollution as quickly and as soon as possible. The 2020 base year cap should be 30-32 million tons with a baseline at the lower end of that range. The cap trajectory should parallel the model that other states in RGGI have implemented to reduce emissions 30% by 2030. The cap should incorporate all planned renewable energy developments in Virginia. The program should set the expectation of continued annual carbon pollution reductions after 2030. Virginia's baseline should also account for the state's untapped energy efficiency potential and incorporate savings that can reasonably be achieved between now and 2020. The American Council for an Energy Efficient Economy ranked Virginia 29th in its most recent State Energy Efficiency Scorecard, placing Virginia well behind all of the RGGI states. Global warming is exacerbating pollution and harming our health. In 2015 Roanoke residents breathed elevated levels of smog pollution 31 days out the year. Residents in the RGGI states are living longer and healthier lives thanks to cleaner air. The program is estimated to have saved 600 lives and prevented 9,000 asthma attacks in 6 years. An Abt Associates report shows that Virginia has already secured $380 million worth of health benefits because pollution across the region has gone down. Virginia's participation would significantly reduce pollution even further, accelerating the health benefits we have already seen.	taken. Specific issues identified by the commenter are discussed in further detail below.
16. Drema Khraibani, Hannah Funk, Lindsey Mendelson; Environment Virginia	Climate change poses increasing threats to Virginians' environment and health. In 2015 residents of northern Virginia breathed elevated levels of smog pollution 99 days out the year. Smoggy skies are expected to grow worse as temperatures rise. This means that we can anticipate more code red days and asthma attacks. The blacklegged tick that can transmit Lyme disease is expanding its presence in Virginia and reported cases of Lyme disease are on the rise. As noted in the Executive Directive, rising storm surges and flooding could impact as many as 420,000 properties along Virginia's coast that would require $92 billion of reconstruction costs. These health concerns can be prevented if we join RGGI. Residents in the 9 member states are living longer and healthier lives thanks to less pollution and cleaner air. The program has been estimated to have	Support for the proposal is appreciated. The commenter's concerns about health issues are well taken. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	saved 600 lives and prevented 9,000 asthma attacks in just 6 years. Because of the health benefits and the many climate impacts this program can provide our state, the strongest possible standard should be set to cut Virginia emissions from power plants and join the region's market of capping and reducing emissions. I implore you to set the 2020 base year emissions cap to be 30-32 million tons with a baseline at the lower end of that range. This cap should mirror the cap that states in RGGI are taking to reduce emissions 30% by 2030. The rule should set the expectation that carbon pollution will continue to be reduced after 2030, and take into account Virginia's untapped energy efficiency potential and all planned renewable energy developments in Virginia. If Virginia links with RGGI, it would be tied to the most successful regional climate and clean energy program in the country. As we have seen across northeast and mid-Atlantic states, we can work together across party lines to cut pollution, clean our air, and protect our climate while the federal government stalls on climate action. RGGI states have seen their pollution decrease in half since 2005, generated $2.7 billion in revenue, and saved consumers $773 million on the energy bills by directly auctioning their emissions. If Virginia follows a similar model it would generate $2 billion that it could use for clean energy, energy efficiency, and coastal resilience programs.	
17. Dr. Kathleen Price and Dr. Samantha Ahdoot, Virginia Clinicians for Climate Action	Patients with Lyme disease suffer from pain and inflammation in their joints, facial nerve palsies, heart arrhythmias, and chronic fatigue. Sometimes even with antibiotics, they do not recover completely. Warmer winters and earlier springs create favorable environments for tick and mosquito survival, reproduction and disease transmission. As a result, tick-borne infections across the country are soaring, including in Virginia. Between 2006-16, cases of Lyme disease increased in Virginia over 3 fold. Other tick-borne illnesses have increased, including Rocky Mountain Spotted Fever. Mosquito-borne illnesses such as West Nile Virus, and possibly Zika in the future are a threat as well. February 2017 was the warmest February on record for our state. In 2018 we had dramatic temperature anomalies, with numerous days reaching 60-80 degrees. Early onset of spring warmth causes many trees and flowers to start blooming earlier and brings earlier onset to the allergy and asthma season. According to pollen count data, the tree pollen season in Richmond is now peaking one week earlier than it did in the 1980s and the peak tree pollen count is now over 50% higher. CO_2 acts as a fertilizer that makes many plants produce more	Support for the proposal is appreciated. The commenter's observations about health issues are well taken. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	pollen. Higher tree pollen increases ER and urgent care visits for allergies. As a result of decreasing air pollution, RGGI states have prevented up to 800 premature deaths and 390 non-fatal heart attacks. Policy that protects our air protects our health, and saves the public and the government money that otherwise goes to healthcare. RGGI states have avoided between $3-8 Billion in health effects costs. By participating in RGGI, Virginia can reduce the carbon pollution that is causing these changes in our climate, natural world and health. RGGI would also enable Virginia to reduce other air pollutants that threaten public health. As a result of decreased particulate matter, RGGI states have prevented 8000-9000 asthma attacks, over 200 asthma ER visits and 400-500 cases of acute bronchitis. I support the strongest possible standard to cut carbon emissions through participation in a carbon market. I ask DEQ to use its authority to adopt and implement a standard that caps and reduces carbon pollution as fast as possible. The 2020 cap should be between 30-32 million tons. The cap should include carbon pollution from biomass facilities which can be more climate-polluting than fossil fuel power. DEQ should monitor implementation so that it can rectify instances of communities being disproportionally affected by pollution.	
18. Dr. Douglas Hendren, Physicians for Social Responsibility	RGGI makes good medical sense as well as business sense for Virginians. Sourcing our energy from dirty sources carries very high costs. Abt Associates has analyzed the public health impacts of RGGI over a 5-year period, finding hundreds of avoided premature adult deaths, hundreds of avoided heart attacks, thousands of avoided asthmatic episodes, hundreds of emergency room visits and hospital admissions, tens of thousands of lost work days, and savings of $3-8.3 billion. Fossil-fuel energy imposes many hidden costs on Virginians. It shortens our lives and sickens our children. It fouls our air, congests our emergency rooms and raises our medical bills. Changes in the atmosphere have brought higher oceans and violent storms threatening coastal cities. The cost to the U.S. of extreme weather events in 2017 came to $306 billion. Virginians cannot afford to be held hostage by the fossil-fuel sector and their political operatives. It is time to make policy decisions based on scientific assessment and common sense. I support setting the strongest possible standards for cutting Virginia emissions, including an initial cap of 30 million tons, with periodic downward adjustment; continuation of the program after 2030, unless superseded by a carbon tax; no exclusion for biomass plants; and no exclusion for methane. Natural gas is worse for our health and for global warming than burning coal. Nearly all of our	Support for the proposal is appreciated. The commenter's observations about health issues are well taken. The commenter's concerns about methane are acknowledged; however, as the specific purpose of this regulation is to enable linking to RGGI, methane is not addressed in this regulation. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	natural gas is obtained by fracking, which virtually all independent studies have found is associated with a greater than 5% rate of fugitive methane emissions. This makes gas worse than coal with regard to GHG emissions.	
19. Roy Hoagland	Referencing Virginia Clinicians for Climate Action information: Clinicians across the state support linking with RGGI. ED 11 will help protect the health of Virginias while also saving money for the state and taxpayers. Summary of cumulative RGGI health benefits, 2009-2014, avoided health effects: 300-830 premature adult deaths, 35-390 non-fatal heart attacks, 420-510 cases of acute bronchitis, 8200-9900 asthma exacerbations, 13,000-16,000 respiratory symptoms, 180-220 hospital admissions, 200-230 asthma ER visits, 39,000-47,000 lost work days, 240,000-280,000 days of minor restricted activity. Value of avoided health effects between $3-$8.3 billion.	The information provided by the commenter is acknowledged.
20. Deborah Kushner	I'm proud to celebrate Virginia's position as the first southern state to consider joining the RGGI. Not only would overall pollution levels decline, but new clean energy jobs would help the labor sector and we would have a new funding source for energy improvements and assistance for low-income customers. Joining RGGI means the road map for Virginia is already in place. RGGI has proven successful in cutting emissions without costing too much. Emissions from power plants in RGGI states fell 5% from 2015 to 2016, and have fallen 40% from 2008, when the initiative began. I urge DEQ to adopt a much lower cap than the 33-34 million that's proposed. We need to clean air quickly, and Virginia's emissions are already very close to the 33-34 figure. All sources of carbon emissions should be included in calculations. Biomass should be included, since 3 coal powered power plants have already been converted to burn wood, and we cannot afford to have others follow suit. Our forests are being harvested at an alarming rate to produce wood pellets and shipped overseas. The Partnership for Policy Integrity calls biomass "the new coal." Wood burning power plants are estimated to put 50% more carbon into the atmosphere than coal burning plants, per megawatt hour. Wood is not carbon neutral, since regrowing forests is anything but quick. Additionally, the plan should continue past 2030.	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.
21. Michael Keegan	The plan should cap and reduce carbon pollution as rapidly as possible, beginning as soon as possible. We are already way behind where we need to be. Based on starting as quickly as possible, the base year should be 2019 and the base year emissions cap should be 20 million tons. The plan should cover carbon pollution from all power plants including from biomass facilities, which can be more climate polluting than fossil fuel power plants. The plan should continue annual carbon pollution reductions in Virginia after 2030. The plan should allow for closely monitoring the implementation in order to	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	respond to instances of disproportionate environmental burdens experienced by any communities, especially low-income and vulnerable communities that have traditionally borne the brunt of pollution.	
22. Kiquanda Baker	I ask that the regulations be set at a realistic yet aggressive limit in order for these regulations to have the desired impact on GHG emissions. It is a proven fact that climate change exists and that humans are the main perpetrators. The practices that have led us to this point should be discontinued. Obviously we can't shut every fossil fuel dependent industry down, but we can cut back. The regulation is essential in pioneering the clean energy transition in Virginia. The cap should be set at least between 30-32 million tons. Biomass emissions should be included because it is a fuel source more unclean than fossil fuels. Decreasing our contribution to global warming and thermal expansion would help alleviate sea level rise in Hampton Roads while we continue to create solutions for resiliency. By embracing clean and renewable energy, Virginia can mitigate the negative impacts of burning fossil fuels while boosting the economy. With low income families and communities of color being the most vulnerable to fossil fuel pollutants and the effects of climate change, we need clean energy sources that benefit all people.	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.
23. Garry Harris, Center for Sustainable Communities	We demand healthy communities and a healthy economy, where workers receive the good-paying, family sustaining clean energy jobs, and their livelihoods are protected in the meantime. There is no reason those jobs can't grow right here, and this legislation offers a path to do so. We have worked for years to help lower income communities reduce energy burdens caused by disproportionate impacts of electricity costs and its effects on the quality of life, creating choices between food, energy, and housing adequacy. ED-11 protects the health of families and communities by curbing carbon pollution that has shown to have a direct link with enhancing climate change and is exacerbating extreme weather events. On a personal note, I have to take asthma medication on a daily basis. Implementing ED 11 will reduce harmful pollutants that contribute to dangerous smog and soot, causing heart attacks, respiratory illnesses, and even premature deaths. Virginia is the first southern state to take initiative on limiting and capping carbon pollution from fossil fuel power plants. We can take pride pushing to have energy companies take responsibility for toxic emissions that are damaging the health and environment of our communities at a time when the federal government is dismantling regulations that protect us from corporate polluters. Burning coal releases harmful toxins into the air and water, causing respiratory illnesses like asthma. RGGI states, by reducing toxic emissions and switching to cleaner energy, have	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	successfully prevents 8,200 asthma attacks and saved 300 to 830 lives, in a five year period. The starting cap should be between 30 and 32 million tons of emissions by 2020 and continued reduction of the cap beyond 2030. Another significant polluter is biomass; biomass GHG emissions are higher than those from burning fossil fuels. ED 11 contains a woody biomass loophole, which exempts woody biomass plants from the regulation. Such giveaways to industrial polluters render Virginia's program less efficient and give Dominion an unfair economic advantage. Carbon reduction plans have vast potential to reduce climate changing, harmful emissions and expand the economy. Between 2009-14, RGGI states have successfully reduced CO_2 emissions by 35% (compared to 12% in non-RGGI states) by switching from dirty fossil fuels to clean energy. Additionally, the region saw a 21.1% economic growth (compared to 18.2% in non-RGGI states). Virginia's decision to cap carbon emissions through a market-based approach offers a great opportunity to improve the livelihood and health of low-income families and communities of color who are most vulnerable to climate change and dirty fossil fuel pollutants. ED 11 should ensure that there are emission reductions in environmental justice communities and that there is a mechanism that ensures reductions of GHG co-pollutant emissions by facilities located in or near environmental justice neighborhoods.	
24. Kiquanda Baker, Garry Harris	In 2016, the number of solar jobs in Virginia increased by 65%. If the state received 10% of its power from the sun by 2023, Virginia would see over 50,400 more jobs. Virginia's coasts can support offshore wind turbines. Renewable offshore wind energy would produce clean energy and protect the coast from catastrophic oil and gas spills that threaten fish, tourism, and recreation. The wind industry could provide 1.5 times more jobs that offshore oil and gas, creating almost 14,000 offshore wind jobs and 5,000 manufacturing jobs by 2030.	The commenters' views on renewable energy are appreciated.
25. Joy Loving and Anne Nielsen, Climate Action Alliance of the Valley	Overall, this is a good regulation. It will lower Virginia's carbon emissions below what we would emit without this rule, and do it in a way that is efficient and cost effective. Virginia can reduce carbon emissions while also reducing energy costs. Linking Virginia with RGGI allows Virginia to join other RGGI states in a program with a proven track record of success in reducing carbon emissions while allowing our economy to grow. The member states of RGGI are serious about lowering their carbon emissions and would not allow Virginia to link with them if they didn't believe it would be good for them and also lower overall emissions. By linking to these RGGI states, Virginia will need to coordinate with them to	Support for the proposal is appreciated. Note that it is not possible to conduct both a consignment auction and a direct auction at the same time, and the rule will continue to implement the consignment approach while allowing for future potential participation in a conventional auction. The commenters' concerns about methane are

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	not only lower our own carbon emissions, but also to ensure that member RGGI states continue to lower their carbon emissions and maintain funding for their renewable energy and energy efficiency initiatives. Unless prohibited under Virginia law, DEQ should directly auction carbon allowances, in addition to the proposed consignment format. This approach should allow market forces to operate more effectively. Distribute allowances based on energy output, not historic carbon emissions. The initial cap should be 30-32 million tons. Allowing emissions to increase makes no sense. If allowances are given to power plants based on historic carbon emissions, it will still achieve the goal of carbon emission reductions. But it will not provide a new source of income to zero-carbon energy generators. Instead, allowances should be distributed based on updated energy output. This method gives some allowances to zero-carbon energy sources, who can sell the allowances as a new source of revenue. Do not exempt any fossil fuel power generating unit owned by and located at an individual facility that generates electricity and heat from fossil fuel for the primary use of operation of the facility. Do not exempt power plants that use biofuels. The climate responds to all CO_2 molecules, regardless of their origin. Excluding biofuels would give the power industry an incentive to cut down trees to burn in power plants to avoid buying carbon allowances. Even though RGGI states exempt biofuels, Virginia has many wood-based biofuel generators. DEQ should not read the language of ED 11 too narrowly when it is clear that the impetus behind its issuance is to reduce GHG emissions. Methane, a powerful GHG about 25 times more potent than CO_2, accounts for 9% of all U.S. GHG emissions, and almost one-third of that is estimated to come from oil and gas operations. DEQ should interpret ED 11 broadly so as to bring about as much reduction in GHG pollution as possible. The fact that the other RGGI states do not include methane does not prevent Virginia from doing so. Even if exact numbers beyond 2030 are not now known, the regulation needs language that the cap will not increase going forward. Virginia's citizens, agencies and businesses need to know what to expect for their planning purposes. If the regulation leaves open the possibility that the cap will go away or be relaxed, different long-term plans would surely result. The regulation should require close monitoring of implementation to respond to instances of disproportionate environmental burdens experienced by	acknowledged; however, as the specific purpose of this regulation is to enable linking to RGGI, methane is not addressed in this regulation. Additional specific issues identified by the commenter are discussed in further detail below.

Commenter	Comment	Agency response
	any communities, particularly low-income and vulnerable communities that have traditionally borne the brunt of pollution.	
26. April Moore	The regulations will be extremely important in reining in climate-damaging emissions from fossil fuel-burning power plants. With more than 99% of climate scientists around the world warning that we must get our CO_2 emissions down. Linking Virginia to RGGI is a smart, effective way to significantly reduce GHG emissions. The cap-and-trade approach relies on the free market to do what it does well, with a minimum of government involvement. We know that a cap-and-trade approach works. The RGGI states that are using it have already reduced their power plant carbon emissions by 30% since they adopted cap-and-trade in 2008. And during that time, the economies of these states have increased faster than those of the rest of the country. RGGI states have also lowered their average electricity rates by 3.4%, while the rest of the country's rates have increased by an average of 7.2%. The regulation should include a strong incentive for forest carbon offsets. Because trees take in CO_2 during photosynthesis, they sequester carbon in wood, roots, and soil. Trees are the best technology yet discovered for carbon capture and storage. In fact, scientists rank forests as the single best climate change solution. Some cap and trade programs include forest carbon offsets as a mechanism for transferring money from fossil fuel-burning utilities to forest owners as an incentive to manage their forests for increased carbon sequestration instead of timbering. Given that 62% of Virginia is forested, Virginia should follow the example of cap-and-trade programs that include forest carbon offset credits.	Support for the proposal is appreciated. Although the RGGI model rule does offer states the option to award offset allowances for projects outside of the electric power generation sector, only a single offset project has been implemented in the entire RGGI region since the program's inception. Given the uncertainty of any benefits associated with a complex offset program, DEQ will not, at this time, implement the offset option. However, DEQ does intend to recognize offset allowances generated in other RGGI states in accordance with the RGGI Model Rule, and the proposal has been amended accordingly. The issue of whether or not to implement offsets in Virginia may be addressed in ongoing program reviews.
27. Kim Hafner	We are grateful to DEQ for taking measures to save our lives by enforcing strict regulations on carbon emissions, and by creating a cap and trade initiative which will protect the environment and public health. Legislation that will lead us toward 100% renewable, sustainable energy is our best hope. The initial base budget should be 33 million tons or less and decline 3% per year. Methane should be capped. Nothing that is being proposed is actually stringent enough based on the dangers incurred by daily carbon emissions. No fossil fuel power generating unit owned by an individual facility and located at that individual facility that generates electricity and heat from fossil fuel for the primary use of operation of the facility should be exempt. DEQ should be allowed to directly auction carbon allowances in addition to the proposed consignment auction format. On our small family farm, we are working to sequester carbon by planting trees, and by perennially keeping our pasture in grass. Soil that has higher amounts of carbon as a result of such sequestration holds moisture better	The commenter's concerns about methane are acknowledged; however, as the specific purpose of this regulation is to enable linking to RGGI, methane and natural gas are not addressed in this regulation. As discussed in comment 28, for example, cap-and-trade programs in general, and RGGI in particular, are proven effective emissions reduction programs.

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	and lessens the ground's susceptibility to drought. Soil that has sequestered carbon also has green growth that helps the earth maintain lower temperatures. How might we reward farmers for farming practices which lower carbon emissions by sequestering the carbon in similar ways? It is imperative that you establish an aggressive carbon reduction program. Ideally, this would mean bypassing natural gas and all fracking extraction and transitioning directly to renewable energy. While cap and trade initiatives are positive in that they move us away from coal, they are dangerous compromises. None of us knows if the strictest regulations on carbon will be enough to mitigate the damage that we've done in time to make a significant difference, but we do know that compromises like the RGGI cap and trade, which encourages and rewards fracking, will only guarantee more suffering. In a burning building, there is no time to agree we can try buckets when all that can save us is a fire hose.	
28. Jennie Moody	For 30 years I was engaged in research tracing anthropogenic chemical signatures in the atmosphere, using observations of precipitation, aerosols, and atmospheric gases like ozone to study how pollutants are transported. Working at the University of Virginia, I evaluated the origins of sulfur and nitrogen in Charlottesville precipitation, using meteorological data and atmospheric transport models and was able to establish that higher concentrations of sulfate were associated with atmospheric transport. I am proud to think that this work, along with work I did on my Ph.D. may have contributed in some small but tangible way to the successful cap and trade program instituted by the Clean Air Act that reduced precipitation acidity by reducing atmospheric sulfates. Research published with colleagues at the University of Virginia illustrates that sulfate concentrations dropped substantially, as much as 85% from 1980 to 2009 measuring sulfate concentrations in precipitation and aerosols downwind of North America. This is simply to say, cap and trade works, we can lower emissions and their environmental impact. I support DEQ in the position of being the first southern state to formulate a program to encourage the reduction of CO_2 emissions. Since 1978 we have seen a 70 ppm concentration increase from 335 to 405 ppm. The proposal to cap carbon emissions in Virginia is a positive step toward reducing the atmospheric concentration of CO_2. Because the concentration of atmospheric methane has also been increasing, and methane contributes significantly to the aggregate GHG index, transitioning to energy sources that result in higher fugitive methane emissions are less desirable than transitioning to zero-	Support for the proposal is appreciated. DEQ agrees that emissions trading programs are a demonstrated, effective means of controlling air pollution.

Commenter	Comment	Agency response
	carbon energy sources. Despite concerns regarding methane, I support a statewide declining cap from 2020-30. Capping CO_2 from Virginia fossil-fuel fired electric generating facilities should allow for the pursuit of multiple pathways to attain lower emissions. A carbon trading market force that creates incentives for energy efficiency and development of zero-emission renewable energy sources would be a positive step forward. However, setting the baseline emission cap below 33 MT should be explored. It is important that models reflect the impact of proposed fossil fuel retirements and account for proposed renewable projects or energy efficiency gains that will be realized on or before 2020. Virginia's participation in RGGI, along with the reentry of New Jersey, means that 20% of the 50 states are creating incentives to lower CO_2 emissions. The implementation of this program should have enhanced benefits, including air quality improvements beyond CO_2 particularly to the extent that present fossil fuel generation is replaced by zero-carbon renewable sources like wind and solar.	
29. Randall Freed, Citizens Climate Lobby (CCL)	Virginia's GHG profile is like most other states, in that by far the biggest source is burning fossil fuels. The best way in the long run to reduce emissions is to introduce a carbon fee-and-dividend approach where we put a fee on carbon in fuels, and refund the money directly to households as a dividend. CCL advocates for this approach. In the short run, the most cost-effective and straightforward way to reduce our emissions is to focus on power plants. The RGGI system works--it reduces millions of tons of emissions per year without harming states' economies. Joining RGGI will provide a clear path for utilities to invest in a way that protects ratepayers and the environment. Most of the RGGI states use these revenues for energy efficiency programs or technology upgrades. The Grid Transformation and Security Act will create a structure for Dominion and Appalachian Power to invest $1 billion in efficiency programs over the next decade. It commits those utilities to make 5,000 MW in solar, wind, and grid technology upgrades, and provides a financial mechanism to recoup costs. Instead of plowing allowance money back to the utilities, let's demonstrate how a fee-and-dividend approach works, where environmental fees from sales of allowances get distributed evenly to all households. This approach, which CCL advocates for an economy-wide carbon fee and dividend, offers the best long-term solution.	Support for the proposal is appreciated. Virginia's utilities are regulated by the SCC, which ensures that ratepayers are protected. The primary purpose of the regulation is to address carbon pollution via linking to RGGI in accordance with ED 11; therefore, no fee-and-dividend approach is being considered under this regulatory action.
30. Ivy Main, Virginia Chapter of the Sierra Club	Putting Virginia on a carbon diet opens up opportunities for the growth of Virginia businesses that develop carbon-free renewable energy or that reduce energy use. The more we displace fossil fuels that emit carbon, like coal and fracked gas, the more room we make for wind	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed in further detail below.

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	and solar, and the more we reward energy efficiency. The timing is ideal. Solar is now the cheapest form of energy in Virginia, and offshore wind is maturing into a powerhouse industry. DEQ proposes to begin our carbon diet in 2020 from a baseline of 33-34 million tons of CO_2. That makes 3% annual reductions less difficult than if we start from a lower baseline. However, modeling suggests a more realistic baseline would be 30-32 million tons. We should use this lower baseline to send the right signal to our market participants. We don't want our utilities to bulk up on carbon between now and 2020, when our carbon diet begins. We want them to start putting healthier practices in place now, so by 2020 they have already begun shedding carbon by employing renewable energy and energy efficiency. Another way to cheat on a diet is to kid yourself about what you're consuming. Burning biomass is the empty calories of the renewable energy sector. Unlike wind and solar, biomass emits carbon pollution, more than coal. Dominion went down a blind alley with biomass, thinking it could meet renewable energy goals while burning stuff. That's bad for Virginia forests, the health of residents, the wind and solar industries and the climate. When you put CO_2 into the atmosphere by burning trees, it doesn't do the planet any good to pretend it's carbon neutral. DEQ also proposes to exclude sources of carbon pollution under 25 MW. That's consistent with RGGI, but the exclusion should minimize the incentive for generators to structure operations in a way that will use this exemption. In conclusion, I commend DEQ for developing this carbon diet, and encourage you to make it rigorous.	
31. Earle Mitchell	It is commendable that the board is addressing the problem of burning of dirty fossil fuels to generate electricity. RGGI auctions generate proceeds, which participating states are able to invest in energy and consumer benefit programs. Programs funded have included energy efficiency, clean and renewable energy, GHG abatement, and direct bill assistance. Virginia could allocate some of these proceeds directly to the southwestern part of our state to provide economic development, education and workforce training to those who have been affected by the decline of coal production. Since RGGI started those participating have realized $ 2.3 Billon in lifetime energy bill savings, 9 million MWh of electricity use avoided and 5.3 million tons of CO_2 emissions avoided. Through 2015, $40.4 million has been returned to consumers through rebates. Rather than suppressing economic growth the participating states have outpaced the remainder of the U.S. during the time that RGGI has been operating. RGGI provides technical and administrative services to all participating states; it is a non-profit organization.	Support for the proposal and the commenter's discussion of RGGI are appreciated. Specific disproportionately affected community issues are discussed in the response to comment 55.

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	There is no glory in re-inventing the wheel when other states have already done much research and have come up with a workable, cost effective system that will clean the air and add good paying jobs at the same time. We in Virginia have already embraced a cooperative structure in that we belong to the PJM system. The function of PJM is to coordinate the movement of wholesale electricity in 13 states. Note the similarity of PJM and RGGI: two organizations working for the common good of the participants. From a humanitarian standpoint we need to confront a truth that has not been adequately addressed. The Journal of the American Medical Association published a report which states that miners working in the Appalachian coal country are now experiencing the highest levels of black lung disease that have ever been reported. We need to phase out coal as soon as possible.	
32. 301 emails sponsored by the National Wildlife Federation	Thank you for taking steps to create a new carbon market in our state with the potential to link to RGGI and make Virginia a national leader in confronting the threat of a changing climate. Virginia communities and wildlife are already on the frontlines of a changing climate, and impacts like extreme weather and sea level rise are only expected to get worse, unless we act now. Wildlife like the Carolina northern flying squirrel need your help. This endangered species is now living on "sky-islands" on nine isolated mountain peaks in the southern Appalachians. The impacts of a changing climate threaten this special species' last remaining strongholds in the state. CO_2 pollution is the leading cause of climate change, which is already fueling phenomena like massive storms, floods, and megafires. It is critical that we reduce this pollution as quickly as possible. By creating a carbon market and linking to RGGI, we can use a proven, effective market-based solution to reduce carbon pollution from the power sector while generating revenue at the same time. This revenue can then be invested in additional climate solutions such as energy efficiency measures and renewable energy. My family, our wildlife, and our environment desperately need effective solutions from the growing threat of climate change. It is your duty to protect us, so please do everything you can to make our state a leader in climate action and carbon markets.	Support for the proposal is appreciated. The commenters' concerns are well taken.
33. Tyler Privott	I am in favor of passing this regulation. However, I wanted to point out some information that the DEQ failed to utilize in their models when coming up with a cap of 33-34 million tons. This information, if implemented, would further reduce the proposed cap below 33 million tons. To start, the models did not accurately depict the amount of current solar power and amount of future solar power used in Virginia. The state already has more than 360 MW of solar power, even though the model used a	Modeling is a decisionmaking tool that captures a set of information at a certain point in time. Assumptions and inputs that are used to develop a model can vary infinitely; therefore, it is important that every effort

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	current estimate of 274 MW. In addition, the model used to calculate a reasonable cap had an extremely slow growth rate for solar energy in Virginia; however, the amount of solar energy in queue for the next few years will increase the total output by at least 1000 MW, including a 500 MW plant that is being built in Spotsylvania. In addition, DEQ assumes a growth rate in electricity demand of 1.9-3%, but the expected demand growth over the next 15 years is only roughly 1%. Also, DEQ is using information that power plant CO_2 emissions have been overall increasing since 2012. 2012 was an anomaly in terms of weather, with a relatively warm winter and cool summer, which means the overall energy consumption would be low compared to other years; therefore, the total power plant CO_2 emissions would be lower relative to neighboring years. Virginia has also reduced the amount of electricity imports from other states by creating more power plants in the state; because of this, Virginia is now responsible for these emissions since the electricity was made in-state versus out-of-state, which would result in skewed data and growth. Either new models should be created or the regulation should include a lower cap than 33 million tons.	be made to make them as reasonable and accurate as possible for the time period under consideration. In order to accomplish this goal, DEQ availed itself of modeling expertise provided by the Georgetown Climate Center. The assumptions provided by DEQ were based on reference cases obtained directly from RGGI, coupled with adjustments made for specific Virginia circumstances. The load growth and renewable energy projections provided were the best available information at the time the models were developed. Since the regulatory action was initiated, other modeling and forecasting exercises have been undertaken by a variety of parties, including DEQ, using updated data. It is important to note that the implementation of the 2018 Grid Transformation and Security Act (see response to comment 51) was one of several factors pointing to the need for additional modeling based on new circumstances. 28 million tons has been chosen for the base year cap based on new modeling data performed for DEQ by the Georgetown Climate Center as well as public input; see response to 37 for additional detail. Given the fluid nature of modeling, it is important to note that additional modeling will be performed by RGGI in concert with

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		Virginia as the program progresses in order to assure that the program is operating properly and meeting its goals. Virginia also has the capability to conduct modeling at any time if needed.
34. Mike Sandler, Carbon Share	It is society's responsibility to pass along a livable planet to the next generation. Climate change is a dangerous threat to health, the environment, agriculture, the economy, and national security. Auctioning is important because we have seen in other carbon trading programs the tendency to overallocate permits, leaving the price at the minimum. In RGGI's case, power plants switched from coal to natural gas, leaving the program overallocated and the permit price at $2/ton. In the next 10 years, solar and battery storage will undercut the business as usual case, and make current baselines obsolete. This can be partially remedied with an escalating price floor on the permit price (what California did), but auctioning 100% of permits is better because it lets the market determine the impact of innovation on the permit price. DEQ should study how a "consigned auction" differs from a non-consigned auction. Is the purpose of the consignment to protect the companies from the price signal? A climate dividend is important. Some environmental groups would prefer revenues to be used to invest in solar and wind technologies. But this is the people's money. If companies are going to have to buy permits to pollute, that money belongs to all of us. An equal per capita dividend addresses the regressive impacts of the carbon price on low-income households, and encourages support for the program. In an age of economic inequality, a climate dividend could unify the public to fight climate change. A climate dividend could become part of a basic income, addressing unemployment and social justice aspects. In addition to a price floor on permits, DEQ should consider limiting or banning offsets. There should be no exemption for onsite fossil fuel plants. Virginia should adopt its own cap and rules before joining RGGI. Once in RGGI, it may be difficult to change. I have heard that many RGGI states would prefer a tighter cap but are unable to get consensus. Virginia’s cap should be less than 33 million tons. Virginia should look at an economy-wide cap, not just on the electricity sector. A good first step would be joining the Transportation and Climate Initiative (TCI). Finally, the Department of Mines, Minerals and Energy should change its name to the Department of Sustainable Energy.	Support for the proposal is appreciated. The primary purpose of the regulation is to address carbon pollution via linking to RGGI in accordance with ED 11; therefore, no fee-and-dividend approach is being considered under this regulatory action. See the response to comment 65 for a discussion of the industrial exemption. As discussed in the response to comment 26, DEQ will not implement the offset option although offset allowances from other RGGI states will be recognized. See the response to comment 37 for a discussion of the cap.

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35. Mark Belleville	I am a professor at the Appalachian School of Law, and I teach energy related courses. I strongly support efforts to create an trading-ready GHG emission reduction program for new and existing power plants, with the goal of joining RGGI. It has been 30 years since James Hansen testified before the Senate on the risks of climate change, 26 years since the UN Framework Convention on Climate Change, 11 years the Supreme Court handed down Massachusetts v. EPA, and 5 years since President Obama's Climate Action Plan and we still have no federal law or rule addressing the emission of GHGs like CO_2 and methane. Into that void, states must step. There are many ways to internalize the externalities associated with emitting GHGs; while the RGGI program may not be my first choice, it has grown to work fairly well. One of the benefits Virginia enjoys in entering RGGI at this stage is that it has some empirical data on which to judge the program's efficacy and its fit with Virginia's goals and policies. I'd like to point out some features of the RGGI program that should help inform Virginia's decision, most of which weigh in favor of joining. The serious design flaw of the RGGI program was an initial overallocation of allowances. The spread between allowances and actual emissions was exacerbated by a decrease in energy consumption caused by the economic downturn, the displacement of coal by newly available cheap natural gas, and increased renewable energy deployments. This overallocation led to floor-level prices for allowances, and the absence of a robust trading program. The allowance auctions operated as a small carbon tax, an expense that utilities and their customers barely noticed. This problem has been addressed. By retiring a number of allowances and setting new reduced cap levels, the program is in a position to effectuate behavioral changes to the tune of a 3% reduction from current levels each year going forward. While the price of allowances has risen, as it was designed to do, it is still fairly low compared to other cap-and-trade programs around the globe, and mechanisms exist to prevent it from rising too much. Even as the overallocation caused depressed allowance prices, the program has always been successful at raising revenue for the participating states. More than 90% of the allowances have been auctioned off, raising nearly $3 billion for participating states. While it is for member states to decide on how to allocate allowances and spend proceeds, all states have auctioned the bulk of their allowances and utilize the bulk of the proceeds on energy efficiency, clean and renewable energy, and direct bill assistance. Thus, even if the allowance prices were not enough to change utility behavior, these	Support for the proposal is appreciated, as is the commenter's discussion of RGGI and Virginia issues. The commenter's concerns about the SCC's role in managing rates is well taken. SCC proceedings and audits are all public; this vertically integrated system is complemented by the RGGI program's open and transparent processes. All auction information is tracked and publically available. At the end of a compliance period, it will be possible to determine how many allowances were bought and sold, by whom, and at what price; based on this information one could then determine to what degree program costs are recoverable. DEQ is therefore confident that SCC's oversight role as well as the transparency of the complete process will ultimately protect Virginia's consumers.

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	expenditures have helped contribute to not-insignificant emission reductions in member states. With 39 auctions behind it, the quarterly regional auctions are mature and seem to function today with little difficulty. The RGGI program applies only to fossil-fuel fired power plants >25 MW. While I would prefer to see greater coverage for broader industry, the limited scope should provide some comfort for policy-makers worried about a broadly negative economic impact. It is possible that the cap-and-trade program could be expanded beyond fossil-fuel power plants, as this has occurred in both California and Europe. The RGGI program has built in enough safeguards to avoid the demise of affordable electricity. It allows only a limited use of offsets. But it allows increasing use of offsets if the prices for allowances reach certain levels. The program allows unlimited banking of allowances, and has a 3-year, both of which help utilities accommodate fluctuating annual electricity demands. And it has a reserve price that will now rise 2.5% per year; this helps assure that the allowances are utilities hold continue to have value. One of the most serious challenges Virginia and RGGI will face is that most of the currently participating states have deregulated their electric utilities far more than Virginia has. I would focus my attention on how much the SCC will allow Dominion and APCo to pass on increased costs to its customers in the SCC-approved tariffs. I urge the rulemakers to be transparent with the public on this issue. As a rate payer, I am comfortable with a small rise in my electric rates associated with joining RGGI. But I also am aware that recent tax cuts have benefited the bottom line of both major Virginia electric utilities, and there is likely enough excess profit there to absorb the additional costs. I appreciate the Attorney General's opinion that this program is achievable under existing law. There will be serious and plausible litigation over Virginia's attempt to effectuate this change without the General Assembly's involvement. The General Assembly will need to pass legislation to determine how allowances are allocated and revenue spent. For this reason, I would urge DEQ and other involved agencies, as well as our delegates and senators, to work to provide explicit approval for this proposal. State leaders must be clear-eyed as to the sea-level and storm-surge threats facing Norfolk/Hampton Roads, including the naval base and export facilities. Hurricanes affecting mid-Atlantic states will continue to grow in frequency and intensity. Studies suggest degradation	

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	and loss of economic value to the Chesapeake Bay, and loss of fish stock and forest productivity. While climate change is a global problem, self-interest and self-preservation should also motivate the state to reduce its emissions. This is a very good proposal, and I strongly support it.	
36. Coleman Dickerson	This regulation needs to be put in place, but not without some changes to the modeling process and general process of assumptions. The proposal grossly overestimates the projected growth in Virginia's future electricity consumption. This overestimation results from neglecting the strides the state has been making in increasing solar power, and neglecting the reduction of increasing electricity demand given a weakening stream of electricity imports. I insist that the projections for Virginia's future electricity demand be re-modeled and realistic expectations for this growth replace the 1.5% - 3% estimation given in the current report. Updating the models with more relevant and accurate information would support the 33 million ton cap versus the 34 million ton cap. Setting the cap at 33 million tons would provide a more accurate goal for the front end of this regulation's time allotment. Reaching the estimations for our 2030 cap is more feasible when the range between starting goal and ending goal is decreased.	See the response to comment 33 for a discussion of DEQ's modeling efforts and the response to comment 37 for further discussion of how the final cap was established.
37. Victoria Glasgow	While it is a step toward responsible GHG management, the proposed cap is higher than what we can meet under current projections. I urge DEQ to update its baseline scenario to reflect more realistic estimates. The current cap of 33 or 34 million tons CO_2 is based on the assumption that energy demand is going to increase at a rate of 1.9% and 3% for residential/industrial and commercial development. When including solar capacity, residential/industrial demand growth is under 1% for the next 15 years. Moreover, commercial demand is growing only because of the prevalence of server farms. The energy demand of these solar farms is covered by newly-installed solar. For example, a 500 MW plant has been proposed in Spotsylvania, and Microsoft has purchased more than half of the energy it will produce. Spotsylvania's 500 MW solar farm is projected to cut 1 million tons of CO_2 per year, so why is this already-planned projection not accounted for in the cap? Additionally, Dominion has 3 new natural gas plants that will displace coal plants and result in reduced emissions: another reason to lower the cap, since the plants will be able to provide the same amount of energy with lower emissions compared to coal. If DEQ keeps its baseline emissions too high, it inflates the cost of reaching the cap. DEQ should consider including ECR as part of the cap (9VAC5-140-6210) plus output-based allocation (9VAC5-140-6215). The cap should also start in 2019 to effectuate the Executive Order as soon as possible.	As can be seen from this and many other comments, a wide range of caps has been advocated. Recommendations ranged from a low of 20 million tons per year to a high of 37.5 million. Many recommendations fell within a range of 30-32 or 33-34. It has been determined that 28 million tons is the appropriate level for a starting base budget. This initial budget will enable the reduction of CO_2 while enabling Virginia's participation in RGGI to operate smoothly and effectively. Since the regulatory action was initiated, modeling and forecasting exercises beyond the department's original modeling have been undertaken by a variety of parties using updated data. Notably, modeling by NRDC using

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		updated assumptions projects business-as-usual emissions of 28 million tons in 2020 (see comment 121), and NRDC recommended that the cap be set accordingly. As discussed elsewhere, implementation of the 2018 Grid Transformation and Security Act, which calls for significant utility energy efficiency and renewable energy initiatives from Virginia investment owned utilities, will further lower emissions beyond what was originally proposed. Additionally, new modeling was conducted with updated information on a business-as-usual basis for Virginia and the 9 RGGI states that indicated a cap of 28 million tons was achievable and reasonable; see the response to comment 33. Ultimately, the program needs a starting point, and, having reviewed the new information and considerable public input, DEQ believes that 28 million tons is a reasonable program starting point. More detail on how DEQ's modeling was performed is discussed in the response to comment 33. While DEQ expects to achieve steady emission reductions whatever the starting cap, the state also needs to balance that goal with the reality that there will always be a degree of uncertainty as to the composition and amount of emissions in the future that no model can accurately predict with certainty. Imposing a cap that is too stringent or too

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		lenient will not help Virginia reach its goals, and DEQ believes the final cap strikes the proper balance. As discussed in greater detail elsewhere, RGGI routinely undergoes comprehensive, periodic reviews to consider program successes, impacts, and design elements. Caps can be modified as needed to ensure long-term program success, not only for RGGI but in the specific interests of the Commonwealth.
38. Chris Bolgiano	I support DEQ's cap and trade proposal as at least a first step to addressing climate change. However, it is so limited in scope that Governor Northam should issue a new Executive Order and expand state authority to address certain shortcomings. The irony of facilitating gas pipelines while promoting a cap and trade program for CO_2 is not lost on us. To avoid subverting addressing climate change, CO_2 equivalents should be calculated for net emissions impact of methane by fracked gas production and transport. These methane-CO_2 equivalents must be included in the CO_2 budgets and allowances, because utilities burning coal or oil will move to gas to claim lower CO_2 emissions. A program based only on CO_2 will stimulate fracking, gas transport, and pipelines. Methane is a greater climate danger than CO_2. The Attorney General has ruled that "The Board has the authority to establish a statewide cap on GHG emissions." GHGs include methane. As Bill McKibben says, moving from coal and oil to gas is like kicking OxyContin by taking up heroin. Fossil fuel utilities should pay for the privilege of damaging our environment and Virginia should apply those revenues toward climate solutions, as RGGI does. According to DEQ staff, "Unlike a conventional auction, such as the one RGGI manages, a consignment auction is revenue neutral, and will enable Virginia to link to RGGI while staying within the bounds of Virginia law." In addition, if Virginia law prohibits the return of auction revenues to the state, or if the General Assembly must approve revenue-positive auctions, then DEQ should outline the appropriate steps to overcome these obstacles, because RGGI states gain billions of dollars from auctions which are then used for climate solutions. The single most powerful natural climate solution is	The commenter's concerns about methane are acknowledged; however, as the specific purpose of this regulation is to enable linking to RGGI, methane and natural gas are not addressed in this regulation. As discussed in the response to comment 26, offsets will not be implemented at this time. Biomass is further discussed in the response to comment 67. For a detailed explanation of how the consignment auction will operate, see comment 136.

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	forest conservation. Because trees take in CO_2 for as long as they live, which for most of the hardwoods that constitute the majority of Virginia's forests is at least four centuries, trees are the best technology for carbon capture and storage. Yet the proposal does not include forest carbon offset credits, which RGGI allows up to 3% of CO_2 emissions, and the California market allows up to 6%. Given that 62% of Virginia's land base is in forest, and most of that acreage is owned by more than 400,000 private individuals and families, this incentive would benefit all Virginians not only with climate change mitigation but also by long-term protection of water and air quality. To omit forest carbon offsets, and miss the opportunity to encourage retaining forests for the carbon they have already locked up and the amounts they would continue to sequester, would be a strategic mistake. Counting biomass as carbon neutral is another mistake. In a letter to Governor Cooper of North Carolina concerning the increase of biomass burning, more than 100 scientists stated: "Biomass plants emit more CO_2 emissions per unit of electricity than coal or gas plants. In addition, it releases harmful particulate matter and smog precursors.… Removing the CO_2 emitted from burning trees for electricity requires waiting decades to a century for trees to regrow. Forests in the U.S. South are logged at a rate four times that of South American rainforests. A 2016 study showed that logging reduced the potential of the U.S. forest carbon sink by approximately 35%. Increasing carbon sinks by way of forest conservation and restoration plays a significant role in emissions reduction." While logging residues give off CO_2 during decay, removing them for burning depletes soil by removing nutrients, degrading forest productivity including the regrowth of the trees supposed to balance emissions from burning. Whole trees are being harvested for pellets, an industry that has degraded forests in the southeast and is moving into Virginia. There is no mechanism to verify that trees regrow on site, and cutover forests are ripe for development. Even if trees do regrow on site, decades are required for such forests to capture and store as much CO_2 as was emitted by burning, and during that time CO_2 emissions will increase because trees can't grow fast enough to offset them. This proposal covers only one facility that co-fires coal and biomass but should also include the others that burn only biomass, and ideally not allow burning biomass at all.	
39. John Reeves	DEQ and the board deserve wide support for this key initiative. The evidence and science is overwhelming that anthropogenic climate change is very real. Threats to our health, economy, infrastructure, coastline and national security plus carbon pollution from burning fossil fuel is significantly contributing to ramping-up climate change and sea-level rise. Practical, market-based strategies	Support for the proposal is appreciated. See the response to comment 65 for additional discussion about the industrial exemption, and response to comment 67 for further

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	should be optimized to improve Virginia's poor rankings on energy efficiency plus on renewable energy, especially on solar energy capacity and initiatives. Virginia should expedite steps to partner with RGGI. The legislature may also need to concur, so preparations and good findings must be available to ensure this concurrence. Many benefits await good measurement, especially lowering of wasted energy, swinging demands on power grids and peaking facilities, and cost of power bills. The regulation should include practical, market-based ways to continue CO_2 reductions after 2030. There are few justified exemptions for fossil-fueled heat and electricity generators at a factory. There may be a reasonable compromise on some exemption of blended in biomass/forestry byproducts. It seems that Virginia forestry and pulp and paper facilities can justify levels above 10% blend with fossil fuels--maybe up to 30 or 50%?	discussion of treatment of biomass.
40. Adam Brookman	We have been given a tremendous opportunity to protect our future with this carbon emissions cap. While this program is best we can hope for right now, the choice we have been presented for how many annual millions of tons of CO_2 to be released is simply appalling. I understand that in any negotiation there is a give and take for all parties involved, but why must we give away what has been taken from us for so long. To choose between 33 and 34 million tons of CO_2 is insulting and reeks of nothing but greed. The reason we have these two choices is obviously the representatives from the major power companies of Virginia. Thank you for giving your customers options. I propose a different amount. I propose that there be an annual allotment of no more than 25 million tons of CO_2 with the amount reducing by 8% each year. This goal may be aggressive but easy goals is something we do not have time for. The text of the proposal consistently refers to "fossil fuels" when discussing CO_2 reduction. While fossil fuels are one of the worst contributors of CO_2, they are not exclusive. The burning of wood or biomass produces equal if not more CO_2, so why should it be treated any different? There should be no exemption for any power producing facility on any of their units that produce CO_2 in any way shape or form. Biomass burning power generation must be held accountable for their CO_2 emissions.	See comment 37 for further discussion of the cap and comment 67 for further discussion of the treatment of biomass.
41. Maria Papadakis	I am writing to indicate my strong support for a cap-and-trade allowance system and participation in RGGI. The regulation should include opportunities for CO_2 emission offset allowances in agriculture (forest offsets and avoided methane from agricultural manure management operations). This would enable the farm sector to benefit financially from efforts to protect forests and to afforest, and from efforts to mitigate methane, a highly potent GHG. The regulation must make a provision for the voluntary renewable energy market set-aside allocation mechanism, as allowed for by RGGI. The set aside	Support for the proposal is appreciated. DEQ recognizes the value of voluntary renewable energy market; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME. Given the uncertainty of any benefits

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	enables the voluntary renewable energy market to contribute to the state's overall CO_2 mitigation goals and compliance opportunities, and are critical for the process of reducing emissions. It is also needed to avoid weakening the in-state economy for renewables. The absence of a set aside could cause Green-E to quit certifying in state green power. The Center for Resource Solutions explains that "If a cap-and-trade program is adopted and implemented without a voluntary renewable energy set-aside mechanism, Green-e may be unable to continue to certify voluntary sales of renewable energy from the state, or the additional cost of allowance retirement to the voluntary purchaser may preclude certified sales from generation in the state. This would mean that voluntary buyers in these states will get their certified renewable energy from outside of the state in the future. A voluntary renewable energy set-aside will allow for this demand to be met by resources in the state--allowing your state the opportunity to maintain the private investment dollars that may otherwise go elsewhere."	associated with a complex offset program, DEQ is not, at this time, proposing to implement offsets; see the response to comment 26. See comment 51 for further discussion of the set-aside.
42. William M. Shobe, University of Virginia	Output-based updating of allocations is appropriate and prevents emission leakage. Model runs show that output-based updating of allowance allocations helps reduce leakage while retaining incentives to shift generation away from high-emitting sources. Free allocation of allowances acts as an implicit subsidy for the generation of electricity by granting to ratepayers the market value of the stream of allowances. Generators take this grant into account when calculating their marginal cost of generation and so can maintain relative competitiveness with the generators in the rest of the PJM region. This prevents generation from migrating out of Virginia and into the uncapped portions of PJM. Output-based allocation seems the appropriate choice given the potential for leakage of emissions into the rest of PJM. The consignment auction improves efficiency and fairness. By enhancing liquidity in the auction, requiring consignment probably improves price discovery in the RGGI market. The act of consignment and the resulting requirement that Virginia utilities purchase back what they need may make allowance prices more salient to market players and the generators. Consignment auctions monetize the value of the grant of allowances to the generators--they establish a clear market value of the grant. This allows the SCC to establish whether allowance value is being transferred to ratepayers rather than being retained by generators. Given the value of the free grant of allowances, it is critical that ratepayers be protected from generators pocketing the value of allowances. The consignment auction helps make this possible. The ECR helps correct over-allocation. In every emission	See the response to comment 33 for a discussion of modeling, and the response to comment 37 for discussion of the cap. The commenter correctly notes that carbon intensity is decreasing.

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	market established to date, allowances have been over-allocated at first. In the case of RGGI, the cap has been reduced dramatically due to the initial over-allocation. Even after the initial allocation, costs often fall faster than the cap leading to lower than expected allowance prices. The proposed rule continues this pattern of over-allocation, since DEQ has set the initial cap too high. This makes the ECR an important backup mechanism for ensuring that emission reductions will be greater, if the costs of achieving those reductions fall below expectations. The initial cap should be 30 to 31 million tons. DEQ has overestimated business-as-usual emissions over the next 15 years. This makes achieving the reductions for a given cap level appear more expensive than they really are. DEQ's analysis is not off by just a little, it is grossly in error. The agency has provided an analysis that is inconsistent with facts that were readily available to the agency at the time it did its analysis. What is more, the bias is clearly in one direction, overstating the emissions that would occur in the absence of this rule. This, in turn, overstates the cost of achieving a given reduction. "Reference Case 1" (RC1) assumes that Virginia will generate zero electricity with solar PV for the entire forecast horizon. This assumption is false. At the time DEQ did its analysis, Virginia had more than 100 MW of solar PV in operation with more than 250 MW under construction. By the end of 2017, Virginia had just more than 360 MW of solar PV capacity in operation. This capacity can be expected to generate approximately 720 GWh of electricity per year. In addition to the solar already in operation, the PJM interconnect queue has several gigawatts of solar PV slated for Virginia. Two years ago, Dominion had agreed to have 400 MW in place by 2020, but in April 2017 the company announced in its IRP its intention to build around 240 MW per year for the next 15 years. This estimated solar build was for Dominion's "no carbon regulation" case. APCO and ODEC had both announced that they were adding solar capacity as well. There are currently over 700 MW of Virginia solar PV capacity in the engineering and procurement stage. The PJM interconnection queue has close to 6 GW of capacity planned for Virginia in the next few years. Much of this was already on the queue when DEQ assumed zero solar build for Virginia over the next 15 years. At the time of its analysis, DEQ had reason to know that Virginia would probably have at least one GW of solar PV capacity by 2020. Yet the agency assumed in RC1 that there would be zero solar PV built in Virginia before 2031. This inflates the appropriate level of the cap. Reference Case 2 (RC2) is only marginally better; again, understating likely solar PV capacity and generation that would occur in the absence of the rule.	

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	The agency assumed that, by 2020, Virginia will have a capacity of 344 MW and will generate only 819 GWh of solar PV electricity. This is less than half of what would reasonably have been expected even before ED11 was announced. Taking the current 360 MW and adding 240 MW per year, this implies solar PV generation of about 1300-1500 GWh more per year than estimated in RC2. If the solar PV displaces half coal and half natural gas, then DEQ has overestimated CO_2 emissions by nearly 1.5 million tons per year due to underestimating solar capacity. The mistake is much greater for RC1, where solar PV is incorrectly assumed to be zero. By underestimating the amount of solar PV generation that would have occurred without the rule, DEQ has overestimated business-as-usual emissions by around 1.5 million tons/year. Both scenarios ignore already contracted capacity increases in the short run. Both of DEQ's Reference Case scenarios err by assuming unrealistic rates of growth in electricity generation. This, in turn, results in unrealistically high capacity factors for coal plants in Virginia and unrealistic growth in fossil fuel generation capacity, mostly natural gas. This further inflates expected business-as-usual emissions and is used to justify a higher cap than is necessary. In its April 2017 IRP, Dominion estimates future generation growth to be 1.3% per year. Accepting Dominion's estimate for demand growth, DEQ made a serious error in its modeling of reference case emissions by assuming unrealistically high growth rates in generation. DEQ's generation scenario for RC 1 has generation growing at an average rate of 1.9% per year and RC2 has it growing at 3.4% per year. Dominion represents 70% of generation in Virginia. The APCO region, which is the second largest in Virginia, has flat or declining demand. The remainder of the state is too small to make up the difference, but does not have growth rates higher than Dominion's. DEQ assumed a higher growth rate for generation than the electric utilities are using in their own capacity planning. This inflates the estimated need for fossil fuel combustion in future years. Dominion has over-forecast demand every year since at least 2012. Its forecasts of future generation have fallen dramatically over this same period but are still too high and will continue to fall in the next few years because of a flaw in its forecasting methodology. Generation has grown faster than demand since 2015 because of a Virginia state policy to repatriate generation and reduce imports of electricity. The process of repatriating imports is now essentially complete. Dominion is anticipating small amounts of exports over	

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	the next few years, given that it is nearing completion of 3 new natural gas generators. Now that the process of repatriating generation is complete, generation and demand will tend to grow at the same rate. Recent growth in electricity demand in Virginia has been less than 1% per year even as the state economy has grown following the last recession. Recent trends in both residential and industrial demand have been negative, that is negative growth in demand. In the industrial sector, this is due to a shift to less energy intensive industries. In the residential sector, this is due to the penetration of energy efficient technologies and improvements in the energy performance of the building shell. The one source of increase in electricity demand in Virginia in recent years has been server farms. This is a small fraction of overall electricity demand in Virginia and is already accounted for in Dominion's forecast. DEQ has no basis for its grossly overstated estimates of future demand growth in Virginia. Many firms building server farms want to cover their energy demand with renewable generation and the firms are increasingly insisting that the generation be local. Server farm demand cannot account for the growth in fossil fuel emissions assumed in DEQ's faulty analysis. DEQ's two reference cases make different assumptions about 2017 total generation: 96,786 for RC1 and 93,305 for RC2. At the time DEQ did this analysis, there was zero chance that demand would be as high as assumed in RC1, but this is consistent with the general pattern of unsupported and erroneous assumptions in its analysis. Actual generation for 2017 was 93,500 GWh. To be conservative, take the higher of the two 2017 generation estimates from DEQ's reference cases, 96,786 GWh (even though it didn't actually happen) and increase it at 1% per year. The resulting generation profile shows that DEQ's assumed generation is in excess of any reasonable expectation by 3,600 GWh per year by 2020 and 10,500 GWh by 2031. If you assume that each GWh displaces half coal and half natural gas, then each 1,000 GWh is associated with on the order of 1 million short tons of CO_2. In light of this, it is clear that DEQ's analysis has grossly overestimated BAU emissions. Combined with the solar PV analysis, the 2020 emission overestimate is on the order of 4 million tons of CO_2 per year. The assumption of half displacement of gas and half coal is somewhat conservative. Chances are that more coal dispatch will be displaced. Dominion's IRP had a BAU scenario and a scenario for operating under a cap under the Clean Power Plan. One of the major differences	

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	between these two scenarios is the retirement of significant coal capacity in 2020, when the CPP was to come into force. These coal plants were not retired under the BAU scenario. This implies that substantial reductions in coal dispatch can be anticipated under this cap, which will ultimately be tighter than what would have been true under the CPP. And coal dispatch is already falling sharply due to the addition of the new natural gas capacity. Net electricity generation from coal in Virginia fell from 15,600 GWh in 2016 to 10,110 GWh in 2017. This downward trend will continue as Dominion brings its Greensville natural gas power plant online in 2019. DEQ has failed to make a case for a cap greater than 30 million tons per year. In recent years, any increases in generation due to load growth (including repatriating imports) has been offset by reduced emission intensity of generation. Since nearly all increments to generation in Dominion's IRP are solar PV, through to the end of the 15-year planning horizon, emission intensity is bound to fall further. In its reference cases, DEQ assumes a natural gas price of $2.83 in 2017 rising to $3.95 in 2020. In April 2018, the spot price of natural gas hovered around $2.75/MMBtu. To match DEQ's assumption, natural gas prices must rise more than 30% in the next two years. And yet, the futures price for natural gas, as of April 3, 2018, is $2.70. DEQ assumed a high rate of growth in natural gas prices and plugged that assumption into its model even though it was known at the time that there was a substantial probability that the price would be lower. This adds more upward bias in the estimated business-as-usual emissions.	
43. Jonathan Miles, James Madison University	The proposal will not provide any avenues for voluntary market customers to ensure that their renewable energy purchase contributes to emissions reductions beyond the cap set by the program. All RGGI states with the exception of Delaware and California have implemented voluntary renewable energy set-aside mechanisms. Without the set-aside, Virginia generation would be ineligible for participation in the Green-e Energy market, meaning that regional voluntary market customers would have to invest in renewable energy in nearby states in order to have the renewable energy certified. This would benefit neighboring states and discourage increased investment in renewable energy in Virginia. The set-aside mechanism is important to continue to stimulate private investment in renewable energy in Virginia, which in turn will promote local jobs and businesses, and further reduce GHG emissions generated in the state. I strongly encourage the inclusion of the voluntary renewable energy market set-aside allocation mechanism from Section XX-5.3(l) of the RGGI Model Rule.	DEQ recognizes the value of voluntary renewable energy market; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME. See comment 51 for further discussion.

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44. Christina Luman-Bailey, City Council of Hopewell, Virginia and Chair, GoGreen Virginia	I am concerned that the industry exemption barely passed; although I agree that all major carbon emitters should be held accountable, it is typically the coal-burning utilities sector which is the biggest offender and has a monopoly on the customer market, whereas industry must face more competition and may need more flexibility re cost of production in order to compete in the private sector. The threshold of 90% biomass in order to claim carbon-neutral seems unreasonable. Basing the credit for carbon neutral on the percentage of biomass makes for a more reasonable, scientifically-based formula and is fair. I am glad to see the DEQ moving forward with air pollution controls, but I think that a more reasonable, scientifically-based proposal will be more accepted by all and therefore more successful.	See comment 67 for further discussion of how biomass will be addressed.
45. Mayor Tom Sibold, City of Covington; James H. Hudson, III, Mayor, Town of West Point; William Hodges, Chairman, King William County Board of Supervisors	The WestRock Paper mill in Covington is a significant economic driver for our community providing over 1000 jobs and supporting over $200,000,000 in local investment through supplier purchases, payroll, and taxes every year. If care is not taken, the proposed regulation could have a serious and negative impact on the mill. The West Point Paper Mill has been an important economic driver for the Town of West Point and the broader region for over 100 years. Today, the Mill employs roughly 500 people in good paying jobs. The Mill is the largest taxpayer in the Town of West Point (and one of the largest in King William County), and contributes over $100,000,000 to the regional economy every year. Papermaking is an energy intensive and trade exposed industry, and the mill operates in an intensely competitive business environment. The West Point Paper Mill is of critical importance to King William County. The mill is one of the largest employers, one of the largest taxpayers, and one of the most significant corporate members of the community. The hundreds of jobs that the mill provides, the hundreds more that it supports, and the millions of dollars that it injects into the local economy are irreplaceable. Simply put, the mill is the lifeblood of King William County. DEQ should take great care in crafting the final regulation to ensure the mills are not placed at a competitive disadvantage. Specifically, the regulation should: 1) Maintain the existing exemption for industrial generation. 2) Fully recognize the carbon neutrality of biomass by amending the regulation to allow for the subtraction of biogenic emissions from any covered source. This is an approach that is consistent with established science and the existing RGGI program. 3) Preserve the free allocation of carbon allowances currently in the regulation, as a full auction of allowances could significantly increase the financial impact to	The commenters' concerns are well taken. The cap-and-trade program has been designed to meet the goal of reducing carbon pollution--which will be beneficial to the manufacturing sector--while protecting the economy. Industrial generation and biomass are discussed in greater detail in responses to comments 65 and 67. DEQ agrees that free allocation of allowances is integral in ensuring the smooth function of the consignment auction.

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	energy-intensive industries.	
46. Virginia Solar Energy Development and Energy Storage Authority	The Authority was established to 1) facilitate, coordinate, and support the development of the solar energy and energy storage industries and storage projects through programs that increase the availability of financing for solar energy and energy storage projects; 2) facilitate the increase of solar energy generation systems and energy storage projects on public and private sector facilities; 3) promote the growth of the Virginia solar and energy storage industries; 4) provide a hub for collaboration between entities, public and private, to partner on solar energy and energy storage projects; and 5) position the state as a leader in research, development, commercialization, manufacture, and deployment of energy storage technology. If carbon emitting generation is reduced, cleaner forms of power generation will become more widespread. The addition of energy storage will allow intermittent renewables to continue providing power at times when conventional generation would typically be required, leading to further carbon reductions. The Authority recommends that a portion of any proceeds resulting from the auctioning of the 5% of allowances set aside for DMME be used to advance renewable energy coupled with energy storage technologies. Legislators and the Governor, through their creation of this Authority, recognized that accelerated deployment of renewable energy and energy storage technologies will support a more robust and secure electric power grid. It will also lead to decreased carbon emissions, help grow the energy storage industry and create economic benefits for Virginia and its citizens.	DEQ recognizes the value of renewable energy coupled with energy storage technologies; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME. See comment 51 for further discussion of the set-aside.
47. About 25 individual commenters.	General opposition to the proposal was expressed.	The commenters' concerns are recognized.
48. 272 emails sponsored by Food and Water Watch	I urge you to drop plans to join RGGI, a short-sighted cap and trade program. It seeks to limit CO_2 emissions, but it incentivizes switching from coal to fracked gas, exchanging methane for CO_2. That's not progress. Implementing RGGI would ultimately mean more fracked gas and pipelines in Virginia. We don't need schemes like RGGI. For over 40 years, the Clean Air Act has succeeded by requiring each source of pollution to meet individual, technology-based emissions controls that minimize emissions without the lack of accountability that purchasing credits and offsets brings. Effectively, cap and trade programs like RGGI just set up a pay-to-pollute scheme that big polluters can take advantage of year after year.	Executive Directive 11 directs DEQ to "1. Develop a proposed regulation for the State Air Pollution Control Board's consideration to abate, control, or limit carbon dioxide emissions from electric power facilities that: a. Includes provisions to ensure that Virginia's regulation is "trading-ready" to allow for the use of market-based mechanisms and the trading of carbon dioxide allowances through a multi-state trading program; and b. Establishes abatement mechanisms providing for a corresponding level of

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		stringency to limits on carbon dioxide emissions imposed in other states with such limits." (Emphasis added.) In other words, the proposed regulation is designed to meet the Governor's mandate to control CO_2 via participation in an emissions trading program. In the absence of federal action to address climate change, Virginia is therefore taking active steps to address this pollutant--but not starting from scratch. The effectiveness of Virginia's carbon control program will be maximized by linking with the only realistically available program for controlling carbon. The control of methane emissions is indeed important; however, this specific regulatory action is not the means by which that can be accomplished. Methane is controlled elsewhere in the Regulations for the Control and Abatement of Air Pollution as appropriate, and other measures addressing methane may be addressed at a different time in accordance with the federal Clean Air Act and state law. Because the primary purpose of this regulatory action is to enable Virginia to link to the RGGI program, the regulation was drafted to adhere to the RGGI Model Rule as closely as possible within the framework of Virginia-specific administrative requirements. The commenters are

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		correct that the federal Clean Air Act has been extremely effective in reducing air pollution. Emissions trading programs, which are authorized under §§ 108, 109, 110, and 302 of the Act and implemented under 40 CFR Part 51, are part of the Clean Air Act success story. Emissions trading is a proven means of reducing air pollution; see, for example, comments 28, 113, and 136. Cap-and-trade sets a specific goal and a schedule on which the goal must be met. Clearly, linking to RGGI will ensure additional reductions in carbon pollution not only in Virginia but in the region. Joining RGGI will impose additional controls on each source of pollution beyond other individual, technology-based emissions controls. Note that RGGI specifically addresses CO_2, not methane. RGGI issued the "CO_2 Emissions from Electric Generation and Imports in the Regional Greenhouse Gas Initiative: 2015 Monitoring Report" on April 27, 2018. This market analysis summarizes data from 2005-15 for electricity generation, net electricity imports, and related CO_2 emissions for the participating states. It demonstrates that carbon emissions in the RGGI are decreasing in intensity; essentially, carbon intensity is being decoupled from electricity generation.
49. Elizabeth Struthers Malbon	It appears that the decision to participate in a CO_2 cap and trade program has already been made by the board, the so-called DEQ, Governor Northam, former Governor McAuliffe, or Dominion. The sad thing is that distinctions	See response to comment 48. As discussed in comments 28, 113, 136 and elsewhere, cap and

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	between these individuals and agencies may be distinctions without a difference. No one can expect the citizens of Virginia to trust these individuals and agencies given their support for pipelines. The evidence for the decision having been made is in the public notice: "In addition to any other comments, the board seeks comment on whether the initial Virginia CO_2 Budget Trading Program base budget for 2020 should be 33 million tons or 34 million tons, and declining accordingly by 3% per year. After considering public comment, the board will make a final selection of either 33 million tons or 34 million tons." So, the public is being asked to comment on whether we want our air polluted by a huge amount or by somewhat more than a huge amount. I would like the board to think about who is pushing for this program in the first place and who will benefit from it. It is disingenuous of McAuliffe and Northam to act as if they are being responsible in thinking about the dangers of the CO_2 that Virginia's power plants are pumping into the atmosphere, hastening global warming with its sea-level rise and extreme weather events. Participating in such a systematic and continued polluting of the atmosphere might give the impression that something is being done to clean up the air or slow down global warming, but this is not the case. What is needed is regulation that would require energy companies to take real steps toward cleaner air and mitigating global warming by moving away from fossil fuels altogether and utilizing the fast-growing and less expensive technologies for solar and wind power. Such a short-sighted cap and trade program has not worked elsewhere. This program creates incentives for switching from coal to fracked gas. Methane from fracked gas is a more powerful driver of global warming than coal. Fracked gas benefits the companies that extract, transport and sell it, and a cap and trade program would pass that advantage along to power companies that burn it--and to any politicians they support. The cap is excessively high, and the price of permits is too low, allowing energy companies to buy or trade their way out of reducing emissions. Such a company could also hold their cheaply-bought allowances to offset future failures to reduce emissions. This program only addresses CO_2 emissions and ignores the impact of methane on climate change and air quality. It would allow switching from coal to fracked gas, effectively worsening climate impact while still complying with the cap and trade agreement. It hardly seems coincidental that two Virginia Governors who were supportive of or tolerant of the building of two interstate pipelines for fracked gas and one state-wide energy monopoly that supported them would now be encouraging a cap and trade program that lets burning	trade programs are proven, effective means of controlling pollution.

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	this other fossil fuel instead of coal count as environmentally responsible. Money to encourage favorable legislation and regulation has never been a problem for Dominion Energy, and clean air has never been a priority for them. However, the law requires clean air to be the board's priority. You are hardly in a position to pat yourself on the back if you allow only 33 tons of CO_2 pollution instead of 34 tons while turning a blind eye to methane pollution. For over 40 years the Clean Air Act has succeeded by requiring each source of pollution to meet individual, technology-based emissions controls. The citizens of Virginia need and want bold climate solutions that continue to do that and do not compromise the wellbeing of our communities--in terms of air quality, water quality, and overall quality of life in a world feeling the effects of global warming hastened by the use of all fossil fuels. We are not fooled by this pay-to-pollute scheme, and neither should you be.	
50. David Kuebrich	The cap-and-trade polices of RGGI, the E.U., and California have done little to reduce carbon emissions. It's important Virginia learn from the errors of these plans and do better. For example, it would likely be better to impose a flat fee on the use of fossil fuels. This approach would not be nullified by external factors such as an economic decline that kept emissions under a cap. In addition, an imposed fee provides both fossil-fuel users and consumers with predictable price increases. A cap and trade policy can easily lead to disputes, and well-lawyered and politically muscular companies such as Dominion are very savvy at winning disputes. In the past, the benefits of cap and trade have been hyped. Years later, supporters learn the promised reductions in emissions didn't pan out. But for the years between the initial glowing headlines and the later realization of meager results, many citizens and public officials feel a reduced sense of urgency to develop other policies for limiting emissions. Governor Northam may feel if he proves his green creds by creating a cap and trade program, it will then be politically feasible to approve the Atlantic Coast and Mountain Valley pipelines. If so, he's wrong. I ask that DEQ convince our Governor to create a smart plan for reducing carbon emissions and to cancel the pipelines.	See response to comment 48. As discussed in comments 28, 113, 136 and elsewhere, cap and trade programs are proven, effective means of controlling pollution. In addition, RGGI has a proven track record in reducing carbon pollution. We recognize the commenter's concern about methane from pipelines; however, that is not the subject of this regulatory action.
51. 3Degrees Inc.	3Degrees applauds Virginia's decision to implement a CO_2 Budget Trading Program and join RGGI. This will secure the state as a national climate leader, and greatly expand the scope of the regional carbon market, improving market efficiency and lowering costs of compliance across the region. The proposal does not provide an avenue for voluntary market customers to ensure that their renewable energy purchase contributes to emissions reductions beyond	DEQ recognizes the value of the voluntary renewable energy market as an important tool in reducing carbon pollution but has decided not to implement a separate voluntary renewable energy set-aside. The structure of the general 5% set-aside will

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	regulation. The Voluntary Renewable Energy Market Set-aside allows allowances to be paired with renewable energy at no added cost to the voluntary market. In order to support private investments in renewable energy, 7 RGGI states and California have implemented a renewable energy set-aside. This mechanism sets aside about 2% of the allowances and makes them available for free to be paired with voluntary renewable energy purchases. The renewable energy set-aside will lead to continued demand for Virginia generation in the voluntary market and allow the generation to be eligible for Green-e Energy certification. In addition to the avoided emissions benefit being important in private investment decisions, it is also a requirement of Green-e certification. Green-e certifies tens of millions of megawatt hours of renewable energy every year, including renewable energy generated in Virginia, and, as the only certification for the voluntary renewable energy market in the U.S., is the standard for private purchasing of renewable energy. Where states have introduced cap-and-trade regulation without a renewable energy set-aside, Green-e has required that Green-e certified renewable energy from these states be matched with purchased allowances equal to the generation's emissions reduction benefit on the grid. This adds a significant cost to renewable energy from these states, such that they generally exit the voluntary market. Where private purchase of allowances is not possible, generation from that state is ineligible for Green-e certification. Without Green-e certification, Virginia generation will be less desirable for voluntary purchasing and will lose financial support from the voluntary market. Since Virginia currently only has a RPS goal, the primary markets for Virginia renewable energy generation are adjacent state RPS or the voluntary market. The voluntary market is currently the primary way that high quality renewable energy remains in the state. Local projects risk losing voluntary market support if the renewable energy set-aside is not included. 3Degrees has worked with small-scale and residential solar and wind projects in Virginia, supporting the projects by facilitating the sale of the premium RECs for use by voluntary customers. The voluntary market is generally providing funding for projects that would not receive funding from compliance REC markets, and often providing more funding per MWh. In some cases, the projects would be not financially viable without this revenue stream. If the voluntary renewable energy set-aside is not included, there would no longer be an opportunity for 3Degrees to support projects of this kind in Virginia. We urge DEQ to encourage private capital	be under the purview of DMME, which is the appropriate state agency to implement renewable energy and energy efficiency programs. DMME may, at the appropriate time and in accordance with its regulations and policies, seek to implement a voluntary renewable energy market set-aside or its equivalent. However DMME structures the set-aside, it is important to bear in mind that energy efficiency will be an important tool in the control of carbon pollution. Energy efficiency programs reduce in-state demand, which results in the reduction of carbon pollution and the control of potential leakage. Note that renewable energy projects in Virginia should be considered in the context of the Grid Transformation and Security Act of 2018 (SB966), that: - Requires utilities to make $1.145 billion in investments in energy efficiency projects and low-income energy assistance over the next 10 years. - Authorizes the SCC to deem 5,000 MW of solar and wind energy projects to be in the public interest, paving the way for approval of new clean energy projects. - Commits Appalachian Power to make a separate investment in 200 MW of new solar capacity. - Promotes energy technology including battery storage and pumped storage in southwest Virginia. - Requires review of state

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	investing in renewable energy by including the renewable energy set-aside.	regulations that hinder clean energy development. - Creates a transparent stakeholder process to expand energy efficiency program offerings. - Creates a transparent stakeholder process to make recommendations for solar program expansion, including net metering, community solar, and siting. DEQ expects that opportunities for voluntary renewable energy projects will be encouraged as a result of this initiative.
52. 3Degrees Inc.	3Degrees encourages DEQ to allow the issuance of CO_2 emissions offsets. High-quality carbon offsets can be an important tool for a successful and economic cap-and-trade program. While offsets have not been used to date for compliance in RGGI, as the cap lowers we believe offsets will be an important tool for achieving emissions reductions cost while encouraging innovative climate solutions. Offset projects can address emissions reductions in uncapped sectors and provide other co-benefits.	Although the RGGI model rule does offer offsets, only a single offset project has been implemented in the RGGI region thus far. Given the uncertainty of any benefits associated with a complex offset program, DEQ is not, at this time, proposing to implement offsets; see response to comment 26.
53. American Council for an Energy-Efficient Economy (ACEEE)	Energy efficiency reduces emissions quickly and at a lower cost than any other CO_2 compliance option by reducing the need for power generation. State energy efficiency policies and projects can be the quickest and cheapest means to reduce generation from fossil fuel-fired power plants. Energy efficiency improves air quality and saves consumers money. It boosts local economies by creating diverse, high-quality jobs across the construction, engineering, financial, environmental, manufacturing, and industrial supply chains. In 2015, RGGI states invested 64% of allowance revenues on energy efficiency, amounting to 60% of cumulative investments. Programs funded by these investments are expected to return more than $1.3 billion in lifetime energy bill savings. Energy efficiency investments through RGGI contributed to reducing the number of premature deaths and illness in the northeast since 2009. DEQ proposes a set-aside of 5% for the control of CO_2. Given the benefits and low-cost CO_2 reductions energy efficiency provides, we recommend that all set-aside revenues be allocated to energy efficiency projects. However, current market and regulatory barriers to investment in energy efficiency can hinder its use as a compliance strategy. DEQ should consider	DEQ recognizes the value of energy efficiency as an important tool in reducing carbon pollution; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement the set-aside. DMME may, at the appropriate time and in accordance with its regulations and policies, implement an energy efficiency set-aside as described by the commenter. The set-aside will be 5% in the early stages of the program; the set-aside may be revised at a later date as the state

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	methods for allowance distribution to address these barriers. Typically, a set-aside is a small portion of a total cap of allowances, which means that energy efficiency is treated as a resource on the margin. This is not consistent with Virginia's energy efficiency potential, nor does it make economic sense. The incentive in a market-based regulation should drive emission reductions by the lowest cost means, which in this case is energy efficiency. Instead of a set-aside, an allowance approach could preferentially award allowances to energy efficiency programs. Allowances could be allocated on an updating output basis according to kWh generated or saved. Ideally, such an approach would award allowances to zero-emission savings and generation first. The remaining allowances could go to fossil-fueled electric generators. An updating output-based allocation provides a transparent and predictable price signal, and rewards measures that deliver lasting CO_2 reductions. There is untapped potential for non-utility energy efficiency programs in Virginia over the next 10 years. The 5% set-aside does not reflect the level of potential investment in energy efficiency that the state could achieve. We recommend a set-aside of 10% in order to provide a more robust financing stream for energy efficiency projects. Increasing the set-aside would lead more cost-effective emissions reductions. Modeling indicates that increasing the set-aside would not impact rates. Energy efficiency measures also reduce overall customer bills, helping to alleviate any potential rate increases. DMME should use the set-aside to invest in energy efficiency projects that save energy and reduce utility costs for public and private sectors. While ratepayer-funded programs for residential and commercial customers in Virginia will ramp up over the next 10 years, large industrial customers will not be served by these programs. DMME can fill this gap. Technical assistance programs targeted at industrial customers can identify potential projects and guide the implementation process. We encourage DEQ to clarify that combined heat and power (CHP) and waste heat-to-power (WHP) projects are eligible for set-aside funds. Other RGGI states have used their auction revenue to support CHP deployment. 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 or establishing a revolving loan fund to finance energy efficiency investments at low interest	gains experience with the program and with the program DMME develops.

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	rates for other markets, including public entities, residents or businesses. Financing products could be paired with utility rebates in order to further spur investment. Revolving loan funds have several benefits. These programs are sustainable and can have considerable market impact. Virginia currently has 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 utility consumption by working with energy savings performance contractors. In parallel with VEMP, Virginia recently launched the 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. We recommend that DMME use the set-aside to expand energy efficiency offerings for public buildings, through VEMP or deeper incentives as part of CEDS.	
54. Virginia Advisory Council on Environmental Justice (ACEJ)	Many members of the environmental justice (EJ) community have been skeptical or opposed to market-based solutions to carbon reduction. Many community members believe their voices have not been heard during program implementation in other states. Concerns with carbon trading include the lack of regulation of co-pollutants, hotspots, equity of allowance allocation, and lack of public engagement. Perhaps the most central concern from an EJ perspective is that many EJ organizations prefer guaranteed emissions reductions at the source of polluting facilities in EJ communities, an outcome that market-based solutions can't guarantee directly. DEQ can structure a program with complementary policies that produce outcomes that EJ groups prefer. We urge DEQ to keep this concern at the forefront, and explore ways to carbon reduction that would achieve guaranteed emissions reductions at the source.	The commenter's concerns are acknowledged. In addition to controlling carbon pollution via this regulatory action, DEQ implements a robust permitting and compliance program to ensure that federal and state standards for controlling air pollution are met.
55. Virginia Advisory Council on Environmental Justice (ACEJ)	DEQ should formalize rules for meaningful engagement of EJ communities. The Clean Power Plan required states to demonstrate how they were meaningfully engaging low-income communities, tribal communities, and communities of color. DEQ should likewise set concrete criteria on how the state plans to engage EJ communities throughout the design and implementation of the regulation. DEQ should participate in a dialogue on allowance allocation and the identification of potential hotspots. DEQ should create a plan for sharing the results of the proximity and cumulative impact analysis to the public, including an education and outreach plan to communities that are convenient and understandable. These methods should be targeted to "meet people	Community involvement is important to all DEQ programs, and DEQ has a robust community involvement program. Effective community involvement strengthens public confidence in DEQ, and encourages those who are most concerned with agency decisions to inform and help implement them. In addition to a formal Community Development

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	where they are" in order to maximize community involvement for specific communities. A toolkit was created by community advocates in coordination with Green for All to ensure meaningful community engagement to comply with the Clean Power Plan. DEQ should use this toolkit as a guide to design its own plan for community engagement during this process. ACEJ recommends the creation of a long-term plan designed to increase participation of EJ communities. DEQ should formalize a process to gather feedback from community members affected by climate change, including creating a sustained dialogue to discuss complementary policies that may be adopted to maximize emission reductions in EJ communities. ACEJ recommends that DEQ host community forums in locations that are experiencing threats from climate change, and explain how this rule is designed to strengthen the state's commitment to fighting climate change.	Policy, DEQ is also taking the following steps as part of its strategic plan and commitment to build community involvement: - Provide opportunities for meaningful community involvement in all agency programs, and consistently look for new ways to enhance public input, and include development of education materials and training opportunities for the public. - Identify and implement steps that enable early public involvement and collaboration in significant environmental decisions. - Seek input reflecting different points of view and carefully consider this input when making decisions. - Work to ensure that decisionmaking activities are open and accessible to all interested individuals and organizations, including those with limited experience participating in environmental decision making. - Develop innovative ways to present information on the agency web site and elsewhere, and ensure that information is useful, understandable and easy to find. DEQ's EJ Coordinator has also been consulted for advice on communicating and working with vulnerable communities. The EJ Coordinator will provide this assistance on an ongoing basis as the rule is implemented. Routine RGGI program reviews will also provide the opportunity for any

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		affected community to bring attention to any issues that may arise. Linking to RGGI will make Virginia a participant in RGGI's regularly scheduled program reviews. These comprehensive, periodic reviews consider program successes, impacts, and design elements. Stakeholder meetings are held throughout the program review process in order to encourage stakeholder engagement and the submission of comments from interested parties. As part of this process, the department will evaluate how the program is working from a Virginia standpoint as well as in the context of the other RGGI states. Any issues identified with respect to affected communities may be identified and resolved as part of this exercise. In order to clarify that this review process will take place, the proposal has been modified to add a new Article 10, Program Monitoring and Review. This provision specifies that in conjunction with the CO_2 Budget Trading Program program monitoring and review process, the department will evaluate impacts of the program specific to Virginia, including economic, energy and environmental impacts, and impacts on vulnerable and environmental justice and underserved communities. The department will also develop a plan to encourage increased participation by affected

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		communities.
56. Virginia Advisory Council on Environmental Justice (ACEJ)	DEQ should complete a robust proximity and cumulative impact analysis to determine the environment and health impacts of co-pollutant emissions and pollution from sectors not subject to the carbon cap for EJ communities. Although capping carbon emissions from power facilities is the scope of the rule, we must study all major sources of carbon and other forms of pollution in Virginia when determining the full scope of environmental health effects in EJ communities. For instance, while reducing carbon from the electric sector has been a major focus of numerous advocates, the largest source of carbon pollution in Virginia is from the transportation sector. Other states in the region are launching a series of listening sessions to explore how to cut carbon from transportation while improving the equity and quality of service. Indeed, EPA has identified proximity to vehicle traffic as associated with increased exposure to toxic gases and particulate matter, which is hazardous to human health. A cumulative impact analysis from Kentucky revealed that "strong relationships between exposure related health problems and vulnerable demographics, such as poverty, educational level, and certain age groups." Similar analysis, in coordination with other state agencies and conducted with input of EJ stakeholders would help the state identify existing pollution hotspots and environmentally stressed communities so that the state can design a carbon reduction program to alleviate harms to those communities. DEQ should prioritize the perspectives and feedback of community members over industry. If hotspots are found, DEQ should create a remediation plan to reduce environmental hazards and lower pollution in environmentally stressed communities. DEQ should solicit the input of community members and other interested stakeholders for corrective remediation of past practices.	Fossil fuel-fired units are subject to a host of regulatory and permitting requirements that specifically target and control emissions of criteria pollutants and toxics. Ultimately, the control of CO_2 will reduce global warming impacts and concomitant welfare impacts on disadvantaged communities. As discussed in the response to comment 55, the opportunity to elevate specific concerns about potential problem areas will be available during routine program reviews. Note that the board's ability to address transportation sector emissions is limited by statute. DEQ believes that the monitoring and review components of the RGGI program will enable any leakage of emissions to be identified and corrected. As demonstrated in RGGI's April 2018 market analysis, carbon intensity in RGGI states is decreasing.
57. Virginia Advisory Council on Environmental Justice (ACEJ)	DEQ proposes to allocate 5% of the allowances to DMME to assist the department in abatement and control of air pollution, presumably through investments in energy efficiency and solar. Ninety-five percent of the allowances are proposed to be allocated to the polluters, which is unacceptably high. If only 5% of the allowances are directed to DMME, it must maximize opportunities to assist families and communities who've been disproportionately harmed by existing energy policy. DEQ should specify that the DMME allocation is directed toward low-income communities. In the alternative, conduct an open decisionmaking process where communities have a say in how allowances are allocated. Energy efficiency and solar energy will advance Virginia's goal to combat climate change and reduce carbon pollution. However, the state would benefit by advancing clean energy in communities who	DEQ recognizes value of directing pollution control efforts toward low-income communities; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement the set-aside. DMME may, at the appropriate time and in accordance with its regulations and policies, implement an energy efficiency set-aside for low

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	need it most. Low-income and families of all races and ethnicities pay more for utilities, which means there may be cost savings to disadvantaged communities while reducing air pollution.	income communities as described by the commenter.
58. Virginia Advisory Council on Environmental Justice (ACEJ)	Wood and other types of biomass plants release more carbon per unit of energy than coal plants, in addition to localized criteria pollutants. These plants should be fully accountable to the carbon cap and should be included in the proximity and cumulative impact pollution analysis. RGGI caps carbon on power facilities 25 MW or greater, allowing power facilities with multiple combustion turbines that individually fall below the threshold but are collectively greater than 25 MW go unchecked. DEQ should regulate these types of units holistically, and consider ways to place limits on facilities below the 25 MW threshold. New York will begin covering sub-25 MW peaker plants, a step other RGGI states can voluntarily take. EJ groups have long opposed carbon offsets on principle to not allow facilities to continue or increase pollution by avoiding localized pollution reduction. Localized pollution reduction in EJ communities is the central concern of EJ advocates with cap-and-trade programs. ACEJ supports the recommendation of several EJ organizations in the RGGI region to eliminate the use of offsets as a compliance option.	See the response to comment 67 for a discussion of biomass. To our knowledge there are no sub-25 MW peaker plants, existing or planned, in Virginia. Regardless, current state regulation (9VAC5-20-70) prohibits circumvention of air quality requirements by constructing multiple facilities in a piecemeal fashion in order to avoid regulation. As discussed in the response to comment 26, DEQ is not, at this time, proposing to implement offsets.
59. Virginia Advisory Council on Environmental Justice (ACEJ)	DEQ should coordinate with other state agencies, localities, and community organizations to study the effects of the regulation in coal-dependent communities to ensure a fair and just transition from fossil fuels to clean energy. The coalfield counties in southwest Virginia have borne disproportionate economic and environmental burdens as coal has been extracted. Virginia coalfields are now left with pollution from mining and an economy struggling to recover. Relevant state agencies should conduct an economic analysis to identify sustainable investment and other job creation opportunities for coal communities.	The commenter's concerns about coal-dependent communities in southwest Virginia are well taken; see the response to comment 55 for further discussion of how communities will be addressed.
60. AdvanSix, Greif, ODEC, Virginia Manufacturers Association (VMA)	It has been the policy of the state to avoid the imposition of regulatory requirements "which are more restrictive than applicable federal requirements" unless a showing of necessity supports a more stringent Virginia rule (VA Code 10.1-1308 A). The Administrative Process Act establishes a procedure whereby the General Assembly reviews regulations that are more restrictive than applicable federal requirements (VA Code 2.2-4014) and has the opportunity to judge whether such regulations are necessary. The board should adhere to this long-standing approach and leave any such regulation to the appropriate time and approach determined for the nation by Congress and EPA.	The board may indeed promulgate regulations in the absence of a specific federal requirement to address a state-specific need. DEQ notified the appropriate legislative committees of this regulatory action in accordance with § 10.1-1308 in November 2017.
61. AdvanSix, Greif, ODEC, Virginia Manufacturers Association	Cost-effectiveness is a fundamental premise for good regulation. When government burdens its citizens by regulation, the benefits should outweigh the burdens. The proposal fails this basic premise. The proposed regulation is not cost-effective and the cost burden far	Flexible, market-based emissions trading programs provide the most cost-effective means of reducing air pollution. The program

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(VMA)	exceeds any purported benefits. In EO-57 and ED-11, then-Governor McAuliffe revealed the non-environmental motive for mandating a CO_2 cap-and-trade program in Virginia: to "grow the clean energy economy" and "make clean energy a pillar of our future economic growth and a meaningful part of our energy portfolio." ED-11 notes an increase in "the number of solar jobs in Virginia" and the increase in "revenue for energy efficiency businesses in Virginia." While these are laudable goals, it is a misuse of governmental authority to use environmental regulation for non-environmental purposes. There are other, more appropriate authorities and programs to accomplish these economic goals. It appears that the environmental benefit envisioned from the regulation of CO_2 emissions is the mitigation of the risks to Virginians from climate change. The administrative record is devoid of scientific data or other information to support the conclusion that the proposal would have any perceptible effect on the severity of storms or flooding in Virginia. The preamble to the proposed regulation contains a chart of "Health Benefits of Incidental Reductions in SO_2 and NO_X." The rationale is that regulating emissions of CO_2 would have the "incidental" benefit of reducing emissions of SO_2 and NO_X. However, there are numerous other air regulatory authorities and programs addressing emissions of SO_2 and NO_X, including their own cap-and-trade programs. Thus, if additional regulation of SO_2 or NO_X is deemed necessary, there are other, more appropriate regulatory programs to directly address this necessity. Virginia does not have to resort to CO_2 regulation to indirectly address concerns with SO_2 or NO_X emissions. More specifically, the board cannot say the proposed regulation is needed to address emissions of SO_2 or NO_X . Incidental reductions in SO_2 and NO_X provide no rationale for imposing the proposed CO_2 emissions cap-and-trade program in Virginia. DPB's Economic Impact Analysis states: ". . . EPA and other federal agencies use estimates of the social cost of carbon (SC-CO_2) to value the climate impacts of regulatory rulemakings. The SC-CO_2 is a measure, in dollars, of the long-term damage done by a ton of CO_2 emissions in a given year. This dollar figure also represents the value of damages avoided for a reduction of a ton of CO_2 emissions in a given year (i.e. the benefit of a CO_2 reduction). It should be noted that the federal model estimates of the social cost of carbon are for the world overall. Thus it is not possible to quantify the Virginia-specific benefits." There is a reason why the value of damages avoided in Virginia is impossible to quantify. The effect, if any, of reducing CO_2 emissions from Virginia's electric power sector on the severity of	sets an overall cap but otherwise does not dictate which sources must make reductions. Through emissions trading, the program delivers the lowest cost reductions possible. Virginia has years of experience and considerable success with this kind of program. In addition to the inherent flexibility provided by emissions trading, the program also provides for the allocation of allowances to the entities with a compliance obligation. Allowances have value, and that value will be realized in the consignment auction, with revenue returning to compliance entities. The revenue returned to compliance entities from the compliance auction will serve to offset and mitigate the costs of the program for compliance entities and consumers. The analysis in the record is clear on these points. While the program minimizes costs through emissions trading and mitigates costs through allowance value, it also produces real benefits for Virginians. The administrative record demonstrating the impacts of climate change and the benefits of encouraging clean energy in Virginia toward the protection and improvement of Virginia's environment is well-documented. The focus of the EO 57 Work Group was to evaluate options under the Governor's existing authority while

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	storms or flooding in Virginia would be negligible at best. The regulation would provide no measurable environmental benefit to Virginia. Climate change and reduction of GHG emissions are global issues. Climate change is not a local phenomenon and to the extent man can craft a solution to climate change by reducing CO_2 emissions, that solution cannot be accomplished by disjointed state and local approaches. If any regulation of CO_2 in the U.S. is deemed necessary to address climate change, that regulation must be undertaken and applied uniformly throughout the country, not state by state or locality by locality. The costs of the regulation outweigh any purported benefits. In its Economic Impact Analysis, DPB notes that the proposal likely would increase electricity costs for Virginia's citizens and businesses by no more than 1.1% ($2015) by 2031. However, a recent study by the Cato Institute showed that electricity costs in the RGGI states rose by 4.6% between 2007 (pre-RGGI) and 2015. This increase was 64% higher than the increase in electricity costs in a sampling of 5 non-RGGI states. As the data from the RGGI states show, adoption of the proposed CO_2 emissions cap-and-trade program will add millions of dollars per year to the electric bills of the citizens and business of Virginia. Virginia has a robust manufacturing sector and is ranked as the fourth most competitive state in overall manufacturing competitiveness in the nation. Moreover, Virginia is ranked the most competitive southern state for manufacturing. However, this position would be jeopardized by increasing energy costs. The Cato Institute study found that from 2007-14 the economies of the 5 non-RGGI comparison states grew 2.5 times faster than the RGGI states. During the same period the RGGI states lost 35% of energy intensive businesses, whereas the 5 non-RGGI comparison states only lost 4%. While the non-RGGI comparison states' overall goods production grew by over 15%, the RGGI states lost 13% of overall goods production. This decline is reflected in industrial electricity demand with the RGGI states falling 17% while non-RGGI comparison states only fell 3%. The greater decline in energy demand in the RGGI states cannot be attributed to greater energy efficiency in those states. In fact, the RGGI states improved by 9.6%, while the non-RGGI comparison states improved by 11.5%. Even as the economy was recovering from the 2008 recession, industry was leaving the RGGI states. If the program is enacted in Virginia, electricity costs for manufacturing facilities will undoubtedly increase, by as much as 4-5% by 2031. This increased cost of operation will diminish Virginia's competitive advantage. If Virginia participates in RGGI, we can expect the same fate for our industry that the RGGI states have experienced--	simultaneously creating more clean energy jobs. (The legal authority to develop this program in the first place is well established; see the response to comment 76 for more detail.) The process consisted of monthly meetings with presentations from the public. Numerous presenters described the impacts of climate change to the Working Group, and presenters included Dominion Energy, the American Petroleum Institute, Covanta, WestRock, and other stakeholders involved in manufacturing and energy generation. The Work Group also received over 8,000 written comments during a 3-month public comment period. The basis for EO 11 and this regulatory development action are, therefore well-established. Note that other commenters describing detailed environmental and fiscal impacts to the state were also submitted during this proposed regulatory development stage; they are summarized here and the full comments are part of the public record (see, for example, comments 108, 121 and 139). DPB's analysis was based on the best available information, including an analysis of potential changes in residential, commercial, and industrial customer electricity bills prepared for the department by the Analysis Group, an internationally recognized economic consulting firm. In addition,

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	industry will go where costs of energy are lower.	the Virginia Joint Legislative Audit and Review Commission (JLARC) in its Fiscal Impact Review of ED 11 (December 2017) found that the fiscal impact of the proposed regulation 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. Based on the results of these studies as well as various modeling exercises, DEQ maintains that impacts on electricity consumers will be minimal. In fact, the latest analysis of customer bills based on updated modeling shows that average bills will slightly decrease as a result of the rule. Non-carbon benefit information provided in the public notice comes from DPB's analysis and quotes EPA COBRA analysis. The latest COBRA analysis again shows significant economic co-benefits resulting from criteria pollutant reductions as a result of this rule. The primary purpose of the regulation is to control CO_2; however, it is accurate to note that there will indeed be other air quality benefits associated with the control of carbon pollution. This discussion is part of the

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		comprehensive economic analysis required by state law that attempts to identify significant impacts--direct and indirect--of the regulation. No analysis of the costs and benefits of the proposal can accurately say that there will be no impacts on other pollutants. DEQ agrees that climate change is a global problem. However, in the absence of a federal program, the Commonwealth is well within its authority to address air pollution within its borders. Linking to RGGI is not a "go it alone" approach; it will enable Virginia to leverage its pollution reduction efforts with a well-established, proven effective interstate program. As discussed in RGGI's most recent market analysis, carbon intensity is decoupling from energy generation in the RGGI region. In addition to its own analyses DEQ has reviewed the results of the RGGI program and finds that costs have been contained and benefits have been realized. See, for example, the most recent recent report prepared by the Analysis Group, "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)." This analysis found that RGGI continues to to lower CO_2 emissions while benefiting local and regional economies and employment opportunities.

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		The report estimates that RGGI states will realize $1.4 billion in net economic value from RGGI's implementation during the 2015-2017 period. According to the report, the program also will create more than 14,500 new job-years (the equivalent of one full-time job for the duration of one year) due to the program's implementation during the past three years. In addition, CO_2 emissions from power plants have dropped by more than 50% over the 9 years since RGGI began. DEQ realizes that the electric generation system in RGGI is different, and that Virginia's participation in RGGI will be via consignment rather than direct auction; however, all indications are that linking to RGGI will be beneficial for Virginia. The energy price projections resulting from the updated modeling are lower than the previous modeling exercise in 2017. Thus, the cost of the program will be less for consumers and regulated sources than previously estimated. Ignoring the costs of carbon pollution will endanger Virginia's competitive advantage, and linking to RGGI is a step toward addressing that risk. DEQ is well aware of the need to address air pollution in the fairest, most cost-effective means possible, which is why the program is flexible and allows emissions trading to seek out the lowest cost

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		reductions possible. DEQ has also taken measures to ensure that the program goals are realistic and can be reasonably achieved; see, for example, the response to comment 37. In short, the program has been designed to minimize impacts on businesses and consumers while achieving DEQ's air pollution control mission to protect public health and welfare.
62. AdvanSix, Greif, ODEC, Virginia Manufacturers Association (VMA)	The regulation imposes a carbon tax and cedes this tax authority to RGGI. The regulation envisions a process whereby conditional allowances are allocated by DEQ to regulated sources. Those regulated sources are compelled to consign the conditional allowances to RGGI for auction. Regulated sources throughout Virginia and the RGGI states can bid on the allowances. RGGI states have taken the auction revenue and used it for a variety of purposes, one of which is not related at all to the goal of reducing CO_2 emissions: 8% of the revenue was used "for state budget reduction," just like any other tax revenue that goes into the state's coffers. The cap-and-trade program in Virginia is supposed to operate differently. Revenue generated by the auction of conditional allowances consigned by a regulated Virginia source is supposed to be returned to that source owner, less RGGI administrative fees. DEQ has indicated the revenue received by owners of regulated electric utilities will "flow to rate payers pursuant to SCC requirements." However, we have no idea that will actually happen or to what purposes the revenue would be put. The provisions governing the allocation and auction of CO_2 emission allowances, whether conducted by DEQ under the board's authority or RGGI, are designed to produce revenue to fund energy efficiency programs, resiliency infrastructure, and other government purposes. The overlay of the additional cost imposed by the auction of CO_2 emission allowances constitutes a tax. The magnitude of that tax will not be set by Virginia; it will be set by RGGI, a non-governmental entity. The General Assembly may delegate the power of taxation to any county, city, town, or regional government (Va. Const. art. VII, § 2). However, the General Assembly cannot delegate its taxing power to an unelected entity, whether the board, DEQ or RGGI. The Constitution and case law are quite clear on these matters. Although the Constitution does not explicitly prohibit the delegation of such decisional authority concerning the imposition of taxes, that delegation is prohibited by necessary implication, and the General	The definition of "tax" is well established in state and federal law. The purpose of the regulation is to control and abate carbon air pollution, not to generate revenue. Rather than impose a tax, the regulation requires the issuance of allowances by the department to CO_2 budget units. An allowance is a limited authorization by the department under the trading program for CO_2 budget units to emit up to one ton of CO_2. Allowances are then traded within the confines of a consignment auction. No money is generated for or sent to the state.

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	Assembly may not delegate its taxing power to a non-elected body. Thus, the Virginia Constitution prohibits ceding tax power to the board, DEQ or RGGI.	
63. AdvanSix, Greif, ODEC, Virginia Manufacturers Association (VMA)	The program is unnecessary. Virginia's per capita energy use fell from a peak of 346 MBtu per person in 2005 to 292 MBtu in 2013 and 2014. Virginia's 2014 rate is lower than the national average of 309 MBtu and ranked Virginia 21st among U.S. states for energy consumption. The decrease in energy consumption translates into a decrease in CO_2. From 2000-15, Virginia's energy-related CO_2 fell by 16.3%; the RGGI states averaged a 17.1% decrease and the entire U.S. experienced a 10.3% drop. Virginia already generates a relatively low amount of GHGs from electrical power generation, transportation, heating/cooling, and industrial processes. Virginia's CO_2 emissions decreased from 15.9 tons per person in 2005 to 12.5 tons in 2014. This was substantially better than the national average of 17.0 tons per capita and ranked 13th best in the country. Virginia is reducing its carbon footprint at a rate better than the nation and comparable to the RGGI states even without a cap-and-trade program. Virginia's electric utilities are expanding the role of renewable energy in power generation. Dominion has solar facilities capable of producing approximately 744 MW of power either operational or under development. ODEC has approximately 300 MW of renewable energy generation capacity, and plans to add 70 MW of solar generation in the next 5 years. As technology costs decrease, solar electric generation is growing rapidly in Virginia. According to the Solar Energy Industries Association, Virginia's total solar capacity of 619.5 MW at the end of 2017 ranked 17th among the states. SEIA data indicate that Virginia's solar generation fleet grew by 381.3 MW in 2017. Virginia ranked 10th in the nation last year in adding solar capacity. Dominion's 2017 IRP calls for the addition of at least 3,200 MW additional solar capacity by 2032 and at least 5,280 MW additional solar capacity by the end of a 25-year study period concluding in 2042. Dominion is moving forward with a project consisting of two, 6-MW turbines that will become the mid-Atlantic's first offshore wind project in a federal lease area. Larger-scale deployment of turbines in an adjacent site could potentially produce up to 2,000 MW of electricity. SB966 (2018), states that construction or purchase by Virginia electric utilities of solar and wind-powered facilities capable of producing up to 5,000 MW of electricity at maximum output is "in the public interest." It is clear that Virginia's electric utilities are moving rapidly to greatly expand generation from renewable resources. Virginia is already among the nation's leading states in this regard. A costly CO_2 program is unnecessary to	The program is needed. DEQ's modeling analysis suggests that carbon emissions from the electricity sector will increase without the program. The analysis is consistent with similar analyses conducted by the federal Energy Information Agency (EIA) showing emissions generally flat or modestly increasing in the coming years and decades. While emissions have decreased in some recent years, that trend is reversing and emissions are expected to continue to increase without the trading program. The commenter is correct that renewable energy development is expanding in Virginia, and it is expected that this trend will continue. DEQ has also recognized the value of these types of programs by establishing the 5% set-aside. New renewables and energy efficiency will make compliance with the trading program easier, but neither new renewables nor energy efficiency guarantee an emissions reduction from the sector. The program does.

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	promote the continued rapid growth of renewable energy generation in the state.	
64. AdvanSix, Greif, ODEC, Virginia Manufacturers Association (VMA)	Virginia's electric utilities have billions of dollars invested in assets that serve the public good and generate returns for investors. If the program fails to allocate allowances necessary for those facilities to generate electricity, that failure would deprive those entities of their ability to operate. In essence the government would be taking the value of those electric generating assets from Virginia's utilities without public need and compensation. Similarly, if sufficient allowances for Virginia's utilities to operate are allocated but then forced to be consigned to RGGI for potential purchase by someone else, the board would be taking valuable allowances away from these companies without public need and compensation. Such "takings" are prohibited by the U.S. and Virginia Constitutions. Virginia is a member of numerous interstate and regional compacts. An essential feature of these compacts is authorization by the U.S. Congress and confirmation by the General Assembly. Linking to RGGI by compelling the consignment of allowances to RGGI for general auction would constitute an unauthorized compact with the RGGI states. Attempting to do so would exceed the authority of the board. Emission allowances should be allocated without cost to EGUs that will be constrained by the emissions cap. Direct auction of the allowances with the revenue collected by the state would constitute a tax. A direct auction would greatly increase the cost of the program to Virginia citizens and businesses.	DEQ disagrees with the commenter's assertion that the allocation of allowances constitutes a taking of value. As described in 9VAC5-140-6050 C 9, a CO_2 allowance does not constitute a property right. The allocation of allowances in no way deprives electricity generators of their ability to operate. That would defeat the purpose of the emissions trading program. Allowances are allocated based on actual generation (versus static historical generation), thus providing facilities with greater flexibility. Linking to RGGI does not constitute entering a compact. RGGI is a cooperative venture, governed by consensus among member states to maximize collective emissions reductions capabilities. Linking to RGGI does not exceed any federal or state requirement, nor does it directly impose any legal requirements on Virginia or its regulated community. As discussed in the response to comment 76, the board has the legal authority to control carbon pollution. Linking to RGGI is the most cost effective and efficient means of accomplishing this goal.
65. AdvanSix, Greif Packaging, Virginia Manufacturers Association (VMA)	Fossil fuel-fired units that serve electrical generators smaller than 25 MWe and industrial facilities should not be included in the proposed program. ED 11 speaks in terms of "electric power facilities," and EO 57 speaks in terms of "power plants," "the electric sector," "electric companies," and "electric utilities." It is clear that the mandate from then-Governor McAuliffe was for the board to propose a CO_2 cap-and-trade program tied to RGGI	DEQ agrees with the commenter's characterization of the directive to control carbon emissions from fossil fuel-fired generators. The ED 57 Work Group specifically recommended that the

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	that would apply to facilities whose primary, if not exclusive, purpose is the generation of electricity for sale to the public. Industrial facilities are not power plants owned by electric companies and operating in the electric sector, and are clearly outside the scope of EO 57 and ED 11. Many industrial facilities in Virginia do not have multiple locations with different energy generating capacities to provide flexibility in meeting a CO_2 emissions cap. They have one facility and cannot shift allocations between facilities and generating technologies. Virginia's electric utilities have multiple units and generating technologies which allow them to find the least expensive way to reduce CO_2 emissions. Utility power producers are in the business of building alternative power generation sources while manufacturers are not. It is easier for utility power producers to shift the mix of generation to renewable power. Electric utilities have economies of scale and may purchase larger and a greater number of alternative generation units. Manufacturers' power needs are generally much smaller. Electric utilities are better able to pass their costs on to their customers, while manufacturers do not have a captive customer base. They compete worldwide for business from customers who are acutely price sensitive. Large capital expenditures for alternative energy generation would increase the price of products and damage their market position. Electric utility revenues are not affected by these global market demands. Emissions from industrial sources comprise only 11.3% of Virginia's CO_2 emissions. Expanding cap-and-trade to the manufacturing sector would impose significant costs with only a small reduction in emissions. The regulation does not define "primary use." The dictionary sense of "primary" would allow a facility to export just under 50% of the electricity and heat generated from fossil fuels on site and still qualify for the exemption. The reality is that no manufacturing facility comes close to exporting 50% of the energy generated on site. However, the regulation should provide manufacturing facilities a margin of flexibility to export energy when it is not all needed on site. "Primary use" should mean that in order to qualify for the exemption, no more than one third of the power generated on site, in the form of electricity and heat, can be exported. This approach is based on the cogeneration exclusion in Virginia's CAIR rule. For example, 9VAC5-140-1040 B 1 a (2) excluded cogeneration units provided they did not supply more than one third of the unit's potential electrical output capacity to any utility power distribution system for sale.	Governor consider taking action via a regulatory process to establish a trading-ready carbon emissions reduction program for fossil fuel-fired electric generating facilities. In the RGGI Model Rule, facilities that provide less than 10% of their power output to the grid are exempted from compliance obligations. DEQ also evaluated dedicated electricity generating units serving industrial facilities in Virginia, and determined that those facilities would not qualify as CO_2 budget sources. These facilities are already subject to a stringent permitting process to control criteria and toxic pollutants, and are closely monitored in order to ensure that they are meeting state requirements for controlling those emissions. Exemption of this level of industrial producers is also consistent with the RGGI model rule. The proposal has been amended to remove the phrase "owned by an individual facility." This change is being made in order to ensure that facilities are not penalized for employing more energy efficient and less polluting generating systems that may be operated by a third party on behalf of the primary facility. The proposal has also been modified to set a threshold for what constitutes "primary use of operation of the facility." These changes are necessary in order that the applicability provisions be consistent with RGGI's

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		2017 Model Rule. Note that ongoing program reviews will provide the opportunity to adjust the exemption if necessary. There may also be opportunities in separate future rulemakings to directly address the exemption should implementation issues be identified.
66. Virginia Advanced Energy Economy (AEE)	AEE supports a CO_2 budget trading program. The regulation will help to make Virginia's energy more secure, clean, and affordable, bolstering the state's economy while reducing emissions. We support the ability of the regulation to integrate into other carbon markets. Integration with other states and regions will help Virginia achieve greater efficiencies and further reduce emissions. Utilizing the State Tool for Electricity Emission Reductions (STEER), AEE analyzed possible compliance pathways. With a diverse portfolio of advanced energy resources, including renewables and energy efficiency, the state could reduce emissions by over 13.3 million tons between 2020-30 at little to no cost, far surpassing the proposed targets. We recommend a 2020 baseline at or below 33 million tons. Lowering the baseline may encourage system planners and grid operators to accelerate the deployment of advanced energy resources in preparation for the 2030 targets. Such accelerated deployment is beneficial to ratepayers, as it would take advantage of the federal production tax credit for wind and the investment tax credit for solar and other advanced energy technologies. These incentives lower the costs of renewable resources, savings that will be passed along to consumers. Given the cost-effectiveness of energy efficiency, the sooner it is deployed the greater the cumulative savings will be to ratepayers. Our modeling also indicates that with a portfolio of advanced energy technologies in conjunction with coal-to-gas switching, Virginia can beat its 2030 carbon reduction target by approximately 3.4 million tons. These results suggest that actual reductions will exceed targets. When emissions reductions outstrip targets it has the effect of lowering the price of a carbon credit. While keeping the price of credits in check is preferable, significantly depreciating them is not, as it depresses the market and introduces volatility. We support the CCR and the ECR as they ensure that	Support for the proposal is appreciated. DEQ recognizes the value of the renewable energy market and energy efficiency measures as important tools in reducing carbon pollution. The program will promote both renewables and energy efficiency by putting a price on carbon emissions. The program effectively encourages renewables and efficiency because they are carbon-free resources and do not have a compliance obligation, unlike carbon-emitting resources. DEQ also recognizes that CHP units are highly efficient, and do not encourage the development of fossil fuel-fired generation. The program achieves its primary environmental objective through the cap, and not the allocation method. Note, however, that the updating output-based allocation methodology will reward units that produce more electricity with lower carbon emissions. In the past, DEQ has always allocated allowances to compliance entities and not to other entities, with the exception of set-asides to promote energy efficiency. This

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	carbon prices remain within a predictable range. However, we prefer predictable and robust prices established and maintained through the market, as opposed to out-of-market interventions. Such prices are essential to the effective financing of advanced energy projects. We recommend that the rate at which the cap decreases each year be 4% annually, and that the ECR and CCR be adjusted correspondingly. These changes will help ensure that targeted and achieved reductions move in closer alignment, and that market functions proceed smoothly. Under the proposal, all permits are allocated to generators (less the set-aside) based on a 3-year average of net generation. We approve of basing allocations on generation, as opposed to historic emissions, as well updating allocations over time. To encourage compliance, we recommend that the rule allocate allowances to all generating units equal to or greater than 25 MW regardless of technology. This will ensure that the allowance allocation remains technology neutral and encourage competition among emission reduction measures. CHP units that generate heat and power for an individual facility are exempt. Given the efficiency of such systems, and the corresponding emissions benefits, this exemption is reasonable. We recommend that "owned by an individual facility" be removed. This will ensure that CHP systems that serve an individual facility are exempt regardless of ownership status. In order to ensure that the "primary use" of the CHP system is indeed to serve the individual facility, the regulation should specify that a minimum of 85% of the useful energy output be used at the site. As proposed, a covered CHP system must account for emissions created in the production of electricity and useful thermal energy (UTE). However, absent a CHP system, such thermal energy would be generated through a conventional method that is not subject to the regulation, potentially discouraging the use of CHP while creating new emissions from non-covered sources. The UTE exemptions put forward by other states should be considered. AEE supports the 5% set aside for DMME. According to studies by EPRI, by 2030 energy efficiency programs have the potential to save Virginians over 23,000 GWh of generation, more than 17% of the state's load, each year. On Virginia's current trajectory, the state will achieve just 5% of that potential. This underperformance stems from underinvestment in energy efficiency and a misalignment of incentives. Until this misalignment is reformed we support allowing experienced parties the ability to implement programs in addition to the utilities. We recommend doubling the set-aside to 10% in order to	program takes a similar approach. The structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement that set-aside. DEQ believes the set-aside should be 5% in the early stages of the program, and this percentage is consistent with past DEQ programs. The set-aside may be revised at a later date as the state gains experience with the program and with the program DMME develops. DEQ agrees that the phrase "owned by an individual facility" should be removed. Under the RGGI Model Rule, facilities that provide less than 10% of their power output to the grid are exempt from compliance obligations; the proposal has been revised accordingly.

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	provide a more robust financing stream. According to our modeling, energy efficiency has the potential to help Virginia meet its carbon mitigation targets while reducing rates, creating jobs, and stimulating new in-state investment. The challenge energy efficiency presents lies in the ability of system planners, regulators, and other stakeholders to effectively track, evaluate, measure, and verify the energy savings produced by an array of energy efficiency programs and measures. The National Energy Efficiency Registry (NEER) helps states track and verify energy efficiency savings and transform those savings into tradable instruments parties may then use for compliance. Regulators and stakeholders should use NEER to facilitate the administration and tracking of energy efficiency programs in Virginia. Employing consistent and well-established methods for evaluation, monitoring, and verification of savings will help Virginia effectively tap into this cost-effective resource. Voluntary purchasers of renewable energy do so in part based on carbon reduction benefits. In many states, the purchase of a REC includes the purchase of environmental attributes associated with the carbon reductions of that power. Unless the voluntary market is taken into account, a statewide carbon reduction requirement could undermine voluntary purchaser commitments because they will no longer represent a regulatory surplus. Several programs have avoided this through a voluntary purchaser set-aside. This can also be done by allocating allowances to resources that reduce emissions rather than only to emitting resources. This will allow advanced energy resources to fulfill any contracted-for obligations to transfer allowances to purchasers under existing power purchase agreements. Those purchasers can then choose to do what they wish with the allowances. This gives purchasers the choice to retain these allowances if they wish to preserve the project's regulatory surplus.	
67. American Forest and Paper Association; American Wood Council; Forest Products Industry National Labor Management Committee; Virginia	The following principle should be incorporated into the regulation: "Emissions from the combustion of any forest-derived biomass shall not be considered a GHG if: 1) timberland carbon stocks, based on U.S. Forest Service Forest Inventory and Analysis data for the U.S. South Region, are stable or increasing relative to the 2005 carbon stocks assessment for this region; or 2) the forest-derived biomass is from forest products manufacturing residuals, harvest residues, or waste-derived feedstocks, including used wood products." Subsection 1 is based on the fact that harvesting wood for energy does not contribute to net carbon emissions in cases where it is offset by wood growth and associated carbon sequestration. U.S. Forest Service data shows	DEQ is well aware of the concerns associated with biomass, and discussed the pros and cons of including or excluding biomass units with the Regulatory Advisory Panel established to advise and assist in the development of the regulation. The group did not reach consensus on an approach for dealing with biomass; given that, and given the numerous, detailed comments

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Agribusiness Council; WestRock	carbon stocks in trees on timberland across the southern U.S. have increased from 4.9 billion tons in 2005 to 5.6 billion tons in 2016. This shows biogenic CO_2 from biomass removed from the forest is more than offset by removals of CO_2 from the atmosphere by growing forests. Also, 2016 data from the U.S. Forest Service demonstrates that the growth/removal ratios for timberlands in Virginia is 2.29, meaning timberlands are growing more than twice as much wood as is being harvested. This positive net growth/removal ratio shows that Virginia forestry is more than sustainable. Finally, strong markets for wood preserve forests by providing an incentive not to convert the land to other uses. Subsection 2 is based on the fact that emissions from forest products manufacturing residuals, harvest residues, or waste-derived feedstocks would eventually enter the atmosphere even if they are not used for energy production. Simply landfilling these feedstocks can result in methane emissions, which have a much greater impact on global warming than CO_2. The use of biomass residuals each year avoids the emission of approximately 181 million tons of CO_2 indicating there are GHG reduction benefits in using forest products residuals for energy in the pulp, paper, packaging and wood products industry.	received during the public comment period, DEQ recognizes that this is a polarizing subject. However, the ED 57 Work Group specifically recommended that the Governor consider taking action via a regulatory process to establish a trading-ready carbon emissions reduction program for fossil fuel-fired electric generating facilities. The RGGI Model Rule provides that a biomass-fired facility may be a CO_2 budget source if the use of fossil fuel combusted comprises, or is projected to comprise, more than 50% (commence operation pre-2005) or 5% (commence operation post-2005) of the annual heat input on a Btu basis during any year. DEQ evaluated the fuel mix of the 5 potentially affected biomass-fired facilities in Virginia, and determined that those facilities would not qualify as CO_2 budget sources. These biomass-fired facilities are already subject to a stringent permitting process to control criteria and toxic pollutants, and are closely monitored in order to ensure that they are meeting state requirements for controlling those emissions. Additionally, most RGGI states allow CO_2 budget units that co-fire eligible biomass to deduct CO_2 emissions attributable to the burning of eligible biomass from their compliance obligation in accordance with the RGGI

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		model rule. DEQ has amended the proposal to indicate that a CO_2 allowance is a limited authorization to emit up to one ton of CO_2 that has been generated as a result of combusting fossil fuel. Finally, periodic program reviews at the RGGI and state level will provide opportunities to adjust the exemption should implementation issues be identified. The proposed definition of "fossil fuel-fired" is inconsistent with the RGGI 2017 Model Rule, which sets a threshold of 5% of the annual heat input on a Btu basis during any year, and the regulation has been amended accordingly. This change is necessary in order to ensure that Virginia's regulation is a corresponding CO_2 Budget Trading Program regulation, such that Virginia can be considered a RGGI Participating State; the proposal has been amended accordingly.
68. American Forest and Paper Association; American Wood Council (AF&PA and AWC)	AF&PA and AWC do not support Virginia joining RGGI because it will raise electric power prices and consequently cause Virginia-based businesses to become less competitive. Biogenic CO_2 emissions from forest-derived bioenergy should be counted as making zero contribution to the build-up of GHGs in the atmosphere where timberland carbon stocks are stable or increasing. Through the natural carbon cycle, growing forests sequester carbon as trees are replanted and grow through their lifecycles, even as some trees are harvested. Recent data from the U.S. Forest Service indicate that timberlands in Virginia, the U.S. south, and the entire U.S. have positive net growth/removal ratios. Virginia's timberlands are growing more than twice as much wood as is harvested. The most significant pressure on forests is conversion to non-forest uses, such as development. By contrast, strong markets for wood help to preserve forests by providing	The commenters' concerns are recognized. As discussed in greater detail in the response to comment 61, potential costs and benefits have been rigorously examined, and the program has been designed to provide the maximum benefit at the least possible cost. See the response to comment 67 for further discussion of how biomass will be treated under the program and the response to comment 65 for further discussion of industrial boilers.

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	an incentive to not to convert land to other uses and to invest in healthy forest management practices. A Journal of Forestry article concluded that "[t]he demand for wood keeps land in forest, provides incentives for expanding forests and improving forest productivity, and supports investments in sustainable forest management that can help offset the forest carbon impacts of increased demand." A U.S. Department of State report shows that strong demand for forest products will increase forest carbon stocks through ongoing landowner investment. Paper and wood products mills rely on residuals from the manufacturing process for steam and power for their operations or to sell electricity to the grid, and there is consensus that the use of residuals and biowastes for energy has significant GHG reduction benefits. A study published in the Journal of Industrial Ecology concluded that "[T]he use of biomass residues from forest products manufacturing, including black liquor, to produce energy in the U.S. forest products industry for 1 year avoids, over a 100-year period, 181 million tons of CO_2-equivalent emissions per year. Even ignoring the displacement of fossil fuels such as coal, the article finds that the avoided disposal of forest products manufacturing residues alone produces a GHG reduction benefit of approximately 5 million t CO_2-eq/yr." This is equivalent to removing one million cars from the road. The article states that ". . . if mill residues were not used for energy, most of these materials would be wastes that would be either incinerated, in which case the atmosphere would see the same biogenic CO_2 emissions as if the material had been burned for energy, or disposed in landfills." Disposal of residues in landfills creates methane, which has about 28 times greater global warming potential than CO_2. The article concludes, "consider[ing] all GHGs and fossil fuel substitution, the overall [GHG reduction] benefits of using manufacturing residuals for energy are large and become evident in short periods." Forest biomass, including manufacturing residuals, should be treated as carbon neutral whether or not it is co-fired with fossil fuel. The carbon profile of biomass is not altered simply because it is co-fired. This distinction is not scientifically supportable given that the biomass portion of the fuel mix has the same characteristics regardless of whether it is co-fired with 9% fossil fuel, 10% fossil fuel, or 90% fossil fuel. It is the biomass portion of the fuel mix alone that should be evaluated for net carbon emissions. The regulation should not cover industrial boilers. ED 11 pertains exclusively to controlling CO_2 emissions from "electric power facilities." Likewise, EO 57 directed the Work Group to recommend methods to reduce CO_2	

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	emissions from "electric power generation facilities." The Economic Impact Assessment, the charge given to the Regulatory Advisory Panel, the emissions and economic modeling conducted by DEQ and its consultants, and DEQ's information leading up to and supporting the proposal indicated that the regulation applied only to the electric power sector. Indeed, covering only utilities is consistent with the intent and scope of the existing RGGI program, and RGGI allowance prices are based on the marginal cost to reduce GHG emissions from the utility sector and do not reflect the capability of industrial sources to reduce emissions. Unlike the electric power sector, industrial facilities must compete in a highly competitive global marketplace and do not have the comparable ability to pass on increased compliance costs to customers. Accordingly, it would be arbitrary and capricious, a violation of due process, and fundamentally unfair for the final rule to include other emission sources, such as industrial boilers. We also urge that the state retain the issuance of free allowances rather than conduct auctions, which would drive up compliance costs and harm the households and businesses served by the power grid.	
69. Appalachian Power/American Electric Power (APCo/AEP)	It would not be in the best interest of the state to develop incremental carbon policies to intervene in an ongoing transformation of the electric sector. Given that the Virginia regulatory process is robust and that CO_2 emissions have trended significantly downward, additional restrictions on carbon emissions could put Virginia at a competitive disadvantage. Unlike the Clean Power Plan, which included all states, a Virginia-specific carbon strategy would distort economic decisions. Carbon restrictions that are more stringent than national standards could lead to existing generating facilities being closed or new facilities constructed elsewhere, leading to a loss of both employment opportunities and tax revenue. The regulation will also result in higher customer rates, which would place additional stress on the finances of households and business, and influence where businesses choose to locate. DEQ has not provided adequate analysis supporting that benefits of the regulation for Virginia citizens would outweigh the costs. APCo is encouraged by the fact that DEQ has proposed a cap and trade program as the regulatory structure. Cap and trade programs have long been documented as effectuating emission reductions at the lowest cost. APCo supports allowance banking and a CCR allowance should allowances costs exceed projections. This is a fair way to ensure that consumers and businesses are not unduly burdened. APCo does recommend that several aspects of the regulation be modified. First, DEQ has not provided an adequate rationale for use of a	Support for the proposal is appreciated. As discussed in the response to comment 61, Virginia's carbon control strategy is not go-it-alone; the purpose of the regulation is to leverage Virginia's carbon reduction efforts by linking to a well-established and effective multi-state program. DEQ agrees that cap-and-trade programs are effective in controlling emissions. However, as discussed in the response to comment 64, DEQ has designed the program to implement a consignment auction rather than a direct auction. This will ensure that Virginia can link to RGGI while accommodating Virginia's unique utility regulatory regimen, and ensure a stable, transparent and fair program. See comments 108 and 136 for further discussion of the appropriateness of the

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	consignment auction. Cap and trade programs have been overwhelmingly successful with a direct allocation to affected sources. Second, the allocation mechanism for allowances on the basis of updating net generation output does not acknowledge the inherent differences in carbon emissions between units utilizing different fossil fuels. Units using fuels with a higher carbon content are unfairly disadvantaged by the allocation process, even as they are subject to a declining carbon cap. APCo recommends directly allocating allowances to affected generators on the basis of actual emissions.	consignment auction.
70. Appalachian Power/American Electric Power (APCo/AEP)	APCo does not support allocation of conditional allowances to DMME. There is no adequate rationale for this set-aside. Under a cap and trade program affected sources and other parties have the incentive to utilize the most cost effective way to comply with the program and/or associated costs. The proposed set-aside effectively represents a 5% tax on affected sources and ultimately consumers and there is no justification that the benefits of this "tax" will justify any benefits that may be provided.	The primary purpose of EO 11 is to control carbon emissions from fossil fuel-fired power plants; however, EO 11 has also identified the encouragement of clean energy as a program goal. A 5% set-aide is modest, and will enable the state to determine the effectiveness of this type of program; see the response to comment 51 for further detail. To characterize the set-aside as a tax is inaccurate as discussed in the response to comment 62.
71. Appalachian Power/American Electric Power (APCo/AEP)	Inclusion of new units will be a disincentive to siting new fossil generation within Virginia as these units would be subject to an incremental cost associated with complying with the regulatory program. As such, units could be more cost effectively built in adjoining states not covered by the Virginia program, thus depriving the state of jobs and tax revenue associated with new generation facilities.	Inclusion of new sources is consistent with the RGGI program. In order for carbon reduction efforts in Virginia to succeed over the long term, new fossil fuel sources in the state must be considered. DEQ is confident that leakage will be addressed by a variety of RGGI and Virginia mechanisms; see comments 91, 108, 136 and 144 for more detail.
72. Appalachian Power/American Electric Power (APCo/AEP)	APCo has concerns with the need to maintain a new Virginia-specific database for GHG emission reporting, operating and maintaining a new database and software program for allowance trading, and maintaining records associated with CO_2 emissions and accompanying reports. APCo already maintains systems for emissions reporting and record retention per federal requirements, which differ significantly from those Virginia has proposed. Better aligning the proposed reporting, trading and compliance programs with the federal systems already in place would reduce the administrative burden	Because Virginia is linking to an existing trading program, it is not anticipated that any new Virginia-specific database will be needed. The Commonwealth is expected to use the RGGI COATS system to track allowances and emissions. The COATS system accepts

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	of the rule.	emissions reporting consistent with federal requirements and is connected to EPA's emissions reporting system.
73. Appalachian Power/American Electric Power (APCo/AEP)	The higher starting cap of 34 million tons of CO_2 would mitigate the economic impact of the regulation. The higher cap would have imperceptible impact on the environmental effectiveness of the program with the benefit of lower resulting compliance costs.	The starting cap will be 28 million tons; see the response to comment 37 for more information.
74. Alliance for Industrial Efficiency	We commend DEQ for developing this regulation. Our members support market-based programs like RGGI because they account for the cost of carbon emissions while promoting economic growth. The regulation provides Virginia the opportunity to capture the economic benefits of transitioning to a low carbon economy. We applaud DEQ for recognizing the most economically efficient means for reducing CO_2 emissions in Virginia: incentives for energy efficiency. Finally, we commend DEQ for exempting certain industrial CHP units, which recognizes the emissions benefits offered by these systems. CHP systems produce heat and electricity from a single fuel source. Instead of generating power and letting the waste heat escape, CHP systems harness the thermal energy for heating, cooling, and other applications. Waste heat to power systems capture waste heat from industrial processes to make electricity, requiring no additional fuel and generating no further emissions. Not only does CHP have higher efficiencies than conventional power generation, it produces energy at the site of the end user, which eliminates line losses. CHP also provides benefits besides energy savings and resiliency and reliability benefits--it can continue to function in the event of a grid disruption. CHP should be a key element of the state's broader efforts to modernize its electric grid and make it more reliable. The General Assembly recognized the benefits of CHP in the 2018 omnibus energy bill which directs utilities to consider CHP as either a demand-side energy efficiency measure or a supply-side generation alternative. The regulation requires that CHP units over 25 MW that do not qualify for the industrial exemption purchase CO_2 emissions allowances for all emissions, including those associated with useful thermal energy (UTE). In the absence of a CHP system, the host would get its thermal energy from conventional methods, such as standalone boilers, which are not subject to the regulation. To avoid this disincentive for CHP, the regulation should exclude CO_2 emissions associated with UTE from a CHP unit. Emissions associated with thermal energy should be	Support for the proposal is appreciated. As discussed in the response to comment 51, DEQ believes the set-aside should be 5% in the early stages of the program; the set-aside may be revised at a later date as the state gains experience with the program and with the program DMME develops. In order to address CHPs with more clarity, the regulation has been amended to specify that the industrial exemption applies to fossil fuel CO_2 budget source located at a manufacturing facility that supplies less than or equal to 10% of its annual gross electrical generation to the electric grid, or supplies less than or equal to 15% of its annual total useful energy to an entity other than a manufacturing facility, provided that source had, prior to January 1, 2019, supplied both non-electric thermal energy to a manufacturing facility and 15% or less of its annual total useful energy to an entity other than a manufacturing facility. The unit's permit must contain a condition with the appropriate restriction of either gross electrical generation or

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	deducted from a qualifying unit's total emissions allowances, as in Massachusetts' RGGI rule. The hallmark of a CHP system is that it produces heat and electricity from a single fuel source. Without a thermal exemption, the regulation undervalues the output of these systems. We commend DEQ for including an energy efficiency set aside, as such programs help consumers and businesses use less energy, reduce carbon emissions, and save money on energy bills. According to an Alliance for Industrial Efficiency analysis, if Virginia achieves a 1.5% annual energy savings target, the state can reduce annual CO_2 emissions by 2.6 million tons in 2030 and save businesses $4.1 billion in cumulative cost savings from avoided electricity purchases. Increasing the set-aside from 5% to 10% would create additional opportunities for energy efficiency programs and help capture more carbon reduction benefits. For example, EPA's guidance document on Establishing an Energy Efficiency and Renewable Energy Set-Aside in the NO_X Budget Trading Program recommends a set-aside of 5-10%. We recommend that DEQ clarify that energy efficiency includes CHP and would be eligible for set aside funds. Although DEQ has previously categorized CHP as a near-term energy solution to enhance energy efficiency, listing CHP incentives explicitly as eligible for set aside funds would ensure that potential project hosts are aware of the definition.	useful thermal energy.
75. Dwight Alpern	I support the proposed rule. I was the attorney-advisor for EPA's Clean Air Market Division and involved in developing regulations for allowance trading programs, including the Acid Rain Program and NO_X SIP Call. I suggest revisions to facilitate program operation and achievement of CO_2 reductions. 1. The proposal does not explain clearly how a holder of a public contract with DMME would set up and operate a conditional allowance account. The function of such an account would be similar to that of any general account established by other persons, i.e., holding and transfer of CO_2 allowances. Neither account's function would include holding allowances for compliance. The simplest approach would be to revise the rule to clarify in 9VAC5-140-6020 C that accounts for handling conditional allowances are a type of CO_2 Allowance Tracking System account (in revised definitions of "CO_2 Allowance Tracking System" and "CO_2 Allowance Tracking System account") and that those accounts of holders of public contracts with DMME (but not of CO_2 budget sources) are general accounts (in a revised definition of "general account"). This would make applicable to the public contract holders' accounts the general-account	Support for the proposal is appreciated. The commenter correctly notes that the proposed rule does not explain how a holder of a public contract with DMME would set up and operate a conditional allowance account. This process will be determined by DMME in accordance with DMME procedure. Because this process will be governed by DMME, it is more appropriately addressed by DMME and not in this regulation. With respect to allowances usable for compliance, the definition of an allowance has been modified such that it covers any other state participating in the

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	provisions, e.g., for applying for an account and selecting and changing an authorized account representative, alternate, and electronic submission agent. Conforming revisions should be made to 9VAC5-140-6220 A, 9VAC5-140-6230 A, 9VAC5-140-6240, and 9VAC5-140-6250 A and B. For example, proposed 9VAC5-140-6230 A should be revised to read: Upon receipt of a complete account certificate of representation under 9VAC5-140-6110 or subsection B of this section, the department or its agent will establish a conditional allowance account and a compliance account for each CO_2 budget source or ~~and~~ a conditional allowance ~~compliance~~ account for a holder of a public contract with DMME for which the account certificate of representation was submitted. 2. The proposal requires Virginia CO_2 budget sources to hold "CO_2 allowances" for CO_2 emissions (9VAC5-140-6050 C 1 and 2 and 9VAC5-140-6260 B) but defines the term "allowance" (9VAC5-140-6020 C) by referring only to the Virginia CO_2 Budget Trading Program. That definition should be expanded to include CO_2 allowances issued by any other state participating in the RGGI program. If DEQ also decides to allow Virginia CO_2 budget sources to use for compliance offset allowances issued by any participating state, the same limitations on the use of offset allowances by other RGGI states' sources should apply to Virginia sources, i.e., limited use to cover emissions and no use for excess emission deductions. If offset allowances are to be usable, the following revisions are suggested: 9VAC5-140-6260 1. The CO_2 allowances, other than CO_2 offset allowances, are of allocation years that fall within a prior control period, the same control period, or the same interim control period for which the allowances will be deducted. ***3. For CO_2 offset allowances, the number of CO_2 offset allowances that are available to be deducted in order for a CO_2 budget source to comply with the CO_2 requirements of 9VAC5-140-6050 C for a control period or an interim control period may not exceed 3.3% of the CO_2 budget source's CO_2 emissions for that control period, or of 0.50 times the CO_2 budget source's CO_2 emissions for an interim control period, as determined in accordance with Article 6 (9VAC5-140-6220 et seq.) of this part and Article 8 (9VAC5-140-6330 et seq.) of this part. 4. The CO_2 allowances are not necessary for deductions for excess emissions for a prior control period under subsection D of this section. 9VAC5-140-6260 C 2. The department or its agent will deduct CO_2 allowances for a control period from the CO_2 budget source's compliance account, in the absence of	trading program.

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	an identification or in the case of a partial identification of available CO_2 allowances by serial number under subdivision 1 of this subsection, as follows: i. First, subject to the relevant compliance deduction limitations under subsections A and D of this section, CO_2 offset allowances. CO_2 offset allowances shall be deducted in chronological order (i.e., CO_2 offset allowances from earlier allocation years shall be deducted before CO_2 offset allowances from later allocation years). In the event that some, but not all, CO_2 offset allowances from a particular allocation year are to be deducted, CO_2 offset allowances shall be deducted by serial number, with lower serial number allowances deducted before higher serial number allowances. ii. Second, any ~~Any~~ CO_2 allowances, other than CO_2 offset allowances, that are available for deduction under subdivision 1 of this subsection. CO_2 allowances shall be deducted in chronological order (i.e., CO_2 allowances from earlier allocation years shall be deducted before CO_2 allowances from later allocation years). In the event that some, but not all, CO_2 allowances from a particular allocation year are to be deducted, CO_2 allowances shall be deducted by serial number, with lower serial number allowances deducted before higher serial number allowances. 9VAC5-140-6260 D 1. After making the deductions for compliance under subsection B of this section, the department or its agent will deduct from the CO_2 budget source's compliance account a number of CO_2 allowances equal to three times the number of the source's excess emissions. In the event that a source has insufficient CO_2 allowances to cover three times the number of the source's excess emissions, the source shall be required to immediately transfer sufficient allowances into its compliance account. No CO_2 offset allowances may be deducted to account for the source's excess emissions.	
76. Americans for Prosperity	The regulation requires electric generators to purchase allowances to emit CO_2 in the RGGI cap-and-trade program. These allowances are equivalent to permit or license fees. In addition, the regulation delegates 5% of the allowance proceeds to DMME for CO_2 reduction projects. The Constitution of Virginia establishes authority to raise and spend money to the General Assembly, not DEQ (Article IV, § 11 and Article X, § 7). The regulation adopts the RGGI Model Rule, model legislation which has been adopted by the legislatures of all participating RGGI states. The General Assembly clearly opposes adoption of a CO_2 cap and trade program without legislative approval. The Senate and House passed HB1270 resolving that no CO_2 cap and trade program be adopted without authorization. In addition, the Senate Agriculture, Conservation and Natural Resources Committee rejected SB696, which	To characterize the issuance of an allowance as a permit or license fee is inaccurate; see the response to comment 62. Facilities have always incurred costs as they have been required to meet legal mandates to control and reduce pollution. Under a cap-and-trade program, facilities have enhanced flexibility to manage these compliance costs based on their specific business needs.

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	would establish cap-and-trade in Virginia and bring the state's regulations into compliance with the RGGI model rule. The proposed regulation will not withstand a legal challenge.	As discussed in comments 139 and 159, it is necessary and appropriate for the board to promulgate state-specific regulations controlling carbon pollution. The board's legal authority to issue regulations controlling air pollution is found in the Code of Virginia at §§ 10.1-1306 through 10.1-1308; the Office of the Attorney General of Virginia issued an official advisory opinion on May 12, 2017, which concluded that the board is legally authorized to regulate carbon pollution under these sections of the code. While the board has broad authority to control air pollution, it is also responsible for achieving this goal in the most effective and cost-effective means possible, and, in the case of carbon pollution, this goal is most readily achieved through implementation of a cap-and-trade program. Cap-and-trade programs are proven means of reducing air pollution (see, for example, the response to comment 48); they incentivize pollution reduction. Unlike a "command-and-control" approach that would simply impose specific pollution control requirements, the trading approach maximizes the ability of a facility to flexibly make favorable business decisions while meeting the primary goal of reducing air pollution. The board furthermore has the authority to maximize the efficiency and efficacy of a

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		cap-and-trade program by linking the program with RGGI rather than attempting to establish a new and untried state-only system. There is nothing novel about Virginia's participation in a cap-and-trade program; indeed, the Commonwealth has participated in such programs since EPA established the Acid Rain Trading Program under Title IV of the 1990 amendments to the federal Clean Air Act. Currently, Virginia is operating under the latest iteration of EPA's trading program for the control of NO_X under CSAPR. Nor is there anything novel about the regulation of carbon pollution in Virginia. Virginia's greenhouse gas permitting regulation (9VAC5-85) has been in place since 2011.
77. Americans for Prosperity	The RGGI program has not worked to reduce CO_2 emissions. CO_2 emissions fell just as fast in states with similar energy policies except for RGGI as they did in RGGI states according to "A Review of the Regional Greenhouse Gas Initiative" (Cato Journal 2018). Lower natural gas prices and EPA regulation encouraged fuel switching from coal to natural gas between 2007-15. This resulted in a 16% reduction in coal-fired electric generation, and a corresponding increase in natural gas generation of about 10% in RGGI and non-RGGI states. The same report shows non-RGGI states added generation from wind, and solar power at over twice the rate as RGGI states (5.5% compared to 2.3%). Non-RGGI states also saw a faster rate of improvement in energy intensity, a measure of energy efficiency (11.5% compared to 9.6%). RGGI, Inc. claims allowance revenue was invested in energy efficiency, and wind and solar power, but the actual comparison results show no significant impact of the investments. Compare non-RGGI Virginia to the combined results in neighboring RGGI states of Maryland and Delaware. All three are in the PJM Interconnection Regional Transmission Organization. The extra costs of RGGI	The RGGI program has been very successful at reducing emissions in participating states. Current emissions are approximately 45% lower than where RGGI started. Commenters argue that RGGI did not bring about the reductions but offers no evidence to demonstrate that RGGI did not cause—or at least contribute—to the emissions reductions in the RGGI region. While the electricity system is complex and it is difficult to separate out specific causes, adjustments to the RGGI program over the years have reduced the RGGI cap, preventing emissions from increasing and locking in reductions.

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	allowances discouraged electric generation in Delaware and Maryland where electricity imports grew 42% since 2005, while Virginia imports decreased 34%. In other words, the RGGI states simply exported electric generation and emissions to other states. Adjusting for those exported emissions, emissions rates per person fell 38.6% in Virginia since 2005 compared to a combined 37.1% for Maryland and Delaware. Importing more power from other states is not the only form of emissions leakage. RGGI allowance costs added to already high regional electric bills. The combined pricing impact resulted in a 12% drop in goods production and a 34% drop in the production of energy intensive goods. Comparison states increased goods production by 20% and only lost 5% of energy intensive manufacturing. The extra costs of RGGI allowances have turned coal-fired plants from base load providers to intermittent suppliers by dramatically lowering operating hours. Expected increases in RGGI emission allowance cost will soon have the same impact on natural gas-fired power plants. Ramping power plants up and down has dropped efficiency 18.5% which results in more emissions, not less, and further raises electricity costs. 61% of Virginia power generation comes from coal and natural gas. A national target of 28% lower emissions from power plants by 2025, and 32% by 2032 from a 2005 base established in the Clean Power Plan will be met without taxes or fees on CO_2 emissions. Over the most recent 12 months power plant emissions have already fallen 27%. The U.S. leads the world in reducing emissions. Since 2005 the U.S. has reduced CO_2 emissions twice as fast as the rest of the developed world combined. Clearly RGGI has not had the expected impact of lowering CO_2 emissions. Benefits calculated in the Economic Impact Analysis assumed the regulation would lower CO_2 emissions along with reducing SO_X and NO_X as a byproduct. A decade of experience with RGGI has shown no added reduction in CO_2 or air pollutant emissions from the RGGI program; therefore there can be no monetized benefits from the proposal. To calculate the costs of the regulation an estimate of tons of annual emissions through 2030 is needed, along with an estimate of how many allowances will be available (each allowance covers one ton of emissions), and an estimate of the future price of allowances. Fortunately, the proposal provides the last two items. The SCC files an annual "Status Report: Implementation of the Virginia Electric Utility Regulation Act." The state's two largest investor owned electric utilities Dominion	This stands in stark contrast to analyses of uncapped areas of the country where emissions are expected to remain flat or slightly increase into the future. In addition to these demonstrable emissions benefits, as discussed in the response to comment 61, the RGGI program has greatly benefited local and regional economies. DEQ continues to believe that the studies and analyses developed on its behalf as well as additional information provided by RGGI and other experts in the field demonstrate that linking to RGGI will benefit the Commonwealth by cost-effectively reducing carbon pollution and stimulating clean energy growth. See comment 136 for more information on how RGGI's market mechanisms work and how they will operate in Virginia. Note that CO_2 intensity is decreasing across the RGGI region in spite of increased generation. With regard to costs incurred as a result of the CCR, the consignment auction approach means that ratepayers only bear the cost of excess allowances needed to comply.

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	Energy and Appalachian Power file annual Integrated Resource Plans (IRP) which forecast future demand, supply, and pricing. Based on these documents there are planned retirements between 2017-26 of 1731 MW of oil and coal-fired capacity, and 440 MW of natural gas capacity. Between 2017 and 2019 5413 MW of new natural gas-fired capacity has already been approved by the SCC. Natural gas emits about half the CO_2 for each MWh of power generated. The retirements could be considered as offsetting emissions from 4280 MW of new natural gas capacity. That leaves a net increase of 1132 MW of new natural gas capacity. If that new capacity operates 5000 hours a year it will generate about 2.5 million tons of added CO_2. New power plants should yield less expensive power and run more hours than the older replaced plants, meaning higher emissions. Some of the retiring power plants will continue to operate after the new plants start up meaning higher emissions. Appalachian Power and Dominion own out-of-state power plants, and could shift generation out of state, meaning lower Virginia emissions, but global emissions would remain the same. The RGGI states review the program every 3 years and have worked to raise the allowance price each time, so it is likely allowance prices will rise. All of these factors will be ignored in favor of a conservative emission forecast adding 2.5 million tons to the 36.6 million tons emitted in 2016, for a total of 39.1 million tons in 2020. The proposal commits 5% of allowances for sale by DMME with the allowance revenue to be spent on CO_2 reduction projects. The Economic Impact Analysis forecasts an allowance price very close to the proposed ECR trigger price which subtracts allowances offered in an auction if the price goes below the trigger price. Our analysis uses the ECR trigger price as the forecast price. An upper range would use the CCR trigger price which runs about twice the ECR trigger price. If the CCR trigger price is exceeded extra allowances are added to the auction. From 2013-15 the CCR acted as a price signal in the auctions. The forecasted cost assumes power companies chose buy the emission allowances they need to comply to maintain electric grid reliability. The alternative is to write off premature closing of existing plants, while paying premium prices for new zero or low emission generation sources. This is likely as Dominion expects demand to grow 24% by 2030 and will need the capacity. The SCC allows utilities to pass on the cost of meeting environmental requirements and would likely allow the pass through of allowance costs. There is no penalty other than allowance cost if a state misses its RGGI target. The total Net Present Value cost through 2030 of	

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	the regulation is $674 million with no offsetting benefits. The cost would be twice as high if the CCR trigger price sends the expected price signal to the auctions, so the range of cost is $0.7-1.4 billion. In 2030, the program will add $182 million, or about $20 a year to residential electric bills. Industrial bills could rise by over $100,000 a year.	
78. Business Council for Sustainable Energy (BCSE)	A regulation to reduce and cap CO_2 through a multi-state trading program makes sense for Virginia. Capping carbon from generation facilities will incentivize the use of cleaner energy resources that promote economic development and job creation in the state. Trading within a larger group of states will allow for greater market efficiency and lower compliance costs. The state will need to use the full portfolio of clean energy technologies and services, including energy efficiency programs that reduce energy consumption, cleaner burning natural gas, and renewable energy resources. BCSE supports the updating output-based allocation structure. DEQ should encourage the use of set asides granted to DMME to support of the full suite of clean energy technologies, including both supply-side and demand-side energy efficiency measures. RGGI states have benefitted from investing the multiyear funding from auction proceeds in clean energy, and BCSE encourages DEQ to consider a larger set aside amount.	Support for the proposal is appreciated, particularly support for the updating output-based allocation structure. As discussed in the response to comment 51, DEQ recognizes the value of energy efficiency programs as an important tool in reducing carbon pollution; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement the set-aside. DEQ believes the set-aside should be 5% in the early stages of the program; the set-aside may be revised at a later date as the state gains experience with the program and with the program DMME develops.
79. Biomass Power Association	Biomass accounts for a significant portion of Virginia's renewable fuels makeup. As of 2015, biomass represented the bulk of renewable power available in the state. We commend the board for pursuing the CO_2 trading program. Only through programs like these can we seriously address the threat of climate change. By supporting a rich combination of power sources, a state can advance goals in other areas like forest management, watershed management, economic development, and transportation. The regulation would apply only to fossil fuel fired-facilities, exempting biomass power. We urge Virginia to maintain this position. Aside from supplying the state with a significant portion of its carbon neutral electricity generation, biomass is a critical part of the forestry supply chain. Biomass power facilities purchase the leftovers that remain following the harvest of a forest for higher-value wood fibers, adding value to the entire supply chain. The wood fibers used to generate biomass power are typically unusable for other wood products, and emit methane during decomposition.	Support for the proposal is appreciated. See the response to comment 67 for further discussion of biomass.

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	The Association commissioned a study to determine the extent of carbon savings that can be achieved by opting for biomass over natural gas. A report is available on our website. The study examined the carbon intensity of a 50 MW capacity biomass power facility with a 43 MW net output on the electric grid, comparing it to that of a typical combined cycle natural gas facility. The study found that the use of organic residues as fuel in a biomass power plant instead of natural gas in a combined cycle facility results in immediate carbon savings of 115%, with 98% carbon savings over 100 years. Like the majority of biomass power facilities in the U.S., the subject of the study uses organic residues to generate power supplied to the grid. The fuels used at this facility are residues left over from harvesting fiber for local lumber and paper mills. These low-value materials are generated whether they are used for power or left to decay. If not used by biomass power plants, the materials typically remain in the forest as slash piles. The avoidance of carbon and methane emissions by removing and using materials that decay results in a significant GHG reduction over time. While the decay of these materials releases small amounts of methane consistently over time, methane has a 21 times higher global warming impact on the climate than CO_2. Further, with federal incentives for carbon capture and sequestration, and rapid technological advances being made in this area, biomass with carbon capture can become one of the only viable techniques that allows for the removal of atmospheric carbon. While the technology is still developing, we are optimistic that our members will soon be able to contribute to reducing the impacts of climate change in an even more meaningful way. Biomass is an essential part of any carbon reduction program.	
80. Blue Ridge Environmental Defense League (BREDL), Food and Water Watch, People Demanding Action, Preserve Floyd, Renewable Energy and Electric Vehicle Association	The excessively high RGGI cap and low allowance clearing prices, combined with other flaws in the program, prevent RGGI from being stringent enough to drive any meaningful reductions in CO_2. RGGI is a weak program that has allowed power plants to emit on a business-as-usual basis. For the first 5 years of the program, the industrywide cap was set over 50% higher than actual emissions. This meant fossil fuel power plants did not need to do anything to meet the overly generous cap. The initial cap allowed power plants to bank a substantial amount of unused allowances, amounting to 140 million tons of CO_2. While the cap was adjusted to address these saved allowances, this allowance surplus could continue to grow significantly due to a cap that continues to be higher than actual emissions, low allowance clearing prices, the purchasing of all available allowances and other factors. This further limits the effectiveness of the program.	The commenter suggests that RGGI allowance prices have been too "low" to drive emissions reductions. As of July 2018, RGGI allowance prices have remained between $2-4 for 70% of the auctions to date, and allowance prices have never reached $8 per ton. At the same time, emissions in RGGI have been steadily declining at a pace that exceeds the rate of decline of the RGGI emissions cap. Given the complexity of the electricity markets, it is difficult to

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	The CCR further disincentivizes emissions reductions by operating as a cushion by releasing additional pollution allowances on top of the cap if prices get too high. The CCR was triggered in 2014 and 2015, allowing 5 million and 10 million additional allowances to be sold. All of these allowances were purchased, and because they were not borrowed from future years, they essentially increased the cap. RGGI prices, including the reserve price, continue to be too low or too volatile to result in any meaningful carbon reductions. Most, if not all, of the current carbon markets have failed to create "a stable, market-driven price of carbon," and often prices for GHG allowances "have been so low as to create little incentive to invest in GHG reduction," according to researchers at the University of California. Structural flaws in the RGGI program prevent the purported market-based incentives from working. Moreover, polluters prefer a larger supply of low-priced pollution allowances, creating a disincentive to actually embrace a pollution price point that might be effective. No market-based pollution trading scheme will ever result in market prices sufficient to encourage all polluters to reduce their emissions. RGGI has not accounted for increased emissions of methane from the growth of fracking and natural gas infrastructure. The climate proponents and petroleum industry that favor natural gas contend that since gas-fired plants emit less CO_2 than coal-fired plants, replacing coal power plants with gas power plants reduces climate emissions. However, methane emissions throughout the natural gas supply chain can nullify or even reverse any climate benefits from switching from coal-fired. RGGI's climate projections also ignore the reality that natural gas emits more CO_2 than coal. Declining CO_2 emissions from coal-fired power plants and coal-related methane emissions have been exceeded by increases in CO_2 from natural gas-fired power plants and methane leaks related to the gas used to fuel the power plants. RGGI drives demand for new gas-fired power which provide symbiotic profit opportunities for power companies that are capitalizing on low gas prices and fracking companies that hope the new plants will soak up supplies and ultimately raise prices enough to encourage more drilling. The Department of Energy reported that more than 420 new gas-fired power plants were proposed for construction between 2017-21. The demand for gas-fired electricity generation increases the demand for fracking and natural gas infrastructure, which further expands methane emissions.	discern the precise cause of the RGGI emissions decline in a given year or years. One econometric analysis carried out by economists at Duke University concluded that the RGGI price has indeed been a principal reason for the emissions reductions seen in the RGGI region. This suggests that even at prices between $2-4 RGGI is driving emissions reductions contrary to the commenter's suggestion. Apart from the RGGI price signal, it is clear that adjustments to RGGI's cap from time to time have locked in the emissions reductions that have been realized in the RGGI electricity sector. The commenter suggests the RGGI cost-containment reserve (CCR) has a negative impact on emissions reductions. The CCR threshold is currently set at $10, meaning that allowance prices would have to reach $10 a ton in a given auction for the CCR to be triggered. The auction clearing price for the June 2018 RGGI allowance auction was approximately $4—far below the CCR threshold. As mentioned above, RGGI allowance prices have never exceeded $8 per ton. Low allowance prices mean lower overall program costs before taking into account the mitigating impact of allocated allowances to consumer benefit. RGGI has locked in meaningful emissions reductions on the order of 45-50% since 2009, while simultaneously

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		keeping allowance prices low. In essence, the RGGI program has achieved its program goal: controlling carbon pollution in a cost-effective and efficient manner. As discussed elsewhere, CO_2 is a global and national problem. RGGI stands for the proposition that a group of states can have a positive impact on emissions without driving emissions allowances up over $8 to date. This effectively balances the need to reduce emissions with the need to keep program costs at a reasonable level. Detailed discussion of how the consignment auction and market mechanisms operate, as well as the benefits of this approach, is available at comments 108 and 136. Executive Directive 11 directs DEQ to "1. Develop a proposed regulation for the State Air Pollution Control Board's consideration to abate, control, or limit carbon dioxide emissions from electric power facilities that: a. Includes provisions to ensure that Virginia's regulation is "trading-ready" to allow for the use of market-based mechanisms and the trading of carbon dioxide allowances through a multi-state trading program; and b. Establishes abatement mechanisms providing for a corresponding level of stringency to limits on carbon dioxide emissions imposed in other states

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		with such limits." (Emphasis added.) In other words, the proposed regulation under consideration is designed to meet the Governor's mandate to control CO_2 via participation in an emissions trading program. This emissions trading program is RGGI and, as the commenter states, RGGI does not address methane. DEQ agrees that the control of methane emissions is important; however, this specific regulatory action is not the means by which that will be accomplished. Note that methane is controlled elsewhere in the board's regulations as appropriate, and other measures may be adopted at a different time and in compliance with federal Clean Air Act and state law. As discussed elsewhere, emissions trading programs are authorized under the federal Clean Air Act and are a proven means of reducing air pollution (see, for example, comment 37). Joining RGGI will impose additional controls on each source of pollution beyond technology-based emissions controls imposed by federal and state permitting programs. Note that RGGI specifically addresses CO_2, not methane. More information on benefits realized by RGGI is discussed elsewhere; see, for example, comments 61 and 108.
81. BREDL et al.	Because biomass is typically considered renewable under state renewable standards, RGGI does not count CO_2 emissions from biomass processing and combustion. This underestimates the amount of carbon	As discussed elsewhere, the focus of this regulation is the control of CO_2 from fossil fuel-fired generators;

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	released from this energy source by a significant amount. There is a growing consensus that biomass cannot be considered carbon neutral. Processing, transporting and burning wood at biomass plants all produce GHG emissions, which can be greater than those from coal. Carbon sequestration from the growth of woody material takes decades to occur and is counteracted by the rapid clearcutting of forests to fuel wood-fired power plants. If biomass CO_2 emissions were counted in RGGI states, total RGGI CO_2 emissions could be on average 31% higher than what is currently projected over the next 10 years. This would also undercount the CO_2 emissions from Virginia's rapidly growing biomass industry. From 2011-16, electricity generation from biomass more than doubled in the state. In 2016, 2.60% of Virginia's power came from biomass, nearly 50 times Virginia's energy generation from wind, solar and geothermal energy combined. By not counting these emissions, RGGI would promote the growth of biomass, increase harmful pollution, and suppress the expansion of genuine renewables like solar.	see the response to comment 67 for additional information.
82. BREDL et al.	RGGI proponents argue that emissions have fallen under RGGI. While CO_2 emissions have declined during the time that RGGI has been in place, there is no indication that RGGI itself has driven these reductions. Those reductions were more likely attributable to the Great Recession than to the program, since RGGI went into effect in 2009 as the economic activity declined steeply. Emissions were already declining before RGGI went into effect; emissions fell faster before RGGI was implemented. Much of the alleged effectiveness of RGGI is attributable to a massive countrywide shift away from coal and oil to natural gas that was already underway when RGGI took effect in 2009. Overall, from 2005-15, coal and oil use decreased from 32% to 9% of electricity production in RGGI states, while natural gas--which has become significantly cheaper because of the risky fracking boom--increased from 25% to 42%. RGGI effectively promotes the expansion of fracking for natural gas at the expense of renewables. From 2009-16, RGGI states have added 4 times more gas-fired electricity generation than wind and solar generation. The percentage of electricity from natural gas-fired power plants rose by 11.2% from 2009-16 but only rose 2.4% from wind and solar. Natural gas-fired power plants have relied on fracking which benefits power companies but imperils communities. Oil and gas operations have become the second greatest global source of the methane. RGGI further encourages the shift to fracked gas because CO_2 is the chief GHG pollutant emitted from coal-burning power plants. If a power company shifted its energy mix from coal to natural gas, it would accumulate RGGI allowances. While shifting to natural gas results in much lower CO_2 emissions at the power plant, the	As noted in the response to comment 80, it is difficult to determine the precise factors that lead to a specific result in complex electricity markets. One study carried out by economists at Duke University concluded the RGGI program was in fact a significant factor on the emissions reductions realized in the RGGI region. Other factors, such as low natural gas prices, also played a role. Without a doubt, the RGGI program has effectively locked in emissions reductions of approximately 45-50% since the program began through cap adjustments. Thus, RGGI has been very effective in realizing emissions reductions from power plants in the RGGI states. RGGI is a flexible, market-based program that imposes an allowance cost on burning fossil fuels, including natural gas. It therefore tends to

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	increased reliance on natural gas significantly amplifies methane emissions. RGGI's failure to consider or cap methane as a GHG allows RGGI states to overestimate climate benefits. The GHG footprint of natural gas is worse than coal and oil because methane traps more heat in the atmosphere. Utilities that switch from coal to gas reduce CO_2 smokestack emissions but could be increasing CO_2 equivalent GHG emissions from methane leaks.	discourage electricity generation from natural gas relative to lower carbon sources of electricity such as wind and solar that have no allowance cost. It is wrong to suggest that RGGI promotes natural gas use over renewables. Also note that not all of the energy shift under RGGI has been to natural gas; shifts to renewable energy and energy efficiency are occurring and on the increase in RGGI and Virginia. For example, implementation of the Grid Transformation and Security Act of 2018 will encourage renewables. The set-aside will also encourage the development of renewable and efficiency projects. See the response to comment 51 for further discussion.
83. BREDL et al.	Cap-and-trade programs have the potential to form pollution hotspots and harm vulnerable communities. These populations already face higher pollution exposures because of the disproportionate location of toxic facilities in their neighborhoods. Market-based environmental policies can exacerbate hotspots that remain outside the scope of trading schemes, and they worsen pre-existing health and socioeconomic disparities. RGGI supporters point to the program's ability to raise revenue for renewable energy and energy efficiency initiatives, as well as reduce energy bills for low-income households. However, many states have used this pollution payment scheme to balance state budgets. While governments need revenue, funding from pollution means that governments will be less inclined to eliminate carbon from industry as they become dependent on the revenue. RGGI proponents assert that the program will save households millions of dollars in electricity rates. This has not been the case. RGGI states' residential consumers have seen their bills go up $1.1 billion since the program was implemented. At the same time, industrial users have seen a $1.9 billion decrease in their electricity bills.	DEQ is committed to addressing the environmental and health impacts of power plants in all communities, including those communities that have historically borne a disproportionate burden from local air pollution sources. The goal of the program is to reduce carbon emissions from power plants using a tool that has proved effective at reducing air pollution at the lowest possible cost. The emissions cap is designed to ensure that carbon emissions are reduced from a baseline, meaning that overall the environmental situation is improved from the baseline. Based on the modeling carried out for the proposal, not only would the program reduce carbon

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		emissions, but it will also produce co-benefits in the form of reductions in other harmful pollutants that contribute to low-level ozone and particulate pollution. This is good for the health of Virginians. The commenters are concerned that because the program does not require emissions reductions at specific plants it may not reduce emissions at plants in specific neighborhoods. Individual power plants are subject to facility permits that hold those plants to specific emissions limits designed to protect public health. As discussed in comments 48 and 136, cap-and-trade programs are effective pollution control programs that reduce emissions beyond permitting controls. It is important to note that Virginia is a regulated state in which costs are carefully monitored and managed by the SCC. The program is not raising revenue; the consignment approach ensures that benefits return to the ratepayers, and no funds of any kind will be available for uses other than emissions reductions. The most recent economic analysis found, that from 2015-17, RGGI lowered CO_2 emissions while benefiting local and regional economies.
84. Birchwood Power Partners, L.P.	Birchwood Power operates a 240 MW coal-fired cogeneration facility in King George County. Birchwood is equipped with state-of-the-art pollution controls, including low NO_X burners, over-fired air, and selective catalytic reduction to reduce NO_X; use of high quality, low sulfur bituminous coal and a flue gas desulfurization system with a dry lime scrubber to control SO_2; and a high efficiency fabric filter baghouse to control particulate	The commenter's concerns are appreciated. DEQ is assisting affected sources in managing compliance costs by issuing allowances. The amount of compliance cost covered by the allowances will

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	matter. Birchwood provides the advantages of fuel diversification, high energy efficiency, and low emissions, and is located in relatively close proximity to load. This combination makes Birchwood an important tool for balancing grid reliability and environmental protection. Birchwood is one of the few remaining coal-fired power plants in Virginia. In 2005, coal-fired power accounted for approximately 34.6 GWh or about 46% of in-state electricity generation. By 2012, coal-fired generation in Virginia was reduced to 13.6 GWh, about 20% of in-state generation. During the same period, generation from natural gas-fired combined cycle plants increased from 7.3 GWh, 10% of in-state generation, to approximately 23 GWh, 35% of in-state power generation. Further retirements of coal plants and construction of new gas plants are underway. The 2014 Virginia Energy Plan lists Birchwood as a coal-fired plant with projected long-term operations, and it is the only such plant that operates as an independent power producer (IPP). Coal-fired generation is important for maintaining fuel diversity and reliability. Birchwood is dispatched during extreme weather events and peak power demand periods. During Polar Vortex events in 2014 and 2015, natural gas that might have been available for power generation was consumed by residential and commercial customers for heating or, if available, became very costly. The Birchwood plant, with an on-site fuel stockpile, was dispatched at a high capacity factor and was 100% available for dispatch. Birchwood is particularly important to maintaining reliability as it is located close to the Washington D.C. and northern Virginia area and can provide fuel diversity in the face of gas shortages or price spikes. Birchwood's sale of energy is currently contracted to a third-party and is unable to pass the costs of the proposed regulation through to the market. Although Birchwood will be able to include these costs in its price of energy after its contract expires, the economics of coal-fired power plants have been severely impacted by the glut of natural gas, which has reduced energy margins and dispatch of the facilities. The regulation will put further pressure on the viability of these critical assets. Birchwood urges DEQ to adopt an approach that preserves a diversified fleet of power plants using different fuels. Diversification of the types of electricity generation sources will help maintain grid reliability during situations where there are natural gas curtailments, periods when renewable energy is limited or not available, and other events impacting individual base load units in Virginia.	depend on business decisions made by any individual facility.

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	Birchwood's allocation will be based upon the average generation of the years 2016, 2017, and 2018. During this period, Birchwood's dispatch was at a historical low that represents only approximately 25% of its potential generation, due to the low price of natural gas. As an IPP, Birchwood would be severely disadvantaged based upon the proposed allocations of emission allowances. Accordingly, selection of a different period would more accurately represent dispatch of Birchwood.	
85. Blue Ridge Power Agency (BRPA)	The commenting members (Towns of Bedford and Richlands; Cities of Danville, Martinsville, Radford, Salem; Virginia Polytechnic Institute and State University; Central Virginia Electric Cooperative) are concerned that the board may lack statutory authority to participate in RGGI. Legislatures in most RGGI states have passed authorizing legislation. These legislatures have determined that because RGGI is a reflection of state policies and will require citizens to bear a cost to achieve those policies, those elected by the citizens of those states should make the decision as to whether joining RGGI is justified. Virginia, on the other hand, is acting without the benefit of legislative direction. Governor McAuliffe directed the board to implement RGGI. Without any support other than saying that it is "well settled," Attorney General Mark Herring determined that GHGs fall within the definition of air pollution under Virginia law. To avoid the uncertainty of protracted litigation and to ensure support for the program, the board should defer action until the General Assembly approves participation and authorizes DEQ to administer carbon-reduction programs.	As discussed in the response to comment 76, it is necessary and appropriate for the board to promulgate state-specific regulations controlling carbon pollution. See also comments 139 and 159 for further discussion.
86. BRPA	The rule would not require generators to purchase emissions allowances from the state in an auction, thus avoiding a requirement that all revenue-raising measures must be approved by the General Assembly. Instead, generators would be freely allocated allowances, which they consign to the RGGI auction. Allowances purchased at the RGGI auction would no longer be conditional, i.e., generators would surrender these allowances to DEQ in order to cover their actual annual CO_2 emissions. For each conditional allowance consigned to auction, the generator would receive the clearing price of the auction. This process allows generators to consign all of their conditional allowances but only purchase what they actually need. Unneeded allowances would be sold, with the proceeds collected by the generator. The program does not address the treatment of these windfall proceeds and, importantly, contains no provision specifying how such windfalls would be returned to consumers. The impact of the program on monthly customer bills is not reliable, and the impacts are likely to be considerably higher. The regulation preamble suggests that the	To date all emissions trading programs implemented by Virginia have allocated emissions allowances to the compliance entities. This is consistent with the approach recommended repeatedly by EPA in the various federal model rules offered for implementation by states beginning with the NO_X Budget Program in the late 1990s. This program will similarly allocate allowances to compliance entities. The program does two things that address the concerns voiced by the commenter. First, compliance entities will

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	average monthly bill impact for residential, commercial, and industrial consumers through the year 2031 will be nominal--never more than 1.1%. These estimates are taken from an impact analysis prepared by a consultant that assumes that "95% of revenues that accrue to utilities from the sale of carbon allowances or credits are returned to ratepayers." No factual basis exists upon which to base an assumption that 95% of the revenues accrued would be returned to customers. As DEQ recognizes, the "revenue received by CO_2 Budget Sources owned by regulated electric utilities flow to rate payers pursuant to SCC) requirements." However, there is no legislative or other mandate to require the SCC to impose such a requirement on regulated utilities. The outcome of any proceeding at the SCC contemplating a proposal to direct the regulated utilities to return RGGI windfalls to customers is uncertain. Relying on the presumed outcome of an action that may or may not be taken by a different regulatory agency as the basis for cost estimates is speculative. The cost estimates developed by The Analysis Group fail to take into account that a significant share of the covered generators are not subject to SCC jurisdiction. Approximately one-third of the energy produced in Virginia in 2015 was generated by facilities owned by IPPs., which are not regulated by the SCC and would not be subject to any regulation that may be adopted later by the SCC. These facilities sell power into the regulated wholesale markets, and those sales are subject to the exclusive jurisdiction of FERC. The consultant's study assumes that "revenues from allowances to independent power producers [would be treated] in the same way as those allocated to utilities (i.e., revenues returned to ratepayers)"; however, no state mechanism exists to assure that the benefits of allocations to IPPs actually accrue to ratepayers. The program would allow these facilities to make windfall profits off of their allocated share of RGGI allowances, and permit those profits to lay beyond the jurisdictional reach of the state's rate regulator. Surely this approach is contrary to the program's intent. The board should explain why customer bill impacts should not be adjusted to remove revenues from allowances to unregulated entities, or explain what regulatory mechanisms would assure those revenues are returned to customers. The RGGI model rule leaves how to allocate allowances to states. Under the proposal, allowances will be allocated to units based on the average of the 3 amounts of the unit’s total net-electric output during the 3 most recent years for which data are available prior to the start of the control period. All covered units in Virginia, regardless of whether they are regulated by the SCC, will receive an allocation of allowances based on past	consign their allocated allowances to auction, where the allowances will be sold. Unlike previous programs, this means that the value of the allowances will be transparently known to all observers of the auction. This, in turn, means that the utility commission will have a clear valuation of the allowances to use in carrying out their responsibilities. Second, the allocations are to be made on an updating, output basis. This means that the allocation will tend to reflect the facts in the field: the plants that run more will get more allowances and the plants that run less will get less. This should greatly reduce the chances of an overallocation to individual plants. The commenter notes that independent power producers are not subject to rate regulation by the commission. To the extent the power generated by independent power producers is purchased by regulated utilities, however, the costs of that power are indeed the subject of regulation. This would include any embedded allowance costs. The commission, therefore, may have some influence over whether the costs of allowances are in fact passed on to consumers when the compliance entities have received the allocations at no cost to them. In any event, the program will make such regulatory decisions much easier than previous

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	operation and the right to potentially convert those allowances into profits. Note that no other state has chosen to allocate 95% of allowances to generators. The allocation of conditional allowances to generators based on historical usage is arbitrary, and likely to overcompensate generators and produce excess allowances because energy production at many of the covered units will continue to decline as zero-carbon resources compete with high-carbon emitters. These excess revenues will be sold at auction or banked by the generators, but those entities that have made investments in energy efficiency and carbon-reducing technologies are provided nothing. Further, the board has stated that the SCC will need to act to require that regulated utilities return auction revenues to customers. But until those rules are finalized there is no guarantee whether or how that will be done and there is a risk that the funds will become windfall profits to the recipients of allowances. It is also unclear as to how Virginia customers will receive any benefit from the profits earned by unregulated IPPs. An alternative to the allocation of allowances to units is to directly allocate allowances to load-serving entities (LSEs) in proportion to their customers' energy consumption. The value could be passed on to those customers by way of offsetting reduction to their bills, or the benefits of programs to invest in local alternative energy projects in their service territories. This approach would not foreclose the statewide set-asides of allowances to support energy efficiency programs. The commenting members therefore strongly urge the board to withdraw the regulation for the purpose of considering whether allocation of consignment allowances should be redirected from generating units to LSEs. The preamble does not explain how the program would impact the cost of wholesale power sold to Virginia entities, which it would assuredly do for BRPA's members. These impacts take effect at the wholesale markets regulated by FERC. With respect to power purchase contracts that include a formulaic type of cost-of-service rates, the cost incurred by the owners of covered generators of procuring RGGI allowances are likely to be passed through in those cost-based rates. However, it is not clear whether revenues from the auction for consigned allowances would be credited through the formula rate process and returned to our members. This is to be decided by FERC, and could leave members and consumers with the obligation to bear the costs of RGGI without any offsetting revenues. Energy prices could increase as the cost of RGGI allowances are incorporated into the energy offers that are submitted into the PJM energy markets. Energy prices in the regional markets are determined by the	emissions trading programs where allowance allocations were made without the benefit of a consignment auction or without updating. See, for example, comment 136. According to the bill impact analysis conducted on DEQ's behalf, costs are expected to be minimal.

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	offer of last-dispatched and highest-price resource, and because the auction is a single-price auction the generator's cost of RGGI allowances could have region-wide price impacts. Over time, the program would ratchet up the RGGI allowance price and ratchet down available quantity, so the cost of RGGI will become more apparent in wholesale market prices. BRPA members will see a more significant impact of RGGI on wholesale power costs. Participation in RGGI has the potential to affect congestion paid by our members. Wherever power is generated, whether in Virginia or another state, it must be moved financially from that location into the Blue Ridge. Regardless of the contract price, if the price of power at the point of generation in another state is low and the price of power in the Blue Ridge area is high, the purchaser must pay for the difference, and those costs can be substantial. We ask the board to reconsider the allocation of conditional allowances to generators. The Regulatory Advisory Panel was clear: cost to customers should be a primary consideration. In fact, the panel could not come to consensus on whether LSEs or generators should receive the auction credits. Assigning allowances to LSEs is the most direct way to assure that the benefits of RGGI accrue to intended beneficiaries--retail consumers in Virginia.	
87. Calpine	Calpine supports cap-and-trade programs that place a clear price on carbon emissions in a way that allows such a price to be reflected in wholesale power prices and that are designed to minimize market distortions, including broad coverage of new and existing power generation facilities that emit GHGs; effective and equitable methods for distributing emission allowances; minimization of leakage issues that result from differing requirements from one state to the next; and setting allowance budget caps at a level that will result in meaningful carbon reductions by incentivizing environmentally efficient dispatch of power generation facilities. For these reasons, Calpine supports the proposal, including allowing Virginia sources to use allowances that either originated in Virginia or any other RGGI state. Linkage with RGGI will allow for a broader, more flexible emissions market, helping to improve market competitiveness and trading efficiency while lowering carbon abatement costs for affected generators. Because Virginia's linkage with RGGI will significantly expand the size of the RGGI market, it is important to recognize the potential impact of the level of Virginia's base budget on the RGGI program and on allowance prices. A budget that is not based on reasonable assumptions regarding the generation mix in light of a cap-and-trade program in Virginia may result in significantly higher or lower compliance costs for the	Support for the proposal is appreciated, as is the commenter's discussion of the benefits of RGGI and its market mechanisms. As discussed in the response to comment 37, a cap of 28 million tons was selected.

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	overall program. In RGGI's most recent auction, CO_2 allowances sold at a relatively weak clearing price of $3.79. This suggests that a too-high base budget could further weaken the carbon price signal. At this price, the societal value of the RGGI program is largely limited to income it generates for the participating states; it is too low to impact power system dispatch to any meaningful degree. Thus, Calpine recommends that Virginia set its initial base budget to no more than 34 million tons of CO_2. The proposed budgets account for recent trends in Virginia's electric generation sector, including planned retirements of fossil fuel generators and opportunities for clean energy and energy efficiency. The opportunity to trade with other RGGI states, and the inclusion of the CCR, help ensure that a base budget no higher than Virginia's proposed levels is reasonable and will ensure sufficient overall market liquidity. Recognizing the historically low allowance prices in the RGGI region, Calpine supports the proposal to include the ECR.	
88. Covanta	We fully support efforts to reduce GHG emissions through a market-based mechanism. We are proud to be part of efforts already underway to reduce GHG emissions in Virginia. Covanta operates EfW facilities in Fairfax County and Alexandria. These facilities are recognized internationally as a source of GHG emissions mitigation and low carbon energy generation. EPA has determined that EfW facilities reduce lifecycle GHG emissions by one ton of CO_2 equivalents (CO_2e) for every ton of MSW diverted from a landfill and processed. Based on Virginia data, every ton of MSW diverted to EfWs reduces GHG emissions by roughly 0.7 tons CO_2e. Covanta's Alexandria and Fairfax facilities annually reduce GHG emissions by over 900,000 tons of CO_2e a year relative to landfilling. Capping emissions through a trading-ready approach will incentivize the use of low-carbon energy sources that promote economic development and job creation. To achieve the most cost-effective program, we support a full portfolio of clean energy technologies and services, including wind, solar, energy efficiency, and EfW. We encourage DEQ and DMME to leverage the set-aside mechanism to further support renewable generation, both for existing facilities that face ongoing operating costs as well as new capacity, inclusive of both greenfield development and additional generation achieved at existing facilities. We also support the proposal to allocate allowances on the basis of regularly updated electricity output, as opposed to historical emissions. This approach provides the greatest alignment between the carbon intensity of electrical generation and the market-based policy signal.	Support for the proposal is appreciated. DEQ agrees that EfW facilities play an important role in the reduction of carbon pollution.
89. Center for Resource Solutions	The RGGI Model Rule includes a voluntary renewable energy market set-aside provision. Virginia would be able to draw on the experiences of 8 other RGGI states	As discussed in the response to comment 51, DEQ recognizes the value

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(CRS)	that have successfully implemented this provision. We strongly recommend that Virginia incorporate this or a similar provision in order to maintain and grow the environmental and economic benefits of voluntary, private investment in renewable energy. Under the rule, GHG reductions at regulated electricity generating facilities due to renewable energy generation will be automatically counted and reported by those facilities toward compliance, and since the rule determines and fixes the level of emissions from the sector, there is no net change to emissions at regulated sources due to renewable generation. In this scenario, voluntary renewable energy can have no impact on statewide or regional GHG emissions beyond what is already required; furthermore, it subsidizes compliance for regulated entities. As voluntary renewable energy reduces emissions counted toward compliance, voluntary purchases help reduce the cost of compliance, making it cheaper and easier for regulated emitting facilities to comply. This presents a different value proposition for voluntary and corporate buyers and investors in comparison to circumstances prior to implementation of the rule. Voluntary renewable energy is not used to meet governmental targets or mandates--it stands apart from and builds on compliance efforts. This separation enables the voluntary market to make an incremental difference or "regulatory surplus." Voluntary purchasers of renewable energy tend to value this incremental impact highly. Renewable energy generation that is counted toward regulatory compliance cannot be considered surplus to regulation. Regulatory surplus with respect to GHG regulation may be important for voluntary renewable energy demand. Since many of the companies and individuals purchasing in the voluntary market do so a commitment to address GHG, an effect on emissions beyond what is required by law may be a non-financial benefit. Where renewable energy sold into the market does not have an effect beyond compliance and only helps regulated entities comply, this changes the effectiveness of voluntary renewable energy as a climate change solution for companies and individuals. As such, voluntary demand for renewable energy may decline if these benefits do not remain intact. Virginia's program can protect voluntary renewable energy benefits and demand by incorporating a provision that sets aside and periodically retires allowances for voluntary renewable energy, effectively lowering the emissions cap on its behalf. This mechanism would counteract the automatic counting of emissions reductions associated with voluntary renewable energy and recognize those emissions reductions as	of a voluntary renewable energy market as an important tool in reducing carbon pollution; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement that set-aside. DMME may, at the appropriate time and in accordance with its regulations and policies select a voluntary renewable energy market set-aside.

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	incremental to what would otherwise be achieved through GHG regulations. This helps preserve voluntary demand and private investment in renewable energy as drivers of emissions reductions, which can lower the cost of and reduce the need for GHG regulations. The RGGI Model Rule contains provisions for the number of tons that would be allocated to the voluntary renewable energy market set-aside account in a specific control period, including a sample formula with which the state could calculate the quantity of set-aside allowances that would be required. Regulatory surplus is critical to sustaining clear voluntary claims and has been helpful in the RGGI region in sustaining voluntary investment in renewable energy beyond what is required. A voluntary renewable set-aside preserves regulatory surplus for voluntary renewable energy by lowering the emissions cap and recognizing those emissions reductions as incremental to what would otherwise be achieved due to the cap. A set-aside can motivate private capital to produce voluntary renewable energy generation and emissions reductions in excess of state mandates. Alternatively, where voluntary demand for renewable energy is limited, so is the development of renewable energy and associated emissions reductions. By not including a set-aside for voluntary renewable energy in the regulation, Virginia may potentially leave privately-funded emissions reductions on the table, which it will later have to regulate to achieve. Green-e sets the standard for the voluntary market . To maintain the impact of the voluntary market and meet consumer expectations, Green-e requires a set-aside mechanism or allowance procurement and retirement for certified sales in regions covered by cap-and-trade regulation. Due to lack of a set-aside, Green-e would not be able to certify voluntary sales of renewable energy from within RGGI or Virginia to customers in Virginia, unless the customer pays the additional price to independently purchase and retire an allowance. Since customers are unlikely to pay this additional cost, we anticipate that there would be no Green-e market for Virginia renewable energy generation, or for RGGI renewable energy generation that is sold into Virginia. Voluntary buyers in Virginia will have to get their certified renewable energy from outside of the RGGI region. In 2016, Green-e certified over 728,000 MWh in sales to over 30,000 retail customers located in Virginia. This shows strong demand for voluntary renewable energy in the state.	
90. Dominion Energy	We support a program that would allow for emissions trading and be trading-ready. The program should reduce carbon emissions not only in Virginia, but regionally. The program should encourage the growth of	Support for the proposal is appreciated. Specific issues identified by the commenter are discussed

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	cleaner-emitting generation commensurate with the Grid Transformation and Security Act of 2018, which finds 5,500 MW of new solar and wind in Virginia in the public interest, as opposed to encouraging the increase in the dispatch of higher emitting generation in neighboring states. It must recognize the benefit of reducing purchased power from out of state and its impact on the environment, the Virginia economy and Virginia jobs. The program must establish a representative baseline that accounts for the emissions serving Virginia customer energy needs from which to determine and measure emissions reduction goals. This should account for emissions from in state generation sources as well as emissions from purchased power. The plan should evaluate and set emission goals and realistic implementation timelines that will provide needed time for the ramp-up of new renewables, energy efficiency programs, and infrastructure improvements in order to maintain the state's fuel diversity and goal to become more energy independent. The program should recognize the role of extending the operation of Virginia's existing fleet of carbon-free nuclear generation and the role of natural gas as the lowest cost, cleanest and most reliable form of dispatchable generation to complement the integration of renewables to the grid. It should also account for electrification of other sectors of the economy, such as transportation, and must not hinder the growth of electric vehicles. The program should be flexible, with multi-year emission averaging and other measures so that reductions can be achieved in the most cost-effective manner. The program should address electric system reliability and rate impacts.	in further detail below.
91. Dominion Energy	Any program setting carbon emission targets for electric generating units must accommodate for the dynamics of power generated outside of and imported into Virginia. The baseline and targets must account for the fact that Virginia is a net importer of energy from more carbon-intensive out-of-state resources. The program must also incentivize the expansion of lower-emitting cleaner generation in the state, and reduce imports of electricity. Encouraging the expansion of natural gas-fired combined cycle and renewable energy resources will grow the economy and lower emissions by decreasing reliance on imported carbon-intensive power. Setting a stringent cap on already cleaner generation in Virginia absent a similar level of reductions from neighboring states or a way to address leakage would increase the cost burden to Virginia generators. This would encourage lower cost electricity imports that are more carbon-intensive and not subject to a carbon cost adder, and result in limiting the dispatch natural gas combined cycle facilities in Virginia. In the PJM Interconnect, units are dispatched based on "replacement cost" of the variable components required	In theory, emissions "leakage" occurs when an emissions cap causes generation to shift from the area under an emissions cap to an area outside the cap, and that shift leads to increase in emissions. A number of factors make emissions leakage unlikely in the case of the trading program in Virginia. The electricity markets are in a period of significant change. Retirements of older plants and construction of new plants in new locations means changes in where power is generated. In addition, plants closer to the well heads tend to enjoy lower

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	to run the unit. The variable components include fuel and emission allowances, such as RGGI allowances. The replacement cost changes based on the market value of the type of fuel used in a unit and the market value of the allowance. Dominion does not choose when to operate its units, units are called upon by PJM. If Dominion units are above the target price for the day, other units, generally less controlled and more carbon intensive, will be called upon to meet load demand. Due to a carbon cost adder to the unit bid price when Virginia units bid into the electric market that other PJM resources would not have to account for, Virginia generators will be less competitive, resulting in increased imports. Coupled with the retirement or curtailment of fossil fuel-fired resources, this raises reliability concerns. These concerns are borne out by modeling analyses. In support of the company's 2018 IRP, ICF provided Dominion with forecasts for cases where Virginia joins/does not join RGGI. Virginia linking to RGGI does not reduce emissions regionally. The modeling results indicate that Virginia entering RGGI in 2020 does not result in overall carbon emission reductions in the EI or PJM regions by 2030. Emissions in the entire EI in 2030 are about 10 million tons higher than emissions in 2020 and about 3 million tons higher in the PJM region during the same period. The analysis shows that emissions reductions achieved in the RGGI region are offset by emissions increases in the non-RGGI portions of the EI region. Cumulatively, over 2020-30, emissions in the portion of the EI subject to RGGI are reduced by about 75 million tons, but increase by almost 90 million tons in the non-RGGI portion of the EI In the RGGI region, emission decreases over the period 2020-30 with Virginia linked to RGGI are driven by emission reductions in Virginia emissions in the non-Virginia portion of RGGI actually increase. The modeling results also show significant increases in net energy imports in Virginia, increasing from about 28% under the case with no carbon regulations in Virginia to 48% for the case with Virginia linked to RGGI. At the same time, the weighted average capacity factor for NGCC facilities in Virginia is projected to decrease by almost 50% between 2020 and 2030 under the RGGI case. DEQ modeling of Virginia linking with RGGI showed similar increases in power imports under both policy scenarios evaluated relative to the case with no carbon regulations in Virginia. DEQ has proposed an updating output-based allowance allocation approach that it believes will incentivize utilization of NGCC resources as a means to counter leakage. However, while an updating output-based allocation approach may be more favorable to NGCC units relative to coal-fired units, it does not address leakage. Natural gas-fired units in Virginia will still be subject to a CO_2 cost adder that	fuel costs—the primary operating cost for natural gas power plants. The cost of transmission, in contrast, favors plants that are closer to the load the plant serves. Thus, while differences in environmental costs have the potential to change the relative costs of plants in Virginia compared to plants outside Virginia, shifts in generation are determined by a whole host of other factors that are more significant than the low RGGI allowance price. Second, the owners of generation in Virginia are unlikely to face any competitive disadvantage relative to plants outside the state because the allowances are to be allocated to compliance entities under the program, and the amount of the allocations are to be determined on an updating output basis. To the extent a generator must use an allowance to generate power and also receives an allowance at no cost, the generator does not have an increased operating cost relative to plants outside Virginia. If there is no competitive disadvantage, there can be no shift in generation caused by the program. Third, vertically integrated utilities have the option of self-scheduling their generation in the competitive wholesale electricity markets. This means that even where generators outside the state have a lower operating cost that is the result of the program's

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	units outside of the region will not be subject to. The effect of RGGI-equivalent reduction requirements in Virginia is likely to limit the dispatch of highly efficient and lower emitting NGCC facilities in Virginia and encourage the dispatch of higher emitting resources and increased emissions in neighboring states outside of the RGGI region. Average carbon intensity in 2030 of electricity serving Virginia with the state not joining RGGI is projected to be 742 lb/MWh in 2030; the carbon intensity increases to 784 lb/MWh if Virginia joins RGGI. This is a 5.7% increase in carbon intensity of the electricity used by Virginia customers largely due to increased electricity imports into Virginia, which have a higher carbon intensity than in-state generation.	allowance cost, utilities may choose to run anyway because it makes economic sense to do so. Utilities, therefore, have a tool to prevent the generation shifts that might otherwise constitute leakage. Fourth, updating output-based allocation is expected to encourage generation in the state, rather than discourage it. Because power plants receive allowances only when they operate, the program is set up to discourage generation shifts by rewarding in-state generation. According to an August 2017 study conducted by researchers at the Regional Economic Studies Institute and Resources for the Future, updating, output-based allocation can be an effective tool to counter incentives to shift generation to areas not covered by an emissions cap. Fifth, if a shift in generation does in fact occur there is some question whether the shift is likely to lead to an increase in emissions. Natural gas has become the dominant fuel in PJM and typically fuels the marginal unit. To the extent a shift occurs between a natural gas plant in Virginia to a natural gas plant outside Virginia, there may be no increase in emissions that occurs as a result of the shift, especially to the extent adjustments to the emissions cap are made over time to address any excess allocations

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		under the trading program. For all of these reasons, DEQ believes that emissions leakage is unlikely to occur under the program (see responses to comments 108, 136 and 144). Also note that the implementation of the DMME set-aside will also encourage the reduction of in-state demand, thereby reducing carbon pollution and further preventing leakage. To the extent the possibility of leakage may theoretically exist, current evidence suggest that it has not happened under RGGI. RGGI issued the "CO_2 Emissions from Electric Generation and Imports in the Regional Greenhouse Gas Initiative: 2015 Monitoring Report." This report, the seventh in a series of annual monitoring reports, summarizes data from 2005-15 for electricity generation, net electricity imports, and related CO_2 emissions for the participating states. These monitoring reports were called for in the 2005 RGGI MOU in response to concerns about the potential for the RGGI trading program to cause emissions leakage. The observed trends in electricity demand, generation, and net imports show there has been a small change in CO_2 emissions from total non-RGGI electric generation serving load in the RGGI region during 2013-15 when compared to the base period, and the CO_2

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		emissions from this category for 2015 show there has been virtually no change when compared to the base period. In other words, the carbon intensity of additional generation is reduced, and emissions leakage has not actually occurred. Linking to RGGI will make Virginia a participant in RGGI's scheduled program reviews, and those program reviews can address any leakage problems should they arise with the program in the future. RGGI participating states perform comprehensive, periodic program reviews to consider program successes, impacts, and design elements. Stakeholder meetings are held throughout the program review process in order to encourage stakeholder engagement and the submission of comments from interested parties. As part of this process, DEQ will evaluate how the program is working from a Virginia standpoint as well as in the context of the other RGGI states. In addition to regular RGGI program reviews, the regulation will also be subject to state periodic review as required by § 2.2-4017 of the Virginia Administrative Process Act. The periodic review procedure includes a review by the Attorney General to ensure statutory authority for the regulation, and a determination by the Governor whether the regulation is necessary for

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		the protection of public health, safety and welfare, and is clearly written and easily understandable. Regulations under periodic review are subject to public comment; this would be another venue to identify concerns about program implementation.
92. Dominion Energy	Based on ICF modeling, linking to RGGI is projected to cost Virginia customers about $530 million over 2020-30, significantly less than actually joining RGGI. The modeling indicates that Virginia linking to RGGI will lower allowance prices thereby lowering the cost of carbon compliance in other RGGI states, subsidized, in part, by Virginia electricity customers. Should Virginia link to RGGI, customers in RGGI states outside of Virginia will incur $876 million less in cost related to RGGI allowance purchases from 2020-30 than the RGGI states would incur without Virginia joining RGGI. Additional costs related to carbon reductions isolated to the state and stranded investments for forced closures will be borne by customers. With the majority of the PJM region not subject to carbon regulations, the energy market will favor non-Virginia generating units, making Virginia units less competitive. This will advantage licensed competitive service providers (CSPs) that cover load through power purchases from non-Virginia-based resources. Unless these costs are non-bypassable, larger energy customers that have the ability under retail choice to purchase energy from a licensed CSP may find that CSPs can provide more attractive pricing and can avoid the costs related to carbon reductions. To the extent larger customers migrate to CSPs, remaining customers will bear the cost for compliance with the state carbon program.	The commenter is correct that the modeling showed that linking Virginia's program to RGGI did modestly reduce the modeled allowance prices for the program overall. These lower costs are exactly what one might expect when making an emissions trading market bigger. Bigger markets open up greater opportunities for lower cost reductions and lower overall costs for consumers across the entire footprint, including in Virginia. The commenter provides no evidence to support its assumption that the PJM market will favor non-Virginia units over Virginia units in the presence of the program. In general, generating units place bids to supply power to the wholesale market and those bids depend on the generator's costs to generate power. Fuel cost is the biggest component of a bid to supply power, and fuel cost depends on the fuel market and a plant's efficiency, not on the program. The program will allocate allowances on the basis of output from a generating unit and allocations will be periodically updated. As a result, the program will provide additional value to

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		a generating unit in Virginia that operates. This will tend to encourage Virginia units to operate, not discourage them compared to units outside the Commonwealth that do not earn this additional value. In addition, to the extent a unit incurs an incremental cost from the program, that cost is expected to be offset in whole or in part by the allowance value received through the allocation and the consignment auction. Essentially, the outcome is an effective program with a modest price tag
93. Dominion Energy	The 33 million ton cap case uses assumptions from Dominion's 2017 IRP; the 34 million ton cap is based on RGGI assumptions. IRPs depict a suggested portfolio expansion and tend to change on an annual basis. While IRPs may provide guidance in setting long-term goals, their purpose is not to establish regulatory requirements. Fundamentals-based models, such as the IPM model, are useful for evaluating the impacts of policy strategies but should not be used to set the program baseline. Rather, an emissions baseline should be established on historic emission levels including allowance for historic variations in emission levels due to year-to-year differences in weather and fuel prices. For example, for the initial RGGI cap determination in 2005, RGGI designers set the 2009 cap about 4% above the average emission levels observed between 2000-02. Historical data have also been used by EPA in establishing baseline levels for various trading programs including CSAPR and the NO_X SIP Call. 2016 emissions for Virginia units that would be covered under the Virginia proposal were about 35.3 million tons. An analysis of statewide emissions from electric generating units in Virginia over the last 20 years shows an average annual emission level of about 35 million tons with ±1 0% CO_2 emission volatility. Average emissions over 2014-16 were about 34.3 million tons. Applying a 10% margin to account for variability would yield a cap of over 37.5 million tons. Applying the same 4% margin used in setting the initial RGGI cap yields a baseline of about 35.7 tons. Accordingly, the 2020 baseline should be between 35.7-37.5 million tons to provide a margin to account for year-to-year fluctuations in weather and fuel price volatility. (This analysis does not include emissions from new generation projects.)	As discussed in the response to comment 37, a base cap of 28 million tons was chosen as the most representative and effective starting point for the program. This number is a reasonable starting point as evidenced by the modeling results, which tend to show reasonable cost impacts from the program using this base cap number. As discussed in numerous comments elsewhere, energy efficiency and renewable energy are increasing in Virginia, and the cap-and-trade program will contribute to this trend.

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	The modeling performed for DEQ by ICF projects almost 1100 MW of additional coal-fired capacity retirements by 2020 in the Virginia assumptions case and over 1500 MW of coal capacity retirements by 2020 in the RGGI case. Unit retirements should not be used to set the baseline. Efforts to reduce emissions by way of unit retirements implemented in advance of the baseline date should be applicable toward compliance and not penalized by applying them toward a further reduction to the baseline level. The data record must include the emissions from all units covered under the program, including units at which CO_2 emissions are not measured by continuous emissions monitoring systems. Coupled with the ability to credit reductions that occur prior to 2020, this would be a more fair approach. The 2020 baseline and reduction targets thereafter should not be based on a presumption that energy efficiency potential based on policies in neighboring states can be achieved in Virginia. Dominion continually works to achieve operating efficiencies to obtain more output with fewer emissions. In addition, we offer a number of end-use energy savings programs to our customers. As reported in the 2017 IRP, these programs have already achieved a substantial amount of energy savings; however, some of these programs are due to expire. Implementation of future programs is subject to approval by the SCC, which is not within the company's control. Dominion has filed approximately 36 replacement and new programs for approval by the SCC, and to date about two-thirds of them have been approved. While there remains potential for energy savings from consumer-side energy efficiency programs, this expansion is subject to state law and regulation. The success of these programs is affected by the degree to which customers choose to participate. Regardless of the success of energy efficiency programs, utilities must be prepared to serve their native load. Accordingly, the emissions target should be based on reasonable expectations of achievable energy savings and the compliance timelines must provide adequate time for the development of energy efficiency programs deemed necessary to achieve such objectives. The Virginia cap should not be more stringent than levels that would have been imposed under the CPP. Although the intent of the Governor's directive is to regulate carbon in the absence of federal action, it does not compel the state to establish emission targets equivalent to or below levels that would have been imposed under the CPP, which was approximately 27.8 million tons in 2030. The mass-based carbon emissions target EPA established under the CPP underestimated potential	

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	future growth to meet energy demand and was the most costly compliance alternative identified in the 2017 IRP. The limits required under the CPP envisioned a nationwide emissions trading program. Virginia should not impose more stringent emission reduction requirements to address a global environmental issue while the states we compete with economically have no emission reduction goals or requirements. RGGI re-assesses its program every 4 years based on historical performance. Since 2009, RGGI has conducted program reviews in 2012 and 2016-17. Both reviews resulted in a lowering of going-forward CO_2 emission caps for the RGGI region. The next assessment period is scheduled to occur in 2021, which is only one year after Virginia would begin its participation in RGGI. This means that Virginia cap identified through 2030 may be re-negotiated in 2021 with other member RGGI states and may be different than what is currently proposed. Virginia's entrance into RGGI creates just two years (2020 and 2021) of "certain" CO_2 limitations. Based on RGGI's two prior re-assessments, the CO_2 cap will likely be different than what is currently proposed, which increases uncertainty in electric utility planning.	
94. Dominion Energy	We support limiting compliance applicability only to fossil fuel-fired electric generating units greater than or equal to 25 MW. Small combustion turbines and boilers below this threshold should not be subject. This is consistent with many existing federal and state-level EGU-based emission reduction programs including EPA's Acid Rain Program, CSAPR, and MATS, and the RGGI model rule. Consistent with the CPP, we support exempting units that use biomass as their primary fuel. In 2013, Dominion converted 3, 51 MW coal-fired units to 100% biomass. Close proximity to an ample supply of waste wood biomass as well as EPA's carbon-neutral policy for permitting were key economic drivers for these projects. Given Dominion's investment in renewable biomass, it is important that biomass emissions remain exempt. Any departure from EPA's prior treatment of biomass as carbon neutral or action that eliminates the use of this fuel as a creditable compliance option could raise compliance costs. This compliance exemption should also apply to fossil fuel-fired units that are co-fired with biomass, such as the Virginia City Hybrid Energy Center (VCHEC). Under the proposal, a fossil fuel-fired unit that co-fires with biomass would be obligated to hold allowances for all of its emissions. This is a disincentive for a coal-fired power plant to reduce its carbon emissions. VCHEC burns waste coal and co-fires with biomass. In 2008, the board directed DEQ to incorporate a timetable for biomass utilization in the facility's PSD permit. According to DEQ,	See the response to comment 67 for a discussion of biomass applicability.

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	the board chose this approach "in order to promote further reductions in sulfur dioxide emissions and show a reduction in carbon emissions. since biomass is considered a biogenic carbon-neutral material." Requiring VCHEC to now hold allowances under a state carbon program for emissions resulting from the burning biomass in compliance with an air permit provision established to address carbon is counterintuitive. Requiring fossil units that co-fire with biomass to hold allowances would also be inconsistent with RGGI which only regulates fossil fuel fired units and provides calculations to subtract CO_2 emissions from biomass from multi-fuel fired units. To regulate biogenic emissions would be a significant departure from the existing RGGI program. It would put Virginia's forest owners and biomass-related renewable energy investments at risk, while creating unnecessary complexity. To the extent that the regulation requires biomass units to hold allowances, the budget must be increased accordingly to assure that the emissions from these facilities are included in the baseline.	
95. Dominion Energy	Dominion supports the consignment auction approach but the proposal does not provide details of the auction process and how revenue will be handled and transferred. The rule mentions that such revenue transfers will be done "in accordance with procedures established by the department." Clarity is needed as to how the Virginia allowances, which are proposed to be allocated annually, will be merged with the RGGI auctions, which are conducted quarterly. Additional legislation is required for the board to designate use of revenue associated with a trading program. Absent such authority, DEQ could not directly conduct an allowance auction or collect revenue from an auction. The consignment auction approach could provide a mechanism for the rule to proceed. Accordingly, to the extent the regulation links to RGGI via auction, we support the consignment approach. Direct auctioning would increase the stringency and cost of the program by forcing generators to purchase allowances they otherwise would have been allocated. EGUs would have to pay twice to reduce emissions: first to reduce emissions from affected EGUs or to develop new low-emitting generation, and second to obtain allowances to cover their remaining emissions. Modeling scenarios performed by ICF with Virginia joining RGGI with the auction proceeds returned to the state projected costs to the customer that are three times higher than costs estimated under the consignment auction approach. We support the proposal to allocate most allowances to affected EGUs using either historic generation (output based) or emissions data. This approach is reasonable,	DEQ agrees with the commenter that at this time the consignment auction is a cost-effective approach for the trading program. Use of the RGGI auction platform provides an already functioning system with detailed procedures that have proven effective. Details as to how the specifics of the auction will operate will be addressed in auction "instructions" which are developed separately from the regulation. DEQ will take the commenter's concerns into account when those instructions are developed. The consignment auction is designed to be cost neutral while enabling participation in the RGGI auction and providing for implementation of the CCR, ECR, and auction reserve price. Generally, the purpose of a regulation is to establish the relationship between DEQ and an affected facility; i.e., the department sets requirements that the

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	consistent with many of EPA's other emissions trading programs, such as the ARP and the CSAPR, and will help to minimize compliance and customer costs. Allocating allowances directly to affected EGUs who have a clear financial interest in complying with the rule will create a more reliable, predictable, and manageable system. Direct allocations to non-affected entities could increase the stringency of the cap by forcing affected sources to acquire allowances they otherwise would have been allocated, and under the proposed consignment auction approach, would have the opportunity to recover cost through auction revenue returned to the generator. This would increase the cost of compliance for affected EGUs and therefore ratepayers. RGGI's quarterly auctions limit how many allowances a single entity can bid (25% of the initial offering of CO_2 allowances in the auction). If Virginia participates in the RGGI auction program, such a limitation might not make it possible for all the compliance entities in the program to rely strictly on the auction to acquire their necessary allowances and they may be forced to go to the secondary market to get sufficient allowances needed to comply. This bidding limitation has not been an issue to date in RGGI because there has not been a single entity requiring enough allowances to hit the 25% limit. Virginia should advocate that RGGI amend this rule by expanding the size of the bid limitation by anyone entity such that every entity has the possibility of relying on the auction for compliance.	facility must meet, and the facility does so following the provisions of the regulation.
96. Dominion Energy	An updating frequency of less than 3 years (including annually) should not be considered. A unit that retires should not be required to give back allowances it has already been allocated. The allocation approach should provide a reasonable lag time between unit retirements and the discontinued allocation of allowances to those units, an approach EPA has allowed under trading programs such as CSAPR. The updating allocation methodology will effectively transition retired units out of the allocation cycle without requiring units to give back allowances. With respect to the baseline for determining a unit's pro-rata share of the state total budget, we suggest using the average of the 3 highest years over the previous 5-year period. This approach, which is consistent with other successful programs such as CSAPR, would provide additional flexibility to assure a baseline representative of a unit's normal operations and filter out years when a unit experienced atypical utilization. The rule must provide a mechanism for providing allocations to units that meet the definition of an existing unit but do not have 3 years of historical operational data. In cases where a unit does not have a full year of operational data over the 2016-18 time period, the allocation could be based on an estimate of	A 3-year period was chosen as the most realistic compromise between too much and too little flexibility. It is designed to avoid year-to-year variations that result from external factors that may influence operation and have a serious impact on allocations. At the same time, the 3-year period prevents allocations from being coming static.

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	projected annual operation with a requirement that the source give back any unused allowances for redistribution to existing sources.	
97. Dominion Energy	Under the proposal, 5% of the statewide budget would be set aside and allocated to DMME. These allowances would be consigned for auction by the holder of a public contract with DMME to assist the department in the abatement and control of air pollution. However, the proposal provides no details as to how the revenues obtained from the sale of these allowances in the RGGI auction would be used. The allowances and proceeds allocated to DMME to administer the program are revenues of the state and cannot be paid to DMME but rather would have to go into the State Treasury. DMME would only be allowed to use funds appropriated by the General Assembly to cover administrative and other costs. Although not explicitly stated, DEQ has indicated its intent to at least in part direct the 5% set-aside to encourage energy efficiency projects. To the extent the set aside is directed toward incentivizing energy efficiency, both demand- and supply-side energy efficiency improvement programs, including voltage optimization and other transmission and distribution efficiency improvements, should be eligible. Eligibility should include programs that help reduce carbon emissions such as infrastructure for electric vehicles.	As discussed elsewhere, DMME will determine how the set-aside is implemented, whether through incentivizing energy efficiency, other transmission and distribution efficiency improvements, or something else. DEQ agrees that both demand- and supply-side energy efficiency improvement programs should be eligible.
98. Dominion Energy	DEQ must explain adjusting the Virginia emission cap on the basis of banked allowances amassed over 2018-20 by affected entities in other RGGI states that Virginia affected sources will not be holding since Virginia entities will not become subject to an emissions cap or required to hold allowances until 2020. RGGI states were not subject to such adjustments through the first two 3-year compliance periods. Banking should be unlimited. Provisions to adjust emissions caps or withhold allowances based on volume of banked allowances should be delayed to provide time for the Virginia carbon market to mature. Similarly, there is no justification for applying the ECR mechanism at the inception of the Virginia program. Virginia sources will not be carrying any banked allowances during the initial compliance period. Under the RGGI model rule, states have discretion whether to implement the ECR mechanism; New Hampshire and Maine do not intend to implement this mechanism. Accordingly, DEQ should allow the Virginia market to mature before applying any mechanism that would artificially reduce the emission cap and increase compliance costs by driving up the allowance price. Another concern with adjustment mechanisms is that compliance entities will be compelled to purchase allowances from noncompliance entities to obtain enough allowances to comply with reducing caps. This	DEQ has developed the rule with the intent of linking to RGGI, because linking to a larger, well-functioning, existing program is a reasonable, efficient way to reduce emissions from Virginia units at the lowest cost. In establishing the provisions of the program and analyzing its potential impacts, DEQ has taken into account the provisions in the rule, including the adjustment of the allowance budget over the course of the program, and implementation of the ECR. Both of these features were included in the modeling and analysis conducted for the program and that analysis showed the program can be implemented yielding substantial benefits at a modest cost.

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	will be further complicated by the ECR that will reduce the bank of allowances. It is likely that the cost of allowances will increase as noncompliant entities seek a return on their investments, which increases compliance costs. The adjustment provisions should not be incorporated into the Virginia program without further evaluation. Applying adjustments and restrictions to the unlimited use of allowance banking would complicate and limit the very emissions trading system that the RGGI states have praised for its success.	The bank adjustment, CCR and ECR are all required elements for participating in the RGGI program. The ECR will only be triggered if the allowance prices are lower than expected and only to the extent the winning bids at a particular auction are lower than the ECR trigger price. The ECR mechanism is designed, therefore, to operate only in those circumstances where allowance prices are below the ECR trigger price.
99. Dominion Energy	The RGGI program has always allowed for a multi-year compliance true-up timeline. For the first 6 years of the program, affected entities were required to demonstrate compliance on a 3-year cycle. Beginning in 2015, the program was modified to a tiered 3-year compliance obligation. This compliance obligation will be maintained under the revised RGGI program and model rule that takes effect beginning in 2021. This allows for a smooth transition for RGGI compliance entities into the next phase of the RGGI program with a new 3-year compliance true-up (2021-23) following the last 3-year compliance true-up (2018-20) under the current phase. DEQ proposes to implement a similar tiered 3-year compliance approach. We generally support a multi-year compliance approach as it affords compliance entities flexibility in meeting compliance obligations. Note that the CPP also allowed for a 3-year compliance true-up. Aligning true-up requirements with compatible 3-year compliance cycles in RGGI makes sense.	Support for the proposal is appreciated.
100. Dominion Energy	With the Virginia program starting in 2020, the regulation would impose a one-year initial compliance timeline (to address 2020 emissions) before converting to a 3-year compliance cycle. DEQ explains that initial 2020 allocations and a one-year compliance true-up obligation is needed to align the Virginia program with RGGI's current 3-year compliance cycle. This single year compliance requirement places a burden on Virginia generators that no other compliance entities in the RGGI program have. In order to address this issue, DEQ should defer the implementation of the Virginia carbon program until 2021. This would fully align the compliance obligations under the Virginia program with RGGI's current 3-year cycle and provide a smoother transition to linking with the RGGI allowance system.	DEQ acknowledges the commenter's concern. The department was faced with a choice: either abbreviate the normal 3-year compliance period to 1 year in order to align the program start with RGGI (2021), or delay implementation and enable sources to obtain a full 3-year compliance period. There are advantages and disadvantages to either approach. DEQ based its final decision on what would best meet the overall program goal of smoothly

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		linking to RGGI. Starting the program on time and limiting facilities to a 1-year compliance period does impose an immediate burden on sources; however, this will benefit them in the long run by giving them a longer term compliance period as well as a smooth transition to the RGGI program. Adjusting as the commenter recommends would provide relief in the short term but put facilities on a steeper, more rapid compliance period overall.
101. Dominion Energy	We support adoption of the CCR which would provide a pool of additional allowances for sale in the consignment auction if the costs of allowances exceed a certain threshold. Such a mechanism is needed to address unexpected scenarios and to address potential adverse impacts on electric system reliability, and could also offer affected entities protection in terms of not being penalized for fewer emission reductions resulting from the unpredictable performance of renewable generation units.	DEQ agrees with the commenter that the CCR is a needed mechanism; see comment 136 for more detail as to how the CCR works.
102. Dominion Energy	The regulation should include offsets as allowed under the RGGI model rule, expanded to allow offsets that will encourage the reduction of emissions from electrification of other sectors of the economy, such as transportation. EVs and charger installations should be allowed to generate offsets. In 2016, more carbon emissions came from the transportation sector than the power sector. The regulation should allow reductions in emissions from sulfur hexafluoride (SF_6), one of the most potent GHGs. This offset category was eliminated from the RGGI model rule on the basis that, to date, there had been no SF_6 projects finalized in any RGGI state. One of the reasons for this has been may be the overall low RGGI allowance prices coupled with an abundant supply of RGGI allowances rendering administration costs undesirable. However, the more stringent RGGI cap and new mechanisms designed to minimize the allowance bank and drive the allowance price higher may now make these projects more viable.	As discussed in the response to comment 26, offsets are not being included in the regulation at this time. DEQ agrees that control of carbon pollution from the transportation sector is important, and may be addressed in another action.
103. Dominion Energy	Table 140-5A in 9VAC5-140-6210 D 2 and Table 140-5B in 9VAC5-140-6210 E 2 should be corrected to reflect that the annual number of CCR and ECR allowances listed are in million tons.	The proposal has been corrected accordingly.
104. DuPont	DuPont acquired the cogeneration units adjacent to its Spruance Plant as the supply contract expired and the previous owner discontinued operation. DuPont has a long-term agreement with Veolia to operate and maintain	DEQ agrees that the phrase "owned by an individual facility" should be removed; see the response

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	the cogeneration units that supply the Spruance powerhouse on the manufacturing campus. Veolia plans to upgrade the utilities to be more efficient, and enhance performance and reliability, which will help DuPont reduce its costs and environmental footprint. The unit that Veolia will operate and maintain for DuPont is a combined heat and power (CHP) unit. DEQ exempts certain industrial CHP units under 9VAC5-140-6060 B. However, this exemption requires that the CHP unit be owned by the industrial end user rather than a third party. DuPont has engaged Veolia to utilize their specialized expertise to operate and maintain the industrial utility, while allowing DuPont to focus on manufacturing. Rather than regulating CHP ownership, DuPont suggests that DEQ remove the phrase "owned by an individual facility and" so that 9VAC5-140-6040 B reads: "Exempt from the requirements of this regulation is any fossil fuel power generating unit located at that individual facility that generates electricity and heat from fossil fuel for the primary use of operation of the facility."	to comment 65. Under the RGGI Model Rule, facilities that provide less than 10% of their power output to the grid are exempt from compliance obligations and the proposal has been revised accordingly. The regulation has been further amended in order to address CHPs with more clarity; see the response to comment 74.
105. Environmental Defense Fund (EDF)	EDF strongly supports regulations to limit carbon pollution from Virginia's power sector because Virginia has profound public health and climate benefits at stake. An overwhelming majority of Virginians agree: 87% support Virginia continuing to reduce carbon emissions from power plants. The board has clear existing authority to regulate carbon emission through a statewide cap, trading program, a revenue-neutral consignment auction, and linking with RGGI. EDF supports Virginia linking to RGGI and aligning its proposed rule accordingly. An expanded regional carbon trading market in which Virginia links with the existing RGGI program has a number of benefits, including greater liquidity, streamlined administration, and additional opportunities for cost-effective compliance. The benefits of cost-effective CO_2 emission reductions from a well-designed CO_2 trading program are clear. For example, from 2012-14, RGGI added $1.3 billion in economic value in the region and led to the creation of more than 14,000 jobs. By finalizing a strong CO_2 trading program that links with RGGI, Virginia is poised to garner significant economic, public health, and environmental benefits as well. Virginia has tremendous opportunity to accelerate clean energy deployment and expand the role of renewables and energy efficiency in the state. Virginia has an estimated 89,000 MW of onshore and offshore wind capacity potential that could serve an electric load that outstrips the state's own needs. Virginia can also take advantage of tremendous solar capacity potential. Shifts in Virginia's power sector reflect national trends toward low carbon electricity. In Virginia, power sector CO_2 emissions declined by 24% from 2005-15. These	Support for the proposal is appreciated.

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	reductions have been driven by falling costs of renewable energy, low natural gas prices, changing consumer preferences, and policies that incentivize clean energy deployment.	
106. EDF	Thirty million tons should constitute the upper bound for the starting budget in 2020, with strong evidence indicating an even lower budget. In addition, the budget should decline annually by a tonnage amount of at least 3% of the 2020 budget--which is in alignment with the existing RGGI program--and consider a more stringent rate of decline. Recognizing that the ability to accurately predict future emissions based on current data has limitations, EDF also recommends DEQ provide for a mechanism to adjust the base budget in 2020 or 2021 if actual emissions are lower than projected. The 2020 budget should be at or below emissions that would have occurred under a BAU scenario. This is crucial in order for the program to drive additional CO_2 reductions beyond BAU, as well as greater near-term emission reductions in the early years of the program, enabling more cost-effective reduction pathways and opening the door to achieving higher levels of mitigation over the long-term. A starting base budget can also be lower than expected emissions under BAU, since covered facilities will have time to plan ahead for compliance with the regulation--and in fact, have already had time to anticipate the general direction of the regulatory framework given the policy direction outlined in ED 11 and the ongoing rulemaking process. Cost-effective abatement opportunities in the power sector are readily available. Modeling suggests that Virginia power sector CO_2 emissions under BAU in 2020 could be as low as 24 million tons. In 2017, DEQ projected Virginia power sector emissions would be 33-34 million tons in 2020, using the Integrated Planning Model (IPM) and assumptions from Annual Energy Outlook (AEO) 2017, Dominion's 2017 IRP, and the RGGI 2016-2017 Program Review. The Natural Resources Defense Council (NRDC) in 2017 projected BAU emissions would be 32.8 million tons in 2020, using assumptions from AEO 2017. However, more recent NRDC modeling conducted in 2018 used updated assumptions to project BAU emissions of 28 million tons in 2020. Meanwhile, The Rhodium Group projected BAU emissions well below DEQ's forecast, as low as 24-25 million tons in 2020, with cumulative emissions of 247-277 tons of CO_2 in 2020-30. These additional modeling efforts suggest DEQ's original projections of 2020 BAU emissions are likely to be overestimates. As new data become available, projections of 2020 BAU emissions could be expected to decline further.	The 2020 budget reflects the reference case used to determine the proposed base budget, and was at or below emissions that would have occurred under a BAU scenario. As discussed in the response to comment 37, a cap of 28 million tons has been selected. Because of the importance of aligning the Virginia program as closely to RGGI's as possible, the cap and rate of decline must align. This will ensure that the program operates as effectively and efficiently as possible.

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	Recent announcements of fossil fuel deactivations, as well as new developments for renewable energy and energy efficiency, further indicate the power sector is becoming cleaner, and demonstrate a pace toward a lower-carbon electric sector in Virginia that is challenging for modeling efforts to fully capture. Clear trends toward a cleaner power sector in Virginia reflect an ongoing transformation toward a low-carbon future for the U.S. electric power sector. As of April 3, 2018, 1,721 MW of coal and natural gas generating capacity is now slated for deactivation by March 2019, according to PJM. In 2016, these units emitted 3.87 million tons of CO_2. In 2017, the units emitted 1.71 million tons. Meanwhile, recent developments suggest a promising future for zero-emitting solar and wind generation that could reduce Virginia emissions by displacing fossil fuel generation. As of April 2018, a total of 3,621 MW of solar capacity in the PJM interconnection queue is expected to enter into service by the end of 2019. The Virginia Solar Energy Development and Energy Storage Authority reported that as of November 2017, 2,703 MW of solar was under development in Virginia. In March 2018, new energy legislation in Virginia declared 5,000 MW of new solar capacity and 16 MW of offshore wind capacity to be "in the public interest." New energy legislation also paves the way for Virginia to deploy more cost-effective energy efficiency, which, by reducing demand for electricity, can contribute to avoiding CO_2 emissions. These trends combined with recent modeling indicates that 2020 BAU emissions are likely to be lower than initially estimated and could continue to decline between now and the beginning of the program. EDF recommends that DEQ set a base budget that starts no higher than 30 million tons in 2020, but encourages DEQ to consider evidence from recent modeling and power sector trends that supports the setting of a base budget that starts below this upper bound. A lower starting budget can also facilitate additional benefits that can result from a more environmentally protective program. A base budget that starts below 30 million tons would be consistent with a trajectory for Virginia to reach zero carbon emissions from the power sector by mid-century. A lower budget would also help drive additional near-term emission reductions, unlocking the benefits of taking earlier actions to mitigate climate change. With annual average temperatures in the U.S. having increased by approximately 1.0°C in the last 115 years, the impacts of climate change are already apparent. Increased magnitudes of temperature rise are likely to further increase the prevalence of harmful climate changes worldwide, including severe weather events, extreme temperatures, extreme precipitation changes, and impacts to natural ecosystems and human necessities such as food security. Given cost-effective	

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	opportunities to reduce carbon emissions in the electric sector, and the lower overall emissions that can result from securing power sector decarbonization in advance of other sectors switching to electricity, it makes sense that the electric power sector should do more than its proportional share in reducing emissions, and follow a steeper trajectory earlier in time. In order to assess whether Virginia's emissions budget is consistent with this trajectory, DEQ can evaluate historical emissions data from 2016 and 2017. Using this data as one set of possible benchmarks, a straight-line decline from 2016 or 2017 emissions to zero by 2050 is consistent with 2020 emissions of 29-30 million tons or less, supporting a base budget that starts below 30 million tons in 2020. The Fourth National Climate Assessment finds, "Net cumulative CO_2 emissions in the industrial era will largely determine long-term, global mean temperature change. A robust feature of model climate change simulations is a nearly linear relationship between cumulative CO_2 emissions and global mean temperature increases. … Increasing the probability that any given temperature goal will be reached therefore implies tighter constraints on cumulative CO_2 emissions. Relatedly, for any given cumulative CO_2 budget, higher emissions in the near term imply the need for steeper reductions in the long term." Furthermore, a number of studies find that the timing of efforts to reduce CO_2 emissions can significantly impact the economic and environmental costs of action. Delayed action requires significantly accelerated mitigation efforts in later years to achieve the same cumulative emissions goals. Studies show that delaying mitigation efforts can increase the economic costs of necessarily more ambitious mitigation in the future. Delayed action also increases the risk of overshooting cumulative emission targets. Conversely, prioritizing emission reductions today can enable long-term mitigation to be more cost-effective and increase the likelihood of keeping temperature increases below target limits. By setting a lower 2020 starting budget, Virginia can facilitate long-term economic and environmental benefits of prioritizing early emission reductions and further limit cumulative CO_2 emissions from the power sector. The RGGI states have determined a regional cap for 2021-30 that declines by 2.275 million tons per year after 2021--approximately 3% of the 2021 cap--resulting in a 30% reduction in the cap from 2020-30. Virginia should achieve at least a similar level of reductions as it contemplates linkage with RGGI. Furthermore, ED 11 directs DEQ to create a rule to reduce CO_2 from the power sector that provides for a "corresponding level of stringency" with CO_2 limits in other states. DEQ should also consider a steeper decline, considering the benefits	

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	of prioritizing near-term reductions and of maintaining consistency with a trajectory to zero emissions by midcentury, as discussed above. For example, a pathway to zero emissions by 2040 could imply a yearly decline equivalent to 5% of the 2020 budget, while a path to zero emissions by 2050 could imply a yearly decline equivalent to 3.3% of the 2020 budget. A steeper rate of decline at the program outset, even while retaining a lower rate of decline in later years, would also facilitate further limits on cumulative emission reductions and additional near-term reductions.	
107. EDF	EDF recommends a mechanism to adjust the emissions budget as new data and analysis emerge. An adjustment could be made to lower the emissions budget in order to achieve additional emission reductions if abatement opportunities are more readily achievable and cost-effective than forecasts show, as well as to optimize market function. DEQ could establish a mechanism to automatically adjust the budget if certain conditions are triggered, or provide for a manual adjustment early in the program. An automatic adjustment mechanism could use a pre-determined formula to tighten the emissions budget under certain conditions. DEQ could establish such a mechanism to adjust the base budget in early years of the program if actual emissions are lower than projected--not unlike how RGGI has adjusted its cap in the past to account for banked allowances. DEQ has a range of options for the timing of any such adjustment, and should consider factors such as the availability of new emissions data, ease of administration, and the timing of RGGI auctions, compliance periods, and the 2021 bank adjustment. Alternatively, DEQ could provide for a manual adjustment of the emissions budget when new data becomes available--for example, 2019 or 2020 actual emissions from the affected power sector units. Virginia has appropriately included the ECR and withholding of allowances in alignment with RGGI's Model Rule. DEQ should harmonize the minimum reserve price for the Virginia program with the minimum reserve price in RGGI. There is a continued need for emission reductions beyond 2030 to achieve climate goals and protect Virginians from the impacts of carbon pollution. DEQ should participate in RGGI program reviews. Periodic program reviews are an important means to assess program success and make changes to strengthen the program. It is important for DEQ to provide as much long-term certainty around carbon regulation as possible--market certainty will contribute to a successful emissions market, and can also help ensure Virginia is at the table as a leader on climate policy in the future.	As part of linking to RGGI, it will be essential for Virginia to participate in RGGI market controls--such as the CCR and ECR--and in periodic reviews to adjust the program as needed. There is no need for Virginia, at this point, to develop its own preemptive mechanisms. DEQ appreciates the need to respond quickly to unpredictable market fluctuations and other unknown issues; however, the best approach to do so is in concert with the other RGGI states. Should a definite state need arise, a Virginia-specific remedy may be implemented.
108. EDF	EDF supports allocating allowances to covered sources with an updating output-based approach, and consignment of allowances to the RGGI auction. This	The commenter's remarks on how the updating output-based approach and

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	design smooths integration with RGGI, facilitates transparency and market efficiencies, and mitigates leakage. Consignment auctions are a proven method to facilitate transparency and price discovery. Successful examples of consignment auctions include the federal Acid Rain SO_2 Trading Program and California's Cap-and-Trade Program. A consignment auction in Virginia should be able to integrate seamlessly with the RGGI auction and key design elements including the price floor and ECR. Consignment auctions can create further incentives to reduce electric sector carbon emissions through a carbon price signal reflected in electricity rates. Furthermore, measures can be taken to provide benefits to ratepayers alongside a carbon price signal. Analyses conducted by EDF and RFF in the context of the CPP found that an updating output-based approach can be an effective means of mitigating emissions leakage--wherein carbon emissions shift out-of-state or to sources not covered by the program through, e.g., shifting generation. Modeling conducted by RFF found that an updating approach to allocate 100% of allowances to a subset of eligible sources under the CPP (as opposed to a historic approach) could reduce leakage by up to 64% compared to a mechanism that allocated only 5% of allowances with an updating output-based approach. Similarly, EDF analysis found that allocating all or nearly all CO_2 allowances with an updating output-based approach could significantly reduce leakage. EDF encourages Virginia and other RGGI participating states to monitor and evaluate whether and to what extent emissions leakage might be occurring on an ongoing basis, and evaluate additional opportunities to effectively mitigate any leakage that may occur.	consignment of allowances to the RGGI auction will address leakage are acknowledged. DEQ agrees that these mechanisms, along with robust program reviews for which RGGI explicitly monitors leakage, will discourage and limit emissions leakage. See the discussions under the response to comment 91.
109. EDF	Industrial power plants over 25 MW in size are a source of carbon pollution that DEQ proposes to exempt. Much of the literature on carbon market designs suggests that broader inclusion of sources can lead to more cost-effective and efficient outcomes. Industrial power plant sources may be included in future climate policies and Virginia can help provide regulatory certainty to these facilities by bringing them into the program and drive investments to reduce emissions now. In order to meet our climate goals, more emitters will need to reduce emissions. There are extensive, cost-effective opportunities for improving efficiency and increasing renewable energy use across industrial sources and DEQ should include these sources in the program.	See the response to comment 65 for a discussion of how industrial facilities will be handled. DEQ agrees that energy efficiency and renewable energy are important elements in a carbon reduction program, and will likely continue to improve in Virginia for a variety of market- and pollution control-based reasons.
110. EDF	A strong trading program can provide important benefits for communities overburdened by pollution. Without affecting timely finalization of the rule, DEQ should conduct ongoing analysis and monitoring to ensure communities disproportionately impacted by air pollution benefit from efforts to abate carbon pollution. This	As discussed in the response to comment 55, the EO 73 EJAC Council will take the lead on directly addressing environmental justice issues. DEQ will

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	analysis could include a geospatial EJ screen using demographic and environmental indicators to identify disadvantaged communities. DEQ should continue to work with affected communities and other stakeholders, such as the EJAC, to identify instances of adverse economic or pollution impacts on disadvantaged communities and take appropriate action to mitigate the effects. DEQ should also continue to engage meaningfully with EJ stakeholders and disadvantaged communities as the agency works to finalize this rule and implement the program. EDF commends DEQ for its efforts to date to hold public hearings across Virginia and invite deep engagement from diverse stakeholders, and encourage DEQ to continue this practice.	continue its public outreach efforts in such a way as to maximize public participation from all Virginians.
111. Forest Products Industry National Labor Management Committee (LMC)	LMC opposes joining RGGI due to concerns it would increase electricity and natural gas prices for businesses and consumers. The following language should be included in the regulation: "Forest biomass, including forest products manufacturing residuals, should categorically be treated as carbon-neutral whether or not it is co-fired with fossil fuel." The carbon profile of biomass is not at all altered when co-fired with other fuels. The biomass portion of the fuel mix has the same characteristics no matter what fossil fuel it may be co-fired with. It is the characteristics of the biomass feedstock, not of the power generation process or facility, that support treatment of biomass as carbon neutral. Additionally, LMC strongly urges the regulation not be expanded beyond its focus on utilities to also apply to industrial boilers. ED 11 pertains exclusively to controlling CO_2 emissions from electric power facilities. The Economic Impact Assessment, the direction given to the Regulatory Advisory Panel, the emissions and economic modeling conducted by DEQ and its consultants, and DEQ's written and oral information supporting the proposal indicated that the regulation applied only to the electric power sector.	See the response to comments 65 and 67 for further information on rule applicability.
112. GRID Alternatives Mid-Atlantic	We understand the consignment is designed to be revenue neutral. However, DMME will have a contract with a third-party administrator that would sell allowances allocated to DMME and make the funding available for use in a variety of programs to help reduce CO_2 emissions. Accordingly, one of DMME's strategies is to accelerate the adoption of energy efficiency practices and expand the deployment of renewable energy. This funding could be utilized to create new economic opportunity in the state through solar energy. Solar provides long-term financial relief to families struggling with high and unpredictable energy costs, living wage employment opportunities in an industry adding jobs at a rate of 20% per year, and a source of clean, local energy sited in communities that have been disproportionately impacted by traditional power generation. Virginia solar jobs increased by 10% in 2017, and the state now has over 3500 solar workers. Virginia is poised to experience	DEQ recognizes the value of low-income solar programs as an important tool in reducing carbon pollution; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement that set-aside. DMME may, at the appropriate time and in accordance with its regulations and policies, implement a low-income solar program set-aside. As

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	1.5% solar jobs growth in 2018. Low-income ratepayers pay a disproportionate amount of their income on utility bills. These customers stand to benefit most from solar energy, and must be prioritized through targeted policies and programs. The proposal assumes that all revenues raised from the auction by utilities are returned to ratepayers. In the case of distribution utilities dependent on other wholesalers for power, such as rural electric cooperatives and municipal electric entities, those wholesale contracts could impose costs on those dependent purchasers with no mechanism--and nothing that DEQ could make a requirement--for the wholesaler's auction revenues to offset those costs or return those revenues to the underlying load that is responsible for paying those costs. There may be solutions to this issue; however, those solutions would be outside DEQ's purview, either involving an order from the SCC, a mandate to run auction revenues through a FERC formulary rate in a certain way, or legislation. Low-income consumers that use electricity should not pay for the costs of carbon regulation without also receiving the benefit of revenue, if any, from allowance auction proceeds. The proposal does not fully address this issue. GRID Mid-Atlantic has seen the benefits of low-income solar programs in markets across the country. We recommend the regulation directly benefit low-income ratepayers with a solar program funded by DMME's allowance funding. A low-income solar program would have the goals of significantly reducing the electrical energy burden of Virginia's low-income ratepayers and training the next generation of solar workers. This type of programming would complement DMME's strategic objective to expand the deployment of renewable energy and overall reduction of CO_2 emissions.	discussed in the response to 55, affected communities will be monitored on an ongoing basis to assure that no disproportionate impacts are experienced. Note that the trading program as well as how the costs of energy in Virginia are arrived at are open and transparent. There will also be numerous opportunities to identify and remedy any identified impacts.
113. International Emissions Trading Association (IETA)	IETA welcomes this opportunity to voice strong support for the proposal. More than 50% of the world's economy is subject to some form of carbon pricing, most of which is under cap and trade systems. This growing coverage includes major international trade partners and the entire RGGI collaborative. Virginia's proposed program allows the use of market-based mechanisms and trading of CO_2 allowances. It provides an important link to RGGI's program, enabling Virginia market participants to have access to a bigger, more efficient market. 9VAC5-140 will allow Virginia to join the other RGGI states as a leader in cutting emissions that lead to climate change and air pollution, while providing opportunities for in-state clean economic growth and business development. The rule would also provide regulatory certainty to Virginia's electric generation sector, including a clear price signal and incentive for electricity generators to invest in innovative lower carbon technologies. IETA sees the	Support for the proposal is appreciated, as is the commenter's discussion of RGGI's attributes.

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	program having 4 fundamental advantages: flexibility, cost-effectiveness, linkability, and building on the proven success of emissions trading systems globally--and most importantly--in the context of the RGGI cap and trade program. The program accesses regional allowance auctions and gives participants across the RGGI region the opportunity to participate in the Virginia market. This will provide a broad market for program revenue, price discovery, and market liquidity. Issuing allowances to generators based on their current GHG emissions and allowing them to sell excess allowances creates an incentive for generators to be innovative in their carbon investment and compliance strategies. Compliance flexibility afforded by the program will ensure that emission reductions are realized cost effectively. Cost-containment design elements, such as an auction reserve price and price ceiling, will guarantee that the carbon price does not go above or below acceptable ranges. This approach will reduce administrative burdens for government. Virginia will be able to take advantage of economies of scale to reduce compliance costs while meeting GHG reduction goals while maintaining Virginia's autonomy and ability to act in its best interest. Linkability will also allow Virginia to take advantage of systems such as COATS without the need to develop and operate new systems and infrastructure. IETA encourages Virginia to establish an offsets policy and framework that could take advantage of existing methodologies developed by RGGI and the Western Climate Initiative. Over nearly a decade, RGGI has resulted in significant environmental and socio-economic benefits, including emission reductions and more than $2.76 billion in net economic gains. Virginia's cap and trade program can demonstrate that economic growth and carbon reductions can work together. As a global organization, IETA is aware of the broad and powerful role that programs like cap and trade can play in efforts to address the climate challenge. Adoption of 9VAC5-140 is a critical step that Virginia must take in order to reduce emissions and air pollution. At a time when Washington D.C. is regressing on climate action and leadership, Virginia's progress could not occur at a more important time	
114. Institute for Policy Integrity, New York University School of Law	When Virginia joins RGGI, the total emissions regulated by RGGI will rise by over 40%. Thus, the choice of Virginia’s emissions cap will substantially affect the total number of allowances available at each auction and may affect the stringency of the RGGI cap. Changing the stringency of the RGGI cap will, in turn, affect future permit prices, affecting all participants in RGGI auctions. In particular, power plants in other states will be able to purchase permits at a lower price, leading to less	Support for the proposal is appreciated, as is the commenter's discussion of trading programs.

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	abatement. Therefore, the achievement of environmental goals by RGGI will also be a function of Virginia's cap choice. A new state joining RGGI could either increase or decrease the stringency of the total emission cap. The RGGI price is currently below the socially optimal price for a ton of CO_2, and the price ceiling in RGGI is also below this level, so a less stringent cap would result in lower social welfare when compared to a tighter cap. If Virginia's cap is set relatively tight, leading to a lower total number of allowances than required to maintain RGGI's stringency, then RGGI permit prices will increase, possibly even hitting the price ceiling. This would not constitute an inefficiency from a social point of view. In 2020 the Social Cost of Carbon will be $49. Even if the generators were paying the full CCR trigger price, which in 2020 will be $10.77, the permit price would still be too low to fully internalize the externality caused by carbon emissions. By the same token, depressing the allowance price by decreasing the stringency of the cap would lower social welfare. If Virginia chooses to issue allowances for more emissions than its generators would emit under a business-as-usual scenario (the "counterfactual emission level"), this will loosen the emission cap for all of RGGI. Unless allowance prices are at the price floor, the price will go down, causing the aggregate emissions to increase compared to a scenario where Virginia does not join RGGI. A fall in the permit price will also decrease the revenue that the other states receive from RGGI auctions. The magnitude of those adjustments will depend on the magnitude of the changes in RGGI's cap. For emissions to decrease, the number of permits issued in Virginia must be set below the counterfactual emission level. To achieve that goal, a reliable prediction of the future emissions path is required. However, developments that can significantly affect Virginia's emission levels are uncertain, for example the rate of fossil fuel retirements and additions of renewables. DEQ should discuss their forecast of state CO_2 emissions to help assess whether the allocation will be too high or too low. Virginia proposes to set the base budget at 33 or 34 million allowances (while putting an additional 3.3 to 3.4 million allowances into the CCR). This might be too generous, even when future declines in the budget are considered. For instance, comments submitted to RGGI by Arcadia Center, NRDC and Sierra Club suggest that 2020 baseline should be set in the range of 30-32 million tons. The choice of the initial budget needs a sound justification given its potential impact on total pollution and permit prices. The allowance price will decrease slightly even if Virginia	

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	sets the cap equal to or just below its counterfactual 2020 emissions. This effect operates through two channels. Cheap pollution abatement possibilities may exist for Virginia's electricity generators that have already been implemented in the other RGGI states. And, if the RGGI cap is more restrictive than the cap chosen by Virginia, the total effective cap will be less stringent than without Virginia joining the system. However, the price decline will not be accompanied by an increase in total emissions compared to the scenario without Virginia. Therefore, a falling permit price, by itself, will not be informative as to whether RGGI's expansion will decrease total CO_2 emissions. As RGGI prices are already close to the reserve price, if Virginia enters RGGI with a loose cap, this will increase the probability of the ECR becoming operative. As Maine and New Hampshire do not intend to implement the ECR and will thus not withhold allowances when the trigger price is reached, this will create redistributional effects between the states. Adding Virginia generators to RGGI will improve market efficiency for current RGGI states and will help Virginia cost-effectively meet its carbon pollution reduction goals. Because of the consignment auction mechanism being used to distribute conditional allowances and RGGI proceeds, the SCC should ensure that all participants in RGGI are on an equal playing field to maintain market efficiency. One concern with the consignment auction is that some power generators in Virginia might be able to keep the revenue disbursed by RGGI, while, ideally, the consignment process should be revenue neutral for all compliance units. Regulated power producers in Virginia will be required by the SCC to pass all revenue from RGGI auctions on to state electricity consumers. The SCC will be in charge of verifying that the consignment auction is indeed revenue neutral for those units. Vertically integrated utilities could potentially gain revenue from the auctions by substituting RGGI-derived revenue for other customer support payments. Only newly conceived customer support programs should be funded using RGGI revenue to ensure that the support is additional to any other support that the generator might have offered. The SCC will need to be proactive in protecting Virginia consumers to prevent behavior by generators that results in windfall revenue. Windfall revenues would place the producer at a long-run competitive advantage relative to electricity generators that participate in RGGI but that do not receive revenue from the auctions. Because conditional permits will be allocated based on electricity generation rather than CO_2 emissions, clean generators could even see their profits increase if they manage to receive revenue from RGGI. This could happen for a generator that receives more conditional allowances than it needs to buy from RGGI to	

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	cover its own emissions, consequently receiving more revenue from RGGI than it spends at RGGI auctions. If non-regulated, private generators in Virginia subject to the proposed regulation do not have a revenue neutrality requirement, those generators will receive a revenue windfall in the form of proceeds from RGGI auctions. Some of the cleanest private resources might experience a profit windfall. As a consequence, this might create a competitive advantage for private generators over regulated resources. This could send incentives for new private power generation to locate in Virginia rather than RGGI states. Even if these generators receive revenue from the auction, joining RGGI will improve market function relative to the current status quo. Right now, emitting generators in Virginia are receiving an implicit subsidy, as they are not paying for the environmental damage caused by their emissions. Internalizing this externality will eliminate the perverse incentives for high emitting generators to locate themselves in Virginia relative to other RGGI states. The pass-through of the permit price from generators to customers will determine the extent to which generators themselves face the incentive to reduce carbon emissions. If the SCC allows generators to increase electricity rates in response to the costs of purchasing RGGI permits, then consumers will face an incentive to reduce electricity consumption and invest in energy efficiency. At the same time, higher energy prices may slow down the rate of electrification of the automotive and heating sectors. To the extent that the SCC wants the incentive for abatement of CO_2 to fall on the generators, it should limit the pass-through of permit prices to consumer electricity prices, either through limits on the approved rate increases by regulated generators or through rebates of RGGI proceeds to consumers. Similarly, if Virginia aims to increase electrification of other sectors of the economy, it should prevent pass-through of permit prices to consumer electricity prices. Electricity generators in Virginia will be incentivized to reduce CO_2 emissions whether or not the consignment auction is fully revenue neutral. A requirement to hold a permit for each ton of CO_2 emitted provides a marginal incentive to reduce emissions. This marginal incentive to abate will be present regardless of whether generators receive lump-sum revenue from RGGI. The RGGI-derived revenue would affect the long-run profitability of the generators if it is not distributed to consumers, so over time higher or lower emitting generators may be more likely to enter or exit the market. However, the marginal incentives to abate will be realized as long as the requirement to hold a permit to emit is in place. Moreover, were Virginia not to place any price on carbon, it would impede efficient market operation by	

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	implicitly subsidizing fossil power generators in the state. Therefore, including Virginia in the RGGI trading program will help improve market function and promote a level playing field between generators. The way in which the revenue from the consignment auction is passed to consumers will also have implications for environmental outcomes and energy demand. If consignment auction revenue is passed to consumers on a volumetric basis, consumers will see a lower price for electricity, reducing the incentive to pursue energy efficiency but also preserving the incentive for electrification. The design of the regulation needs to balance those trade-offs. Finally, the consignment auction mechanism also creates different incentives among the generators inside Virginia. Because the permit allocations and updates are based on net electricity output, the cleanest fossil fuel plants will have an incentive to expand their generation compared to higher emitting generators. This incentive should make the Virginia fleet even cleaner, leading to quicker decreases in emissions. In sum, adding Virginia generators to RGGI will increase environmental quality and improve market efficiency.	
115. Lena Lewis	I strongly support implementing carbon cap and trade of power plants. I congratulate DEQ on writing strong carbon cap-and-trade policy that will move Virginia forward in protecting our citizens from the worst impacts of climate change. I support linking with RGGI, which has a proven track record of success in reducing carbon emissions while keeping state economies strong. The purpose of cap-and-trade is to cause people to make different decisions than they otherwise would without the cap. Exempting biomass will create an incentive to cut down more forests, and will create the incentive for more biomass plants to be built, or for plants to be converted from fossil fuel to exclusively biomass. This will increase the incentive to cut down forests in Virginia. In addition to removing CO_2 from the atmosphere, these mature forests provide many other ecosystem services, such as cleaner drinking water, reduced erosion, and oxygen production. Keep in mind that carbon is just one element among many in our ecosystems. Carbon policy that exempts biomass risks increasing the destruction of biodiversity in forest ecosystems and reducing other benefits that they provide. Proponents of biomass say that it is carbon neutral because the energy source will absorb CO_2 as it grows back. A large body of scientific literature explains that the truth is not so straightforward. One essential question is the time frame needed in order for a harvested forest to	Support for the proposal is appreciated. See, for example, comment 67 for further discussion of biomass, and comment 65 for more information on the industrial exemption. A base cap of 28 million tons tons has been selected; see the response to comment 37 for additional information. As discussed elsewhere, the purpose of the regulation is to control carbon pollution emitted by fossil fuel-fired electric generating facilities.

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	grow back enough to absorb all of the carbon released from burning. This time frame depends on many variables, including age of trees, species, amount of fossil fuels required to harvest trees, temperature, and growth rate of species. We are on the verge of a tipping point with climate change. Harvesting forests for biomass fuel will increase carbon emissions in the near term. In the decades it will take for those forests to reabsorb that carbon, the added CO_2 in the atmosphere will contribute to accelerated release of carbon from melting permafrost in the tundra and reduced albedo in at the poles due to melting ice cover. Some public comments express concern that including biomass in the carbon cap will hurt the paper industry and tree farmers. The point of a market-based solution is to change behavior. If paper factory owners assess that carbon allowances no longer make it profitable to burn residuals, they are not required to burn their wood waste. Nor are they stuck in a situation of profit loss. Paper factory owners are free to innovate to find new ways to use residual wood waste. They may discover a new application that brings in more money than burning waste wood. Market-based solutions such as cap-and-trade promote innovation. Exemptions do not. The climate crisis calls for innovation across all sectors of society, and should not exempt the paper industry or the biomass industry. Though Virginia does not currently have large power plants that incinerate municipal or industrial waste to produce energy, a cap that does not include them will promote their development. Because MSW burned for energy is predominantly plastic that could otherwise be recycled, it is a potential source of carbon emissions and would promote the destruction of otherwise recyclable materials. Rather than wait for these plants to be built before regulating them, the regulation should state that plants burning MSW and industrial waste must retire carbon allowances to do so. The level of the initial cap is important because subsequent reductions are percentages, not set amounts. DEQ's proposed initial cap of 33-34 million tons is based on the electricity utilities' flawed projections of energy demand. The point of the cap is to reduce carbon emissions, not to give utilities a new source of revenue through selling allowances. Such a high number of allowances will flood the market, reducing the clearing price of allowances in the RGGI market and reducing revenue for RGGI states. Furthermore, a cap of 33-34 million will not change Virginia’s carbon emissions. The cap must put downward pressure on carbon emissions from the first year. Virginia’s electricity consumption is growing very slowly. Expected electricity demand growth	

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	over the next 15 years is less than 1% a year. The DEQ scenario of 33-34 million tons assumes an annual growth rate of 1.9-3%. It does not take into account the amount of utility scale solar projects already in the construction pipeline, nor the increase in rooftop solar. Anticipated energy demand depends on which historical data is considered. When looking at 2012-16, one could conclude that energy demand is increasing. However, 2012 had a mild winter and cool summer. Energy demand from 2005-16 resulted in emissions of just under 32 million tons of CO_2. Therefore, the cap should be lower than 32 million in 2020 to account for increased solar and natural gas, and to put downward pressure on emissions from the first year. Even if a business-as-usual scenario predicts a decrease in carbon emissions, the purpose of a cap is to decrease carbon emissions by a greater amount than under business as usual. Therefore, I recommend a starting cap of 30 million tons.	
116. Malin Moench	My comments go to the relative harm that coal, natural gas, and biomass do to the climate and to human health from the toxins that they generate when they generate electric power. Incentives should double down on energy efficiency and on renewables that are truly clean. The Clean Power Plan provided for gas-shift emission rate credits for utilities that replace coal-fired production with gas turbine production. Virginia's plan should not include such credits. Producing and burning natural gas is as climate forcing as coal largely because the effect of fugitive methane is far bigger. About 3.8% of conventional natural gas production and about 12% of shale gas production is fugitive methane. After properly accounting for fugitive methane, and using a 20-year impact analysis, it may very well be that gas-shift penalties are needed, rather than gas shift credits. Biomass should not be eligible for renewable energy credits. Burning wood scraps for power is not climate neutral. Per Btu, it emits 10-35% more CO_2 than burning coal, depending on the moisture content of the fuel, combustion efficiency of the plant, and processing losses. Regrowth of clear-cut hardwood forests will not offset the higher CO_2 intensify of burning wood scraps until the year 2100. By then, under current CO_2 emission trends, the world will have blown past critical tipping points in the carbon cycle. Burned biomass also exceeds coal in its emissions of toxins. Like coal emissions, wood smoke is an extreme public health hazard, containing over 200 toxic chemicals and particulate matter. The component of burned biomass that harms human health the most is fine particulate matter. Wood-fired power plants and coal-fired power plants are primarily neurotoxin and carcinogen factories from a physician's point of view, but	The commenter's observations about biomass are appreciated. Although toxic and criteria pollutants from biomass are indeed a source of concern, they are not regulated by this particular program, nor is methane. These pollutants are more appropriately addressed in other areas of the board's regulations. See the response to comment 67 for more detail.

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	on a Btu-equivalent basis, wood-fired is much worse. They should not get a free pass.	
117. National Alliance of Forest Owners (NAFO), Virginia Forestry Association (VFA)	Excluding biomass CO_2 emissions is good environmental policy and supported by scientific studies. There is an extensive record supporting a decision to differentiate biogenic CO_2 emissions from fossil fuel GHG emissions. Importantly, there is scientific consensus that, because it is part of the natural carbon cycle, the potential for impacts on atmospheric GHG levels from biogenic carbon is fundamentally different than fossil carbon. In the forests of Virginia, biogenic CO_2 emissions are more than balanced by carbon sequestered in growing forests. Studies show that combusting biomass for energy offers substantial GHG mitigation benefits when compared to fossil fuel. There is strong evidence that forests are currently being managed sustainably and will be for the foreseeable future. Thus, when forest carbon stocks are evaluated over appropriate time and spatial scales, there is ample support for the proposition that forests are capable of meeting increased demand without reducing overall forest carbon stocks. It is well-established that all wood products, including biomass combusted for energy, are part of the natural forest carbon cycle. CO_2 is sequestered in forests through photosynthesis and emitted through decomposition and combustion. As long as forest carbon stocks remain stable or increase over time, biomass energy and other forest product uses do not increase atmospheric GHG. In contrast, CO_2 emissions from fossil fuel combustion permanently increase atmospheric GHG concentrations because they release carbon that has been geologically stored for millennia. Sustainable management of forested lands provide distinct climate change mitigation benefits which reduce net GHG emissions over time: 1) durable forest products continue to store carbon for decades after harvest, 2) manufacturing forest products is much less carbon-intensive than alternative products such as concrete or steel, and 3) biomass used for energy can directly displace fossil fuel emissions over multiple harvest cycles. Many studies evaluating biomass energy have found significantly lower net GHG emissions when compared to fossil fuel. Recent studies have attempted to quantify in absolute terms the GHG mitigation benefit of substituting biomass energy for fossil fuels. These studies also identify substantial reductions in GHG emissions, but do not directly answer the question whether biomass combustion for energy results in any net CO_2 emissions. However, these studies consistently conclude that active forest management focused on supplying forests products and biomass energy produces the greatest GHG mitigation benefits from forested lands. Stability or growth in forest carbon stocks is essential for establishing that biogenic CO_2 emissions do not increase	See comment 67 for further discussion of biomass.

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	atmospheric CO_2. If forests are converted to other land uses after harvest, the carbon cycle is broken. Thus, given urban development and other external pressures, it is essential to ensure that forest carbon stocks are not depleted as a result of biomass energy. However, projections by the U.S. Forest Service suggest that forest stability will continue for decades to come. Whether viewed nationally or regionally, studies consistently find that forest carbon stocks have remained stable or increased over the past 60 years despite increases in demand for forest products. Timberland in Virginia has a highly positive net growth/removal ratio, meaning that through sustainable management, our forests are growing more than twice as much wood as is harvested. Despite the stability in U.S. forest carbon stocks over time, some have expressed concern that increased demand for biomass energy will reduce the amount of carbon that would otherwise be stored in forests. However, these concerns are inconsistent with the market factors that influence forest management decisions. Studies have repeatedly found that forest owners will respond to increased demand for biomass energy (or any other forest product) by increasing production, and thereby increasing forest carbon stocks. In the case of biomass energy, such responses can include increased consumption of existing harvest residuals, increased productivity through management practices, and land use changes. Biomass energy relies on low-cost biomass feedstocks to remain competitive with other types of energy. Thus, biomass energy feedstocks are commonly composed of residues and other low-grade feedstocks. In contrast, high-grade trees are reserved for saw timber and similar products that command higher prices and generally result in products that store carbon for decades. Given the price differential between low-grade feedstocks and saw timber, it is unlikely that high-grade, mature trees would ever be harvested exclusively for energy production. While increased demand for biomass energy could increase prices to some degree, even optimistic projections would not raise feedstock prices to the point that landowners would manage forests for energy instead of saw timber. NAFO and VFA support the proposal to exclude 90-100% biomass-fired facilities from the rule. The proposal is supported by scientific consensus that biogenic CO_2 should be regulated as being carbon neutral and is consistent with the RGGI Model Rule. We understand that at least one other commenter has raised the issue of how emissions from biomass are treated under the proposal. NAFO and VFA are sensitive	

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	to the issue of emissions of all kinds from biomass materials; however, these issues that are beyond the scope of the proposal. The proposal addresses CO_2 emissions from electric power generating units in Virginia, not other pollutants. Pollutants like benzene and formaldehyde are governed by other federal and state regulatory regimes already being administered in Virginia. The board should continue to focus the proposed regulation on CO_2 emissions and let existing laws and regulations govern non-CO_2 emissions from electric power generating units. We encourage the board to allow operators that co-fire biomass with fossil fuels to deduct the biogenic CO_2 emissions from the total CO_2 emissions the unit must cover with allowances. It is consistent with carbon-neutral environmental policy, and would bring Virginia in line with the RGGI Model Rule, as well as other RGGI states like New York. The Department of Forestry recognizes the sustainable development value and economic benefits of promoting use of biomass and biogenic fuel sources in Virginia, stating that the "benefit[s] of expanded utilization of biomass include: [p]rovid[ing] new markets for waste wood, manufacturing residues, and materials from forest management activities; … [r]educ[ing] material going to landfills, being dumped or open burned, such as woody debris and other wood waste; [r]educes site preparation costs for artificial regeneration; [r]educ[ing] pollution compared to using fossil fuels …." Congress also understands the environmental and sustainable development benefits of biomass-based fuel. In a display of bipartisan support, Congress passed the Consolidated Appropriations Act of 2018, where it directed the Department of Energy, the Department of Agriculture, and the Environmental Protection Agency to "establish clear and simple policies for the use of forest biomass as an energy solution, including policies that (A) reflect the carbon-neutrality of forest bioenergy and recognize biomass as a renewable energy source, provided the use of forest biomass for energy production does not cause conversion of forests to non-forest use; (B) encourage private investment throughout the forest biomass supply chain … (C) encourage forest management to improve forest health; and (D) recognize State initiatives to produce and use forest biomass." Encouraging the biomass fuel market to grow in Virginia will continue to help the board achieve the purpose of the regulation: "to control CO_2 emissions in order to protect the public's health and welfare." As reported in The Economic Impact of Virginia's Agriculture and Forest Industries (2017), "Biomass energy production has emerged in recent years as a	

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	significant new market for surplus wood residues in Virginia. Federal clean and renewable energy programs and Virginia's voluntary Renewable Portfolio Standard offers incentives to the state's power companies to produce electricity from renewable resources. Woody biomass accounted for most of Virginia's renewable power generation in 2015 and approximately 5% of total power generation in the state. Since 2012, Virginia has added over 300 MW in electrical power generation capacity." Also, "Virginia hosts 10 wood pellet plants, most of which have been established in the last decade. Collectively, they processed over 1.4 million tons of wood, mill, and forest residues." NAFO and VFA can vouch that a broad range of robust markets for all Virginia wood and fiber are in the best interests of forest health and sustainability, the economic prosperity of the state, and the welfare of citizens of the state. Markets for low value wood that may not have other outlets are critical to woodland owners and to lumber manufacturers searching for purchasers of sawmill residues. Energy production from woody biomass aids in reducing the threat of wildfire and insect infestation, and can enhance wildlife diversity. It is vital to have markets for wood during the clean up of biomass debris resulting from natural disasters. By exempting biomass-only and near biomass-only facilities, the board has demonstrated that it agrees biogenic emissions are inherently different from fossil fuel carbon emissions. We urge the board to consistently apply these conclusions by allowing operators that co-fire biomass with other fuel sources to deduct their biogenic emissions when calculating compliance. This policy has already been developed in the RGGI Model Rule and in 6 of the 9 RGGI states. Virginia would be an outlier by disallowing biogenic CO_2 deductions. Since RGGI began, it has engaged working groups to develop Model Rules that can be reviewed, adapted, and implemented by states joining the system. Many stakeholders participate in these reviews and many states have chosen to adopt in full substantive provisions of the Model Rule. In every iteration of the Model Rule, RGGI has allowed operators that co-fire biomass with fossil fuels to deduct the emissions attributable to biomass from the total amount of CO_2 emissions for compliance purposes. The RGGI Model Rule is not an abstract framework; most states that participate in RGGI have adopted it almost verbatim and implemented it with great success. The rule should allow operators co-firing biomass with fossil fuels to deduct biogenic emissions from annual CO_2 compliance accounting. It is consistent with the environmental and economic policies built into the regulation. NAFO and VFA encourage the board to add a definition	

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	of biomass. This will add clarity to the issue of biomass exemptions and allow the board to more easily review the exclusion of biogenic emission from CO_2 co-firing facilities. The legislature has already provided such a definition in VA Code § 10.1-1308.1.	
118. National Council for Air and Stream Improvement, Inc. (NCASI)	The rate at which global CO_2 emissions are increasing and the implications for global temperatures in the near- and long-term has led to calls for steep near-term reductions in emissions. IPCC indicates that, with respect to emissions of CO_2, it is cumulative emissions that will determine peak global temperature. IPCC notes that, "…taking into account the available information from multiple lines of evidence . . . the near linear relationship between cumulative CO_2 emissions and peak global mean temperature is well established in the literature and robust for cumulative total CO_2 emissions up to about 2000 petagrams of carbon. It is consistent with the relationship inferred from past cumulative CO_2 emissions and observed warming, is supported by process understanding of the carbon cycle and global energy balance, and emerges as a robust result from the entire hierarchy of models." IPCC indicates that, "A number of papers have found the global warming response to CO_2 emissions to be determined primarily by total cumulative emissions of CO_2 , irrespective of the timing of those emissions over a broad range of scenarios." One study cited by IPCC states that ". . . the relationship between cumulative emissions and peak warming is remarkably insensitive to the emission pathway (timing of emissions or peak emission rate). Hence policy targets based on limiting cumulative emissions of CO_2 are likely to be more robust to scientific uncertainty than emission-rate or concentration targets." It is only by reducing cumulative CO_2 emissions and thereby peak global temperature that ecological tipping points can be avoided. Near term increases in CO_2 that allow later reductions in cumulative CO_2 emissions are different from those that do not. In this context, it is not uncommon for increased use of forest bioenergy to result in near-term increases in atmospheric CO_2, compared to continued use of fossil fuels. However, as long as land remains in forest, increased use of forest bioenergy to displace fossil fuel accomplishes longer-term reductions in cumulative CO_2 emissions. The time required for increased use of forest bioenergy to transition from net CO_2 emissions to net CO_2 reductions depends on a number of factors. In the case of certain residual materials, the transition is essentially immediate. In other cases, this transition requires more time. Increased use of forest bioenergy to displace fossil fuels is likely to result in net benefits to atmospheric CO_2 within a decade or two. After this transition is completed, the benefits of forest bioenergy continue to accrue.	See comment 67 for further discussion of biomass.

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	Even critics of forest bioenergy acknowledge the long-term benefits of displacing fossil fuel with forest bioenergy. A report prepared on behalf of the National Wildlife Federation and SELC, for instance, found that "…using southeastern forests for an expansion of electric power generation produced a significant long term atmospheric benefit, but at short term atmospheric cost." In the this study, a 35- to 50-year breakeven period was estimated, but this study did not account for reduced deforestation and increased afforestation associated with increased demand for wood, a well-documented phenomenon. Near-term increases in CO_2 emissions must be judged in the context of whether they are associated with reduced cumulative CO_2 emissions in the longer term. This is because of the insensitivity of global temperature to near-term CO_2 emissions, and the need to reduce cumulative CO_2 emissions to limit peak global temperature. These considerations are directly related to questions about biogenic CO_2 resulting from increased use of forest bioenergy. Increased use of forest bioenergy often results in higher near-term CO_2 emissions compared to continued use of fossil fuel but, as long as land remains in forest, cumulative CO_2 emissions are reduced in the longer term when fossil fuels are displaced by forest bioenergy. This phenomenon needs to be considered when contemplating potential regulation of biogenic CO_2 emissions from biomass energy production. The two cases in which emission profiles argue for differential treatment of biomass are 1) when the material used for fuel would have ended up being emitted to the atmosphere even if not used for energy production, and 2) when sustainable management of the biomass resource ensures that ongoing growth will remove equivalent quantities of CO_2 from the atmosphere. In the first case, the biomass emissions that would have occurred anyway will prevent fossil fuel emissions associated with producing the same amount of energy. In the second case, a sustainably managed resource grows biomass equal to or exceeding the amount of biomass harvested, ensuring that the resource is not a net source of CO_2. In both cases, it is the characteristics of the biomass feedstock, not the characteristics of the power generation process or facility, that support treatment as carbon neutral. By exempting facilities using 90% or more biomass feedstock, the regulation implicitly acknowledges the environmental and atmospheric benefits of biomass compared to fossil fuels. The regulation takes an all or nothing approach: either all of a facility's emissions are exempt (if it uses 90% or more biomass fuel) or none of	

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	its emissions are exempt. This removes any incentive to use biomass as part of a fuel mixture in fossil-dominant plants. We have evaluated the carbon stock in trees on timberland across the U.S. South. Carbon stocks increased from 4.9 billion to 5.6 billion tons from 2005-16, an increase of 14.5% over a period with an average of 104 million tons of carbon removed annually during harvests. Even if all the biomass harvested from the forest during this time was immediately converted to CO_2 and emitted to the atmosphere (far from the actual situation), the fact that forest carbon stocks continue to increase is proof that biogenic CO_2 from biomass removed from the forest is more than offset by removals of CO_2 from the atmosphere by growing forests. In Virginia alone, tree carbon stocks on timberland rose from 503 million tons in 2005 to 589 million tons in 2016, a net increase of 17% while carbon removals from harvests were 7.4 million tons annually. In summary, when biomass from residuals or from sustainably managed forests replaces fossil fuels, there are climate change mitigation benefits. A large body of scientific evidence supports the environmental benefits of biomass energy, regardless of whether the biomass is combusted alone or as part of a biomass-fossil mix.	
119. Northern Virginia Electric Cooperative (NOVEC)	While NOVEC's power supply portfolio is predominantly natural gas-fired, NOVEC is keenly aware of its responsibility to provide renewable energy; as such, NOVEC's waste wood-fired biomass plant, landfill gas-fueled generation, and solar energy resources provide over 8% of NOVEC's system energy requirements. The definitions of "fossil fuel" and "fossil fuel-fired" are appropriate and should not be modified. Waste wood-fired, biomass-generating facilities should remain excluded. NOVEC owns and operates a 49.9 MW generating facility in Halifax County that is fueled exclusively by waste wood products that come predominantly from logging operations. This facility provides a winning solution to the management of wood waste products and the production and delivery of renewable energy to the power grid. NOVEC's mission includes the provision of a low-cost, reliable, and environmentally sound energy supply. NOVEC built this facility in response to member requests for additional renewable energy in its resource mix. NOVEC located the facility in an area that was already active in logging woodlands to supply the construction, furniture, and paper industries. Doing so minimized the need to transport waste wood over long distances; a side benefit was an economic boost to local communities.	See comment 67 for further discussion of biomass.

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	NOVEC does not log for the plant's fuel. Instead, purchasers of high quality timber hire loggers to clear land and deliver the high quality round wood for lumber products. The remaining un-marketable wood, known as "slash," remains in the form of branches, limbs and stumps. The region that provides slash to NOVEC's facility produces more than 1 million tons of this waste product annually. Land owners typically want the slash removed, as leaving it in place reduces the amount of land available for growing the next generation of trees. Harvesting slash is superior to sending it to landfills, as the volume would fill up landfill capacity. While slash can be disposed of through uncontrolled burning, there is no control of SO_X, NO_X, particulates, or other emissions. The NOVEC biomass model is the best alternative to open burning or leaving slash in the forest. NOVEC purchases slash already chipped and delivered in truckloads. Small businesses create jobs associated with chipping activities and delivery of wood chips. The facility's air quality permit limits the amount of certain emissions that result from combustion of wood chips. The heat generated during uncontrolled burns is wasted. At the NOVEC facility the heat produced from the combustion is captured and converted to electric energy, reducing the amount of electricity needed from other power plants. Fly ash produced by the plant is used as a soil nutrient by nearby farmers. In summary, NOVEC's biomass power plant is a win for the environment, the local economy, and Virginia. As such, biomass should not be included in the definition of fossil fuels. NOVEC pays a forestry tax to the Department of Forestry that is used to fund the re-planting of trees throughout Virginia. The forestry tax can be viewed as a carbon tax that is already in place and paid by biomass plants. Young trees take in a higher amount of CO_2 compared to older trees for the same acreage. Combusting wood slash does not emit any carbon that is not already in the natural life cycle. Biomass plants in economically challenged areas provide jobs and investments as well as tax revenues for schools and other local government services. Unlike natural gas or coal, biomass fuel is produced close to the plants and the harvesting/chipping/delivery of slash is a significant economic engine for the locality and region.	
120. Northern Virginia Electric Cooperative (NOVEC)	Resolution of the unresolved revenues allocation methodology should be directed to the SCC for development of an equitable distribution formula that includes all electric utility ratepayers across the state. Even though the Regulatory Advisory Panel was unable to reach a consensus on a distribution approach for the revenue, the RAP ranked the following allocation goals as the two most important: 1) protect electricity customers, and 2) promote cost-effectiveness. The rules in this area reference the December 4, 2017,	DEQ appreciates the commenter's concerns, however, this issue is beyond the scope of the regulatory action and the authority to address it rests with the SCC.

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	presentation before the Joint Committee on Electric Utility Regulation; it stated that the "revenue received by CO_2 Budget Sources owned by regulated electric utilities flow to rate payers pursuant to SCC requirements." This statement failed to recognize that Virginia ratepayers served by utilities that do not own CO_2 Budget Sources but purchase power from the PJM wholesale power market (presumably the CO_2 Budget Source entities market for their power) would see their power prices increase as a result of these rules as currently envisioned but would be unable to mitigate the increases in power prices through an allocation of the auction revenue as would be available to a select group of Virginia ratepayers. Making this potential treatment of utilities and its customers that do not own CO_2 Budget Sources is arbitrary and capricious. Assigning the resolution of this matter to the SCC and tasking the SCC to finish the job of developing an equitable distribution formula that includes all ratepayers across the state can achieve both of the original objectives of the RAP.	
121. Natural Resources Defense Council (NRDC)	Because of immediate and growing health and economic dangers, Virginia law clearly encompasses CO_2 in its definition of air pollution. Limiting and reducing carbon pollution would also achieve the board's charge to prevent harm to public health, safety and welfare. Because of the health and economic dangers that unmitigated carbon pollution poses to Virginia's human health, its economy, and property, we broadly support the proposed rule, using the same means already proven effective in 1 in 5 states in the country: a sensible, achievable limit on electric sector carbon pollution, with subsequent annual reductions. NRDC supports DEQ's proposal to ensure allowances comport with, and are fully tradable on, RGGI's pre-existing platform, due to its low administrative costs, third party market monitor reports, and robust cybersecurity. NRDC recommends that the rule set a 2020 baseline of 28.0 million tons. In order to determine the state's business-as-usual emissions and an appropriate annual reduction trajectory, DEQ should review reputable data and projections to establish a baseline that is not artificially high. To do so, DEQ should rely on up-to-date estimates of what Virginia's business-as-usual emissions will likely be in 2020. Similarly, DEQ should avoid industry-derived emissions projections that appear to be set unrealistically high, such as Dominion's 2017 IRP. DEQ's own proposal of either 33 or 34 million tons in 2020 is similarly flawed. An incorrectly high year-1 baseline budget would undermine the entirety of the program and jeopardize Virginia's ability to access the marked benefits of linking with the larger RGGI market. To set an appropriate baseline, DEQ should consider multiple up-to-date projections. The federal EIA's Annual	Support for the proposal is appreciated. The baseline has been set at 28 million tons, as discussed in the response to comment 37.

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	Energy Outlook (AEO) from 2018 shows emissions decreasing in the Virginia-Carolina region by 27% between 2017-20. NRDC's IPM modeling, conducted by ICF, predicts similar emissions declines in Virginia between 2017-20. Preliminary results from NRDC's updated IPM modeling for Virginia (utilizing an updated 2018 data set) projects the state's power sector emissions to be 28.0 million tons in 2020. This more up-to-date modelling accurately reflects the reality of today's power sector in Virginia. Not only are additional coal retirements planned, but renewable energy installations are increasing, concurrent with recently lower or declining demand growth across the state in 2017. The factors of lower in-state electricity demand, persistently declining gas prices, and growing low-cost renewable energy resources mean the state's emissions will be well under 33 million tons in 2020. NRDC's IPM modeling supports the adoption of a 28 million ton baseline as a likely-to-occur starting point in 2020. A sufficiently ambitious program will drive significant economic and health benefits, including lower energy bills and rates, as well as improved public health resulting from cuts in co-pollutants like NO_X and SO_X.	
122. NRDC	DEQ must ensure the economic efficiency of the program by directing allowance value toward consumer benefit. Therefore, the proposal is correct to avoid imposing costs on Virginia families and businesses by awarding allowances directly to emitting generators for free. Doing so would allow the ultimate price of those allowances to be borne by Virginia families and businesses in the form of higher wholesale electricity costs, while providing a windfall profit to generators. NRDC therefore supports the consignment auction, as that mechanism provides an opportunity to recapture revenue that would otherwise be a windfall to generators. Indeed, these carbon allowances are inherently a public good, and thus their value must be captured and utilized on behalf of all Virginians. However, DEQ should amend the rule at 9VAC5-140-6215 to allocate allowances directly to distribution companies, based on pro rata share of load served, to ensure that allowance revenue goes directly to customer benefits. In order to ensure market efficiency and a transparent, undistorted allowance price that levels the playing field for all generators, achieve maximum economic efficiency for Virginia citizens through allowance allocation, and align with the Grid Transformation and Security Act of 2018, a standing Emissions Trading Stakeholder Advisory Group should also be established to monitor implementation and performance of the final rule.	The consignment auction is designed to be cost neutral, and RGGI employs various market control mechanisms to ensure a balanced and consistent flow of prices. In addition, Virginia is a regulated state; thus, it is the responsibility of the SCC to maximize economic efficiency for Virginia citizens. As discussed elsewhere, implementation and performance of the program will be continual, with RGGI program reviews and Virginia APA rule reviews providing opportunity for public comment should issues with program implementation be identified.
123. NRDC	Many forms of biomass fuel are used or under consideration in Virginia, including landfill gas recovery, agricultural plant residues and animal wastes, forest harvest residues, energy crops, whole trees, and industrial waste. Many of these feedstocks can generate	See the response to comment 67 for a discussion of biomass.

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	carbon benefits compared with fossil fuels, while others can have significant negative carbon impacts. We focus on "forest-derived" biomass, specifically, categories of forest-derived feedstocks used to produce electricity: 1) whole trees and other large diameter wood that would otherwise be used in merchantable end uses; 2) harvest residues that would otherwise be discarded or left to decay; and 3) industrial and mill waste produced at a forest products processing facility that would otherwise be burned. We support the proposal to require co-fired facilities to hold allowances for the CO_2 they emit, whether those emissions be from forest-derived biomass or fossil fuels. We urge Virginia to issue a final rule that covers the net carbon emissions from all utility sector biomass power facilities larger than 25 MW. Specifically, Virginia must account for the net emissions from forest-derived biomass combustion from power sector facilities greater than 25 MW, including both dedicated biomass-burning units and those that cofire with forest-derived biomass, and cover these facilities under the cap. We recommend that Virginia regulate net emissions from forest-derived biomass as follows: 1) CO_2 emissions from onsite waste that would otherwise be burned in an industrial setting without energy recovery will require zero allowances for each ton of carbon emitted; 2) CO_2 emissions from forest-derived residues that would otherwise decay will require approximately 0.69 allowances for each ton of carbon emitted; 3) CO_2 emissions from whole trees and large diameter materials that would otherwise have a merchantable end-use, including pulp, paper, fiberboard, engineered wood or lumber will require one allowance for each ton of carbon emitted. Virginia should also require EGUs to furnish to DEQ an estimate of the proportion of their total forest-derived feedstocks annually that fall into these categories. Finally, Virginia must reject sustainable forestry as a proxy for carbon impacts of forest-derived biomass. "Sustainability," however defined, is not a measure of carbon impacts.	
124. NRDC	DEQ should design an economically efficient program with minimal market distortions, maximizing consumer benefits through efficiency investments by allocating allowances to distribution companies, and driving significant levels of in-state renewable energy development. Leakage can be minimized through the cost-effective development of untapped, clean resources like solar and energy efficiency. To ensure the program does not inadvertently lead to increased fossil-based electricity imports, DEQ should establish an annual program review process to assess whether interstate power flows are shifting as a result of the carbon price. A modest price on carbon is but one of many variables that	By linking to RGGI, Virginia will be linked to and involved in basic RGGI processes such as the routine program reviews and monitoring for potential leakage; however, recognizing the potential for any possible leakage to have an impact on disproportionately affected populations, a provision providing for review of

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	can influence interstate power flows; any such analysis would need to account for those in a comprehensive manner. The RGGI states have already built in such emissions monitoring and reporting that assesses leakage, and we urge Virginia to do so as well.	impacts on such communities has been added. See the responses to comments 55 and 91 for further information.
125. NRDC	Climate change is inherently an environmental justice issue, as coastal communities and low-income communities ultimately bear the worst brunt of its impact. Therefore, the program should make significant cuts to CO_2 and ensure the consumer and energy efficiency benefits flow to the low-income citizens most impacted not just by climate change, but energy costs as well. Additionally, because CO_2 is not harmful in locally-higher concentrations, and there do not appear to be specific Virginia plants in proximity to at-risk communities whose capacity factors will increase under a carbon program, a carbon market in Virginia appears unlikely to create hot spots of pollution in frontline communities. And as the cap for carbon emissions is lowered, it can also create additional benefits of further reducing associated co-pollutants that cause health problems in communities close to their source. To ensure this is the case, the regular program review should also incorporate an annual environmental justice review. As RGGI demonstrates, it is good practice to build in regular program reviews to ensure the framework is working effectively. As Virginia adopts and implements its program, it may need to be adjusted over time, to ensure it is functioning efficiently and is driving significant and additional carbon pollution reductions. Program reviews can ensure that the cap is set and updated at the correct level to drive carbon emissions reductions beyond BAU, while maximizing the development of a clean energy economy. Virginia's program should undergo internal review on a regular basis, including stakeholder and public input as RGGI has done. The first review should occur in 2020, to review 2019 emissions and ensure the 2020 budget reflects the reality of Virginia's power sector emissions. As Virginia pursues linking with RGGI, it should integrate itself directly into that program's review processes.	As discussed in the responses to comments 55 and 91, Virginia will participate in RGGI program reviews, and a Virginia-specific program review will be conducted to ensure that EJ communities are monitored.
126. National Wildlife Federation and the Virginia Conservation Network	We applaud Virginia's plan to confront the growing threat of climate change by creating a carbon market that can link with RGGI. According to the National Climate Assessment, with 3 feet of sea level rise between 162 to 877 miles of roads could be inundated. Further, the gradual subsidence of coastal land in Virginia is magnifying the impacts of sea-level rise in the region. The rising seas threaten the coastal tourism industry in Virginia, a critical component of the state's economy. For examples, tourism contributed $1.4 billion to the economy of Virginia Beach in 2015, which resulted in $256 million in salaries and more than 12,900 jobs. Virginia's beaches and coastal waters also support 5 of	Support for the proposal is appreciated, and the commenter's observations on the threat of climate change are recognized.

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	the 7 sea turtle species found worldwide. Every year between 5,000-10,000 sea turtles swim into the Chesapeake Bay. Most of these turtles are the threatened species, which depend on the bay for food and safety. The loggerhead sea turtle depends on the bay's sandy beaches and dunes for nesting habitat. As the sea level rises and extreme weather events occur more frequently, these nesting habitats are being washed away. Likewise, the bay is also experiencing the impacts of rising sea levels and warmer water. Warming temperatures and increased runoff from flooding are making the bay and its tributaries susceptible to harmful algal blooms--a threat to people and wildlife. These changes alter the abundance and migration patterns of wildlife in the bay, leading to declines in waterfowl and commercially important shellfish. Virginia is home to the U.S.'s largest clam aquaculture industry, with an average annual economic impact of $60 million; the seafood industry in Maryland and Virginia support almost 34,000 jobs. RGGI is a highly successful cooperative effort to harness market forces to cap, price, and curb harmful carbon emissions that are contributing to the climate change threats facing Virginia. RGGI states account for one-sixth of the U.S. population and one-fifth of the nation's GDP. Since the program began, RGGI states have experienced a net gain in economic growth, increased jobs, long-run electricity cost reductions, and decreased emissions. By establishing a program to trade carbon that will link with RGGI, Virginia can enjoy the benefits of a carbon trading system while adding momentum to the effort to mitigate climate change by ensuring that, with California's carbon pricing system and New Jersey rejoining RGGI, 1 in 3 Americans will live in states with carbon pricing policy designed to drive down carbon pollution. Tackling carbon emissions is important for avoiding dangerous levels of warming that will have high costs for Virginia. Though there has been a downward national trend in emissions from the power sector in recent years, carbon pollution from Virginia's power plants has risen from 23 million tons in 2012 to 34 million tons in 2016 and is expected to rise to 37 million tons in 2019. Linking to RGGI will reverse this trend for Virginia, propelling it to become a world leader in clean energy development, protecting the state's treasured natural resources and wildlife while creating new jobs and boosting the state's economy. While RGGI is considered to be an excellent example of a multistate program that encourages innovation and collaboration, there are still areas in which it can be improved. As an independent state linking with the RGGI carbon market, Virginia would have a unique opportunity to strengthen and advance the	

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	program. By doing so, Virginia has the potential to cement itself as a gold standard for carbon pricing.	
127. National Wildlife Federation, Virginia Conservation Network	Virginia could provide a model to improve RGGI's approach to biomass. While some biomass practices can reduce carbon emissions compared to other fuels, other practices increase near-term emissions and degrade wildlife habitat. One model for carbon accounting is the Net Emissions Impact, which applies multipliers for each unit of carbon from different biomass feedstocks. We urge Virginia to consider the nuances of biomass and weigh the potential for negative repercussions. The demand for low-value wood for pellets is driving a shift in the southeast from natural forests to pine plantations--a significant downgrade in habitat value. Unrestricted harvests leave high conservation value species and ecosystems vulnerable to biomass harvests, particularly wetland forests like bottomland hardwoods. Research has found that biomass from southeastern forests takes 35-50 years before it performs better than fossil fuels. This is far too long to mitigate the impacts of climate change, and not in line with he governor's executive order to reduce carbon pollution. We encourage measures to protect wildlife and habitat while pursuing measures to address climate. The state can reinforce the RPS limit on non-waste feedstocks by applying it to its carbon market as well. The state should preclude biomass sourced from high conservation value areas, and limit growth in the biomass market to truly sustainable feedstocks. Virginia must establish best practices for biomass production that lead to benefits for both wildlife and climate.	As discussed in the response to comment 67, and discussed in great detail elsewhere, there are pros and cons associated with using biomass as fuel. DEQ agrees that some biomass practices can reduce carbon emissions, and should include measures to protect wildlife and habitat.
128. Old Dominion Electric Cooperative (ODEC), Virginia, Maryland and Delaware Association of Electric Cooperatives	ODEC and the Association have significant concerns regarding the impact of this regulation on the electric bills of its ultimate consumers. Even a modest increase in bills in the territories served by ODEC and member cooperatives will be problematic, and larger increases in costs will turn electricity into a luxury item. The Cooperatives' service territories are predominantly rural and residential. The majority of rural areas in Virginia have seen both a declining population and sluggish to negative economic growth. The Cooperatives' service territories have high numbers of low- and middle-income families, families and seniors on fixed incomes, and families suffering from unemployment and underemployment. The Cooperatives' service territories do not have significant non-residential loads--the service territories are over 80% residential. From 2011-15, many of Virginia's rural counties experienced negative job growth. Current Department of Labor Statistics show that many of the rural counties in Virginia have significantly higher unemployment rates than the urban and suburban areas of the state. Historically, most Cooperatives have per capita annual incomes that fall 22% below the statewide average. For Cooperatives that are more rural,	DEQ agrees with the commenter that costs to consumers are an important consideration, and has worked to develop a rule that minimizes costs while maximizing benefits associated with reducing carbon pollution. Implementing a cost neutral consignment auction is expected to minimize cost impacts to consumers. To the extent that power is purchased from a regulated entity in Virginia, costs will be controlled through the auction and subject to SCC oversight.

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	that percentage is 260%, and for three of the most rural Cooperatives, the percentage is 30% or more below the statewide average. Historically, 13% of Cooperative member-owners are over 65 years of age, and unemployment in Cooperative territories is generally 1-4.5 percentage points above statewide unemployment rates. Based upon the 2010 Census, median household income in rural areas is less than half that of the suburban counties. Concerns over increased costs to consumers are not simply based on future projections. EIA Power Monthly indicates that there is already price pressure indicated on electric rates in RGGI participating states. Every state that participates in RGGI had average retail rates higher than the national average and 4 out of 5 of the states with the highest average retail rates in the U.S. participate in RGGI. The Cooperatives have only their ratepayers from which to recover costs; there are no separate stockholders. Furthermore, electric distribution cooperatives receive their generated electricity by contract. These contracts directly pass on the costs of any regulatory or environmental compliance to the distribution cooperatives, which then recover that cost from their consumers through a cost recovery mechanism in electric rates. Smaller cooperatives, including those wholly dependent on investor-owned utilities for their electricity, could be hit especially hard, as the costs of the regulation could be passed directly to those cooperatives and their consumers, with no mechanism for those suppliers to pass through proceeds from any sales of allowances back to the distribution cooperatives or their consumers.	
129. ODEC et al.	There is no modeling that can show the projected local benefits based upon the anticipated program reductions. The modeling for economic impact of this type of regulatory effort can be severely compromised based upon a variety of unknowable factors: market assumptions, regional power flows, projected resource mix, and demand considerations. In this case, there has been very little analysis done to support the anticipated and likely impacts on electric rates. The limited modeling that has been done could be significantly understating the impacts of the regulation, and by the time we see the results, it will be too late to make adjustments. We recommend a more holistic analysis be performed encompassing total energy consumption. Potentially higher future electric costs may produce unintended consequences in the form of shifts in energy usage or choice of fuel. An example would be a homeowner having an efficient electric heat pump choosing to produce some of the heat for their home via natural gas, propane, oil, or woodstove. In addition to the potential for additional emissions from these other alternate energy sources, one would also see increased CO_2 emissions	DEQ understands that impacts on electric rates are important, and several cost/benefit analyses were conducted; see response to comment 61 for more information. No significant impacts to consumers are anticipated.

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	from the delivery/transportation of these sources.	
130. ODEC et al.	Regulating CO_2 at the state level is not as effective as a broader regional or national approach. Putting this additional burden on Virginia generation will encourage imports from other states, potentially requiring the construction of additional transmission infrastructure to maintain reliability. This is already occurring where the RGGI regulation in Maryland has contributed to the construction of new transmission lines to facilitate the import of power from adjoining non-RGGI states. PJM, as a regional transmission organization, allows for cost-effective exchange of electricity throughout its territory, which includes the majority of Virginia. Inconsistent state CO_2 policies within PJM create distortions in generation dispatch that can increase regional emissions. For example, the cost of CO_2 allowances from the RGGI program in one state can discourage a low-emitting in-state natural gas plant from operating, only to make way for imported coal power from a neighboring state because the out-of-state plants do not incur CO_2 cost. We recommend adding a provision for an analysis of trends in imports in Virginia once the program has been implemented. If there is a significant increase in imports, Virginia should be able to adjust the regulatory requirements for in-state generators to deter the import of out of state generation. The board should consider "safety valve" measures--for consumer protection from price increases, for reliability of the electricity system, and for imports from out-of-state. The additional burden of this program could result in premature retirement of coal facilities, such as the Clover Power Station. These plants were designed, built and permitted in compliance with federal and state regulations to meet long-term electricity needs. This regulation may reduce the remaining useful life of these assets which are still being paid for by our consumers. Virginia needs to develop a mechanism to compensate consumer-funded prematurely-retiring coal generation. One possible way would be to carve out allocations for retired consumer-funded generation for a significant number of years after their retirement. This would remove a barrier to the closure of consumer-funded coal generation by providing allocated allowance revenue to offset the stranded costs. Other mechanisms would likely require legislation to implement. Those renewable generation resources owned directly by Cooperatives should continue to be counted as renewable resources and excluded from the proposed regulation. This includes not only solar PV projects, but also the NOVEC wood waste biomass plant in Halifax County.	Virginia's program is not at a purely state level; rather, Virginia is linking to a larger group of states in order to leverage its carbon control abilities to the maximum. As discussed elsewhere, leakage will be monitored for and addressed as needed; see, for example, the response to comment 91. If the cost of allowances become too high the CCR is triggered; see comment 136 for more information. DEQ agrees that existing coal plants were designed, built and permitted in compliance with federal and state regulations to meet long-term electricity needs. Most of Virginia's coal fleet is owned and operated by Dominion Energy, which has the ability to adjust its electric generating portfolio to meet its business needs while protecting its customers' interests. See the response to comment 67 for additional discussion of biomass.
131. ODEC et al.	While it is true that some form of consignment auction has been used for other allowance programs, it is a wholly new concept to "link" Virginia to RGGI. We do not believe that the mechanisms that will have to be put in	The consignment auction is designed to be cost neutral. This approach has been carefully crafted to

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	place to track allowances, as well as the increased burden on DEQ, have been fully factored into the cost of the program. Additionally, administrative costs have not been fully analyzed. Given that Virginia is not joining RGGI, but "linking" to it, we are unsure how administration of the consignment would be paid for. DEQ has no mechanism to recover its own administrative costs. As a not-for-profit cooperative, ODEC is exempt from federal income taxes as long as it receives no more than 15% of its revenue from non-members. This rule applies to all of the electric distribution cooperatives in Virginia. Cooperatively-organized businesses are designed, from their foundation, to serve their members, who are also their customers. Therefore, ODEC has concerns about the potential accounting and tax impacts of receiving "revenue" in the form of proceeds from the RGGI auctions. This concern would apply to any cooperatively-organized entity receiving auction proceed revenues. To the extent that the regulation maintains the concept of a consignment auction, consideration should be given to this unintended consequence. A solution could be to allow cooperatives to offset any allowance requirement with an equal amount of allocated allowances without the requirement to auction the allowances.	minimize costs. Program design elements such as the unlimited banking of allowances may mitigate this issue further.
132. ODEC et al.	Virginia has seen a downward trend in energy consumption and CO_2 emissions. Virginia's energy resource mix is evolving, with more investments in clean energy resources and renewables, regardless of CO_2 regulation. As reported in January 2018, Virginia has reduced its overall CO_2 emissions from all energy-related sources from 123.1 million tons in 2000 to 103.0 million tons in 2015. That 16.3% reduction ranks Virginia as the 16th highest reduction among all states and significantly higher than the national average reduction of 10.3%. This includes all energy related sources of CO_2 emissions including utility generation, transportation, industrial, commercial and residential sources. Even more impressive is the reduction in average CO_2 emissions per person where Virginia reduced its average emissions per person by 28.9%, ranking it the ninth highest reduction in the nation and significantly better than the national average reduction of 21.1%. The current trends support the initial budget being set at 34 million tons. While the trend has been declining over the years, there has been a great deal of recent investment in new clean combined cycle generation that would be subject to the program. Virginia should be allowed to enter the RGGI program with a budget that is fair to Virginia given the current generation resources. Even with the budget set at 34 million tons, with the new generation assets, the goal will still be challenging. Given that Virginia generators are	The commenter correctly asserts that investments in clean energy resources and renewables are increasing. The 28 million ton cap, as discussed in the response to comment 37, was selected. The RGGI program already contains multiple "safety valves"; the program is continually monitored and adjusted in order to protect reliability and resilience. See also the response to comment 33 for a discussion of modeling and emissions.

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	just now entering the RGGI-linked program, the banking adjustments that have been calculated by RGGI and are being proposed to be applied to subsequent years, should not be applied to the Virginia budget. These banking adjustments are based on participants outside of Virginia banking more allowances than anticipated, and not the actions of any generators in Virginia. Such an adjustment should only be applied to existing RGGI participants. In addition, there should be a reliability and resiliency safety valve. Such a mechanism would recognize that overreliance on intermittent generation or a single fuel such as natural gas may negatively impact reliability and resilience. Analyses should be performed to assure that resiliency is maintained and that critical generation resources are not retired because of the regulation. In the case where retirement of critical resources is likely, adjustments to the allowance allocations should be contemplated.	
133. ODEC et al.	We generally support the provision establishing that 95% of the budget will be allocated to the generators. Particularly for the Cooperatives, revenues from the allocations will go directly to consumers. This is a critical means to reduce the net cost impact on electric consumers. Setting a price on CO_2 emissions as this program does is enough incentive for all sectors to seek ways to reduce emissions. Even when allocated allowances, utilities will still have an incentive to pursue low or non-emitting resources and energy efficiency measures. Not having allowances granted to such sources and forcing electric ratepayers to foot the bill for CO_2 emissions would be a significant cost impact and can be somewhat mitigated by allocated allowances to generators as proposed. Any utility with a wholesale power contract could be adversely affected by a system where their consumers pay for the costs of CO_2 emissions and receive nothing in return. This could be resolved by flowing auction revenues through applicable FERC ratemaking mechanisms using FERC Form 1 data.	Revenues will only be realized if there are excess allowances. It is beyond the scope of this regulation and the department's authority to direct auction revenues through FERC.
134. ODEC et al.	We recommend allocation based on emissions, not megawatts generated. Incumbent utilities have made significant investments under the existing regulatory compact to provide power economically and reliably to meet retail loads. There should be an appreciation for the value associated with these investments in electric generating plants. The conditional allocations being allocated on an emissions basis will provide a glide path for the existing resources to continue to operate within their remaining useful life, rather than having significant stranded resources. Coal generators would still have an incentive to operate efficiently since the allowance price will set the value of each ton of CO_2 emitted irrespective of who is given the allowances.	See comment 136 for a discussion of allocations.
135.	We analyzed Energy Information Administration (EIA)	See the response to

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Partnership for Policy Integrity (PFPI), Appalachian Mountain Club, Center for Biological Diversity, Dogwood Alliance, Michelle's Earth Foundation	2016 data on the fuels burned and energy generated from Virginia's power sector and calculated CO_2 emissions using EIA emissions factors for each fuel. To achieve effective carbon reductions, and to administer the program fairly, Virginia should cover all plants greater than 25 MW, including industrial facilities that generate heat and power, standalone bioenergy plants and waste-to-energy plants in the utility sector. This would reduce CO_2 emissions more effectively, remove incentives to re-fire fossil plants with biomass, and reduce air pollution at some of the most polluting plants in Virginia. Industrial power plants are a significant source of CO_2 in Virginia. As a whole, the industrial sector emitted 16% of power sector CO_2 in 2016. The proposal would exclude some of the biggest polluters in Virginia. For instance, the WestRock Covington plant would under the industrial exemption as a plant that generates on-site heat and power. This facility burns natural gas, bituminous coal, distillate fuel oil, residual fuel oil, black liquor, and wood, and was responsible for 7% of Virginia's power sector CO_2 emissions in 2016. The company brought a new 75 MW wood-fueled generator online in 2013, which led to a dramatic increase in wood consumption and emissions. The facility is a large source of conventional pollution, and has recently been penalized by EPA for excessive particulate matter emissions. Similarly, the WestRock West Point mill burns coal, black liquor, distillate fuel oil, natural gas, residual fuel oil, sludge waste, and wood solids. It was responsible for 3.3% of the state's CO_2 emissions but as an industrial burner would be exempt, as would be the International Paper Franklin mill, which emitted about 700,000 tons of CO_2 from black liquor and natural gas in 2016. Failure to cover dedicated biomass-fueled power plants will exempt a significant amount of CO_2 pollution from coverage, and, like the industrial exemption, give a free pass to some of the largest sources of air pollution. The 50 MW Halifax County plant is a standalone facility shown as burning less than 300,000 tons of wood in 2016 although its capacity is upward of 600,000 tons. The plant has recently been subject to consent decrees for air quality violations. Dominion operates the 83 MW Pittsylvania station, and recently converted 3 coal plants to burn biomass at Altavista, Hopewell, and Southampton, for a total of about 153 MW. Their combined permitted emissions annually were 253.2 tpy $PM_{2.5}$, 114.6 tpy SO_2, 1,237 tpy NO_X, 2,748 tpy CO_2e, and 129.4 tpy VOC. Dominion also built the 585 MW Virginia City plant to burn up to 20% wood with 80% fossil fuels; this facility would need to purchase allowances for biomass-derived CO_2 under the plan. The plan also apparently exempts plants that generate electricity by burning municipal waste, a portion of which	comment 65 for a discussion of industrial facilities, and the response to comment 67 for a discussion of biomass. The regulation has been amended in order to address CHPs with more clarity; see the response to comment 74.

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	is considered biogenic. Combined, biomass burned in Virginia facilities emitted over 8 million tons of CO_2 in 2016; the non-biogenic portion of municipal waste emitted another 1 million tons. However, under the Virginia plan, only about 2.5% of this CO_2 would be regulated under the cap--the approximately 230,000 tons emitted by co-firing biomass at Virginia City. Covering biomass will dramatically increase the plan's effectiveness because it will regulate a large source of CO_2, and remove an incentive for fossil-fired plants to use biomass. Burning biomass undermines efforts to reduce emissions because biomass fuels inherently emit a large amount of CO_2 per unit energy. In 2016, the top 3 highest-emitting categories of solid fuel per unit energy were biomass. When fuels are burned in a power plant, the efficiency of conversion of fuel to energy affects the CO_2 emission rate on an output basis. Wood-burning power plants are inefficient, in part because wood tends to have a high moisture content. This further increases the GHG impact of bioenergy. We also support including emissions from co-fired biomass. The high moisture content of biomass co-fired with fossil fuels can decrease the efficiency of the facility overall, meaning that it emits more CO_2 per unit energy. In comments to DEQ, Dominion claimed the following: "In 2013, Dominion made significant investments to converted three 51 MW units that used coal to 100% biomass, encouraged by EPA's prior determination that biomass was carbon neutral for PSD permitting. Close proximity to an ample supply of waste wood biomass as well as EPA's carbon-neutral policy for permitting under the PSD effective at that time were key economic drivers for these projects. Given Dominion's significant investment in renewable wood waste and forest residuals biomass, it is important for our customers that biomass emissions be considered carbon neutral." This statement highlights how treating bioenergy as having zero emissions is an incentive for more tree-burning power plants. Beyond that, it contains several inaccuracies. Dominion did not convert three "51 MW units that used coal." The units were 63 MW and the boiler de-rating that occurred with the conversion to biomass downgraded the units to 51 MW. It is not true that EPA had made a "prior determination that biomass was carbon neutral" when the Dominion plants were permitted. When EPA began regulating power plant CO_2 under PSD permitting in early 2011, biomass power plants were regulated alongside fossil fueled power plants--all the CO_2 was counted. In July 2011, EPA suspended regulation of CO_2 from bioenergy facilities under PSD for 3 years and convened a panel of its Science Advisory Board to advise the agency on how to regulate biogenic CO_2. EPA had not determined that	

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	bioenergy was carbon neutral--it admitted the topic required study, while suspending regulation. The suspension was challenged, and in 2013 EPA's regulatory deferral for biogenic CO_2 was vacated . The court identified nothing in the Clean Air Act that would allow EPA to exempt biogenic CO_2 from being counted when determining whether a facility meets the emissions thresholds that trigger PSD permitting. The permit for Dominion's first conversion (Altavista) is dated May 2012--prior to the ruling but concurrent with the court case. Dominion knew that EPA had not concluded that bioenergy was carbon neutral and knew there was a possibility that plants would be regulated in the future. Further confirming that Dominion knew the status of bioenergy GHG permitting was indeterminate, the company submitted comments to the Science Advisory Panel requesting that the panel make an a priori determination that biomass is carbon neutral. The issue was still in play in 2014, when EPA published an NSPS for GHG emissions. The NSPS both acknowledges the importance of feedstocks for net carbon impacts and conclusion of the panel that biomass cannot be considered carbon neutral. A 2013 article by a Dominion employee mentions several reasons for the coal plant conversions, stating "Benefits to the environment would include reductions in nitrogen oxides, sulfur dioxide, particulate matter and mercury"--but nowhere mentions a reduction in CO_2 emissions as a rationale. Perhaps this particular executive was aware of the skepticism that met Dominion's claims about bioenergy at the SCC when the company applied to convert the plants. In its application and 2011 testimony, Dominion made numerous claims regarding biopower. Dominion described that residues would decompose in 10-15 years, or 25 years for large logs, and that burning these residues should be considered carbon neutral. While this argument might be valid if Dominion's converted coal plants operated for a single year and then shut down, for facilities in continuous operation, the net cumulative atmospheric CO_2 loading over this period would be many millions of tons more than if the residues had simply decomposed. Dominion and other bioenergy proponents also argue that as long as forest growth exceeds harvesting, that burning wood should be considered as having zero emissions. When forests are cut and burned for electricity or heat, the forest bank's deposits are smaller than they would have been if the trees had been left standing, and there is more CO_2 in the atmosphere. When the bioenergy industry claims that current forest growth should be considered as offsetting bioenergy emissions, the bioenergy industry is effectively arguing	

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	that the bank's deposits can be transferred from one customer's account to another to cover up for the fact that some customers have withdrawn their money. This violates the concept that mass must be conserved. As the IPCC states, "If bioenergy production is to generate a net reduction in emissions, it must do so by offsetting those emissions through increased net carbon uptake of biota and soils." The biomass industry argues that the IPCC treats bioenergy as carbon neutral. The IPCC GHG reporting protocols count carbon loss from bioenergy in the land-use sector, when trees are harvested, and thus to avoid double-counting, does not count it in the energy sector--not the same as treating it as having zero emissions. The false representation of this position has become so pervasive that the IPCC has stated, "The IPCC approach of not including bioenergy emissions in the Energy Sector total should not be interpreted as a conclusion about the sustainability or carbon neutrality of bioenergy." DEQ's decision to count biomass emissions from co-firing should be extended to cover emissions from utility sector and industrial sector bioenergy emissions. Adding these plants would require raising the cap but should not entail other difficulties; the plants would simply increase the number of units covered, and should not interfere with the program's ability to interface with RGGI. Policy precedents for counting biomass carbon exist elsewhere. Massachusetts ended renewable energy subsidies for utility-scale wood-burning power plants in 2012, and the District of Columbia enacted a similar law in 2015. Treatment of bioenergy as having zero emissions under the E.U.'s carbon trading program has led to explosive growth of the wood pellet industry in the U.S. southeast, including Virginia. Forests, including areas that represent some of the most carbon-rich and biodiverse ecosystems in the U.S., are being clear-cut for biomass fuel. DEQ has gone part of the way toward regulating bioenergy emissions by proposing that co-fired facilities be required to hold allowances for 100% of the CO_2 they emit, whether it be from biomass or fossil fuels. We appreciate that DEQ has not repeated the mistakes of the RGGI program in allowing "eligible" biomass to be treated as having zero emissions when it is co-fired in electric plants and defining eligible biomass as sustainably harvested wood. "Sustainably harvested" is a largely undefined term and is not meaningful for carbon accounting. However, it is important for DEQ to cover all plants under the cap, including those that primarily or exclusively burn biomass. This might be facilitated by counting bioenergy net emissions under the carbon plan rather than stack emissions. Net emissions are a	

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	cumulative measure assessed over some time period, and represent the difference between stack emissions and emissions if the biomass underwent some alternative fate. Four categories of wood-derived biomass are defined by the alternative fate if the material is not burned in a power plant: trees that would continue growing or be harvested for another purpose; residues that would remain onsite to decompose or be burned; residues that would be incinerated; and residues that can be used for other purposes like mulch or particle board. This framework matches in part Dominion's argument about forestry residues that "Unless re-purposed for other uses, such as energy production, this material is often left on-site after a harvesting operation is completed and will eventually be burned on-site or nearby, or will decompose, releasing carbon into the atmosphere and turned into organic matter on the forest floor and soil." Emissions from burning residues for energy are significantly greater than those from decomposition over decades, and thus net emissions should be regulated. The NEI at year 10 is 70%, meaning that 70% of the direct stack emissions represent a net increase of CO_2 over that time period. Applying this figure to carbon trading would mean that facilities burning forestry residues would be obligated to purchase 0.7 allowances for every ton of CO_2 they emitted. For facilities burning materials where the alternative fate was incineration, the net difference between direct emissions and alternative fate emissions is zero. Since many industrial facilities burn residues that may be incinerated if not burned for energy, this provides an exemption based on a scientific rationale rather than an arbitrary exemption. We support counting CO_2 emissions at the stack as the best way to account for CO_2 emissions from industrial, waste-to-energy, and biomass facilities. Counting stack emissions is a closer approximation of the net atmospheric impact than the assumption that emissions are zero, which is the outcome of not regulating wood-burning power plants. Stack emissions are an underestimate of the actual net carbon impact of cutting and burning whole trees that would have otherwise continued growing and removing CO_2 from the atmosphere. As a secondary option, we support the NEI methodology because it is relatively simple, science-based, and would ensure that some emissions are counted even if companies claim to use residues and in fact use whole trees. It would also exempt facilities that burn materials where the alternative fate is genuinely incineration. Regulating these facilities is important because they can be large sources of CO_2, and need the same incentives as the rest of the power sector to reduce emissions.	

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	CHP plants contributed 22% of Virginia's power sector CO_2 in 2016, and electric-only plants emitted 78%. Most CHP plants are in the industrial sector; those not designated as industrial include Hopewell Cogeneration; Spruance Genco, a coal-burner; and Dominion's Southampton biomass power station, which reported a total heat input of 25% greater than its heat input for electricity only. This plant received 4% of its heat input from distillate fuel oil in 2016. DEQ will need to find a way to accommodate cogeneration plants outside the industrial sector even if the industrial exemption is maintained. However, we recognize DEQ not wanting to overregulate CHP if it leads to reductions in fuel burning. To incentivize CHP, DEQ should cover CHP plants, but provide a reduction in allowance obligations based on generation of useful thermal energy. It is not advisable to simply exempt CHP plants. Some plants may claim to operate as CHP plants, but not generate a meaningful amount of useful thermal energy. Many industrial sector CHP plants burn a variety of dirty and inefficient fuels. Subjecting these plants to trading will ensure that they seek to minimize emissions and generate energy from zero-emissions technologies.	
136. Resources for the Future	The 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 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 SO_2 trading program established under the 1990 Clean Air Act. 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 EPA. 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	The commenter's observations are appreciated. DEQ agrees that the updating output based allocation approach will effectively control CO_2 emissions while being cost-effective and transparent.

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	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. The consignment approach 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. Consigned allowances from compliance entities in Virginia will also work seamlessly with other features of the RGGI program. The consignment auction approach is a valuable feature because it enables the price floor, the ECR, and the CCR 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 ECR and the CCR can apply to the consigned and state-held allowances in like fashion. 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 creates a program design that could seamlessly segue to a revenue raising auction if the state were to choose to move in that direction. The regulation describes a CO_2 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 "updating output based allocation" approach has been used in previous emissions trading programs including by some of the states in the NO_X Budget Program. 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 proposal aligns incentives associated with the award of allowances with overall program goals and can be	

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	expected to improve program's cost effectiveness. 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 at Resources for the Future has shown that this approach to allocation can mitigate potential leakage of electricity generation from the state. 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. 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	

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	month) per-customer-account basis. 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. The consignment auction preserves many of the benefits of a direct auction of allowances; 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. Two important elements of the RGGI program are provisions to contain emissions and costs when changes in electricity markets lead to outcomes that are unanticipated. The ECR 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 CCR 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 ECR (and the price floor) because experience in emissions markets around the world shows a consistent tendency for prices to fall below expected levels. The ECR automatically restricts the supply of allowances if the cost of emissions reductions falls, and the CCR 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.	

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	The RGGI auction has a bid limitation that limits the share of allowances that any one entity can purchase to 25% 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% to 30% should be adequate. That change would be modest, and 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 IPPs. 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. Given that Virginia's regulatory design is very complementary to the RGGI program, the only substantial issue 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. 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 model this and 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. 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	

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	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 DEQ. 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 annual base budgets of either 33 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. 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 ECR, 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, 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.	
137. Regional Greenhouse Gas Initiative (RGGI)	The RGGI states applaud Virginia's progress toward implementing a market-based program to reduce GHG emissions. In considering Virginia's potential participation in our existing RGGI market, the RGGI states recognize many benefits of an expanded trading market, including increased economic efficiency and mitigation of the	Support for the proposal is appreciated. As discussed in the response to comment 37, the initial base cap has

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	possibility of emissions leakage. Participation in RGGI has helped our states create jobs, save money for consumers, and improve the public health, while reducing power sector emissions and transitioning to a cleaner energy system. If implemented successfully, expanded RGGI participation will serve to amplify these benefits. The RGGI states recognize the importance of ensuring that any new entrant into the RGGI market is fully compatible with our existing program. In studying Virginia's potential compatibility, we considered the alignment of key program elements, consistency in the use of regulatory language, and comparable stringency of the program as a whole. Expanding the RGGI trading market brings many benefits provided that compatible programs can be established. Making the changes outlined above to Virginia's regulation will help to ensure compatibility so that, as a regulatory matter, Virginia can be considered a RGGI Participating State. The RGGI states are excited by the prospect of Virginia's potential participation in the RGGI program, and applaud Virginia's plans for investment in complementary programs such as energy efficiency and clean and renewable energy. We see an opportunity for Virginia to realize a measure of climate leadership by adopting a lower starting allowance budget than the 33-34 million tons currently proposed. The RGGI states' comments have been informed by productive conversations with Virginia state staff and Agency Heads. States hope to continue the discussions in the future as Virginia makes further refinements to this proposed rule. The RGGI states are available to assist Virginia in addressing these comments as the state continues towards the development of a compatible program.	been set at 28 million tons.
137-1. RGGI	The proposed rule states at 6020 C: *"Allowance" means an allowance up to one ton of CO_2 purchased from the consignment auction in accordance with Article 9 (9VAC5-140-6410 et seq.) of this part and may be deposited in the compliance account of a CO2 budget source.* The RGGI states suggest that this definition be replaced by the following, in order to be consistent with the definition of "CO_2 allowance" in the 2017 Model Rule. This change would help ensure the proper functioning of the RGGI allowance market, including for purposes of tracking of allowances to be used for regulatory compliance with the RGGI program: *"CO_2 allowance" means a limited authorization by the* [REGULATORY AGENCY] *or a participating state under the CO_2 Budget Trading Program to emit up to one ton of CO_2, subject to all applicable limitations contained in this Part."*	The proposal has been revised accordingly.
137-2. RGGI	a. The proposal is silent regarding the potential use of CO_2 offset allowances. The RGGI states recommend that the Virginia rule specify that CO_2 offset allowances will be accepted for compliance, up to a maximum 3.3%	a. The proposal has been revised accordingly. b. The proposal has been

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	of any entity's compliance obligation. The RGGI states intend to amend the 2017 Model Rule to clarify the limit on offset allowance use. The RGGI states recommend inclusion of the following regulatory language on offsets, in order to be consistent with the to-be-amended 2017 Model Rule: *For CO_2 offset allowances, the number of CO_2 offset allowances that are available to be deducted in order for a CO_2 budget source to comply with the CO_2 requirements of* [Section XX] *for a control period, initial control period, or an interim control period may not exceed 3.3 percent of the CO_2 budget source's CO_2 emissions for that control period or initial control period, or may not exceed 3.3 percent of 0.50 times the CO_2 budget source's CO_2 emissions for an interim control period, as determined in accordance with* [Subparts XX]. b. A definition of "CO_2 Offset Allowance" will be necessary to support inclusion of the offset language offered above. The 2017 Model Rule defines "CO_2 offset allowance" as: "*CO_2 offset allowance. A CO_2 allowance that is awarded to the sponsor of a CO_2 emissions offset project pursuant to section XX-10.7 and is subject to the relevant compliance deduction limitations of section XX-6.5(a)(3).* c. Note that these recommendations pertain to the fungibility and acceptance of CO_2 offset allowances for compliance under the RGGI trading program. The RGGI states leave it to Virginia's discretion whether Virginia wishes to establish state-specific offset protocols, and to issue CO_2 offset allowances to qualifying projects within the state. The proposed rule does not provide for the issuance of CO_2 offset allowances.	revised accordingly with some modification. c. As discussed in the response to comment 26, Virginia is exercising its discretion to not implement offsets at this time.
137-3. RGGI	The proposed rule states at 6020 C: *"CO_2 Budget Trading Program" means the Regional Greenhouse Gas Initiative (RGGI), a multi-state CO_2 air pollution control and emissions reduction program as a means of reducing emissions of CO_2 from CO_2 budget sources.* The RGGI states suggest that this definition be replaced by the following, in order to be consistent with the definition of "CO_2 Budget Trading Program" in the 2017 Model Rule. Because this defined term is part of the regulatory definition of "Participating State," this change would help ensure that Virginia is considered a RGGI Participating State and that Virginia-issued allowances are fully fungible across the RGGI program: *"CO_2 Budget Trading Program" means a multi-state CO_2 air pollution control and emissions reduction program established pursuant to this Part and corresponding regulations in other states as a means of reducing emissions of CO_2 from CO_2 budget sources.*	The definition of "CO_2 Budget Trading Program" has been revised accordingly with some modification. No change has been made to the definition of "participating state" because the need for corresponding regulations is addressed in the CO_2 Budget Trading Program definition.
137-4. RGGI	The proposed rule states at 6020 C: "*Beginning in 2020 and each calendar year thereafter, the CCR trigger price shall be 1.025 multiplied by the CCR trigger price from the previous calendar year, rounded to the nearest whole cent. The CCR trigger price in calendar year 2021 shall be $13.00. Each calendar year thereafter, the CCR*	These corrections have been made.

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	trigger price shall be 1.07 multiplied by the CCR trigger price from the previous calendar year, rounded to the nearest whole cent, as shown in Table 140-1A." The RGGI states note that the 2017 Model Rule modifies the CCR trigger price trajectory after 2020. The 2017 Model Rule states that the RGGI CCR will be $13.00 in 2021 and increase by 7% per year in the years following. To be compatible, RGGI states suggest the following: *"The CCR trigger price in calendar year 2020 shall be $10.77. The CCR trigger price in calendar year 2021 shall be $13.00. Each calendar year thereafter, the CCR trigger price shall be 1.07 multiplied by the CCR trigger price from the previous calendar year, rounded to the nearest whole cent, as shown in Table 140-1A."* Virginia's proposed rule displays a list of CCR trigger prices in Table 140-1A. These prices differ from those shown in the RGGI 2017 Model Rule by one cent, for the prices starting in 2024 and ending in 2030. Likewise, Virginia's proposed rule displays a list of ECR trigger prices in Table 140-1B. These prices differ from those shown in the 2017 Model Rule by one cent, for the years 2026, 2029, and 2030. Revised tables are provided.	
137-5. RGGI	The proposed rule states at 6020 C: *"'Conditional allowance' means an allowance allocated by the department to CO2 budget sources and to DMME. Such conditional allowance shall be consigned by the entity to whom it is allocated to the consignment auction…after which the conditional allowance becomes an allowance to be used for compliance purposes."* The RGGI states suggest a change to the final clause of this section, to clarify the relationship between a conditional allowance and a CO_2 allowance: "*…after which the conditional allowance becomes a CO_2 allowance once it is sold to an auction participant."* A similar issue exists in 6430, p. 959, where the proposed rule states: *"At the completion of the consignment auction, a conditional allowance shall become an allowance used for compliance purposes."* The RGGI states suggest a change to this language, to clarify the relationship between a conditional allowance and a CO_2 allowance: "*At the completion of the consignment auction, a conditional allowance sold at auction shall become a CO_2 allowance."*	The proposal has been revised accordingly.
137-6. RGGI	The proposed rule states at 6020 C: *"'Minimum reserve price' means, in calendar year 2020, $2.00."* The minimum reserve price for RGGI auctions in 2020 will be $2.32. The RGGI states recommend correcting this number in order to be compatible with the 2017 Model Rule.	The proposal has been revised accordingly.
137-7. RGGI	The proposed rule states at 6020 C: *" 'Receive' or 'receipt of' means, with regard to CO_2 allowances, the movement of CO_2 allowances by the department or its agent from one COATS account to another, for purposes of allocation, transfer, or deduction."* This definition should match the updated definition in the 2017 Model	The proposal has been revised accordingly.

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	Rule: *" 'Receive' or 'receipt of' means, when referring to the* [REGULATORY AGENCY] *or its agent, to come into possession of a document, information, or correspondence (whether sent in writing or by authorized electronic transmission), as indicated in an official correspondence log, or by a notation made on the document, information, or correspondence, by the* [REGULATORY AGENCY] *or its agent in the regular course of business."*	
137-8. RGGI	The proposed rule states at 6020 C: *"'RGGI, Inc.' means the 501(c)(3) non-profit corporation created to support development and implementation of the Regional Greenhouse Gas Initiative (RGGI). Participating RGGI states use RGGI, Inc., as their agent to conduct the consignment auction, and operate and manage COATS."* The RGGI states recommend deleting the definition of RGGI, Inc., while retaining the general concept of an agent designated to conduct auctions and manage allowance tracking.	The proposal has been revised accordingly.
137-9. RGGI	The proposed rule states at 6020 C: *"'State' means the Commonwealth of Virginia. The term 'state' shall have its conventional meaning where such meaning is clear from the context."* In clarifying the "conventional meaning" of the word "State," the rule should also incorporate the broader 2017 Model Rule definition: "*A State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa and includes the Commonwealth of the Northern Mariana Islands."* Also, the RGGI states recommend that the broader term "State" not be used in the Virginia regulation where the more specific term "Participating State" would be more appropriate. Where the term "Participating State" is used in the 2017 Model Rule, this term should also be used in the Virginia regulation instead of "State." This would help avoid confusion and ensure compatibility.	The proposal has been revised to eliminate the definition of "state" altogether and rely instead on the definition of "participating state." "State" is a commonly understood term, and there is no need to define it in this regulation. "Participating state" is an important term of art, and is properly defined separately.
137-10. RGGI	The proposed rule states in 6200 A & B: "*A. The department may retire undistributed CO_2 allowances at the end of each control period. B. The department may retire unsold CO_2 allowances at the end of each control period."* Conditional allowances should not be allowed to be transferred, except to be sold at auction, retired, or withheld as part of an ECR trigger event. Accordingly, this phrase should reference undistributed and unsold "conditional allowances" instead of "CO_2 allowances": *"Undistributed or unsold conditional allowances shall not be transferred, with the exception of a transfer to consign them to auction, retire them, or withhold them in the event of an ECR trigger event. The department may retire undistributed conditional allowances at the end of each control period. B. The department may retire unsold conditional allowances at the end of each control period."* A similar issue exists in 6210 E, where the proposed rule states: "*The department will convert and transfer any*	The proposal has been revised accordingly.

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	CO2 allowances that have been withheld from any auction or auctions in the prior year into the Virginia ECR account…The department will withhold CO2 ECR allowances as follows." "Conditional allowances" should replace "CO_2 allowances." Also note that "in the prior year" has been removed from the 2017 Model Rule, and should be removed here: *"The department will convert and transfer any conditional allowances that have been withheld from any auction or auctions into the Virginia ECR withholding account…The department will withhold CO_2 ECR allowances as follows."*	
137-11. RGGI	The proposed rule states in 6210 I: *"Timing requirements for CO_2 allowance allocations shall be as follows. 1. By May 1, 2019, the department will submit to RGGI, Inc., the CO_2 conditional allowance allocations, in a format prescribed by RGGI, Inc., and in accordance with 9VAC5-140-6215 A and B, for the initial control period (2020). 2. By May 1, 2020, and May 1 of every third year thereafter, the department will submit to RGGI, Inc., the CO_2 allowance allocations, in a format prescribed by RGGI, Inc., for the applicable control period, and in accordance with 9VAC5-140-6215 A and B."* The RGGI states suggest removing references to RGGI, Inc. and replacing them with "its agent." This section should also replace "CO_2 conditional allowance" and "CO_2 allowance" with "conditional allowance": "*Timing requirements for CO_2 allowance allocations shall be as follows. 1. By May 1, 2019, the department will submit to its agent the conditional allowance allocations, in a format prescribed, and in accordance with 9VAC5-140-6215 A and B, for the initial control period (2020). 2. By May 1, 2020, and May 1 of every third year thereafter, the department will submit to its agent, the conditional allowance allocations, in a format prescribed, for the applicable control period, and in accordance with 9VAC5-140-6215 A and B."*	The proposal has been revised accordingly with some additional modification to improve clarity.
137-12. RGGI	The proposed rule states in 6020 C: *"'Fossil fuel-fired' means the combustion of fossil fuel, alone or in combination with any other fuel, where the fossil fuel combusted comprises, or is projected to comprise, more than 10% of the annual heat input on a Btu basis during any year."* This definition is inconsistent with and less stringent than the 2017 Model Rule, which sets a threshold of 5% of the annual heat input on a Btu basis during any year. The applicability provisions of the Virginia rule should be consistent and at least as stringent as those of the 2017 Model Rule. This change is necessary in order to ensure that Virginia's regulation is a corresponding CO_2 Budget Trading Program regulation, such that Virginia can be considered a RGGI Participating State.	The proposal has been revised accordingly.
137-13. RGGI	The proposed rule states in 6040 B, p. 938: *"Exempt from the requirements of this regulation is any fossil fuel power generating unit owned by an individual facility and located at that individual facility that generates electricity*	The proposal has been revised accordingly.

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	and heat from fossil fuel for the primary use of operation of the facility." This provision does not set a threshold for what constitutes "primary use of operation of the facility." In the 2017 Model Rule, facilities that provide less than 10% of their power output to the grid are exempted from compliance obligations. The RGGI states suggest that the Virginia rule consistently adopt this 10% threshold. The applicability provisions should be consistent and at least as stringent as those of the 2017 Model Rule. This is necessary in order to ensure that Virginia's regulation is a corresponding CO_2 Budget Trading Program regulation, such that Virginia can be considered a RGGI Participating State.	
137-14. RGGI	The proposed rule states in 6210 D 1: *"The department will initially allocate…CO_2 CCR allowances for calendar year 2020."* RGGI states suggest that Virginia clarify how the CCR provisions will work.	The proposal has been modified to specify that CCR allowances will be allocated on a pro rata basis to CO_2 budget sources.
137-15. RGGI	The proposed rule states in 6260 A: *"CO_2 allowances that meet the following criteria are available to be deducted in order for a CO_2 budget source to comply with the CO_2 requirements of 9VAC5-140-6050 C for a control period or an interim control period."* This section mentions requirements for both a "control period" and an "interim control period." However, the Virginia proposed rule includes a third type of control period, the "initial control period." This "initial control period" includes only the year 2020, as a means of synchronizing with the RGGI states' compliance schedule. RGGI states suggest that the "initial control period" should also be mentioned here, to specify that compliance requirements apply in 2020: *"CO_2 allowances that meet the following criteria are available to be deducted in order for a CO_2 budget source to comply with the CO_2 requirements of 9VAC5-140-6050 C for an initial control period, a control period, or an interim control period."*	The proposal has been revised accordingly.
137-16. RGGI	The proposed rule states in 6430, p. 959: "*[C]onditional allowances shall be consigned by the CO2 budget source…or DMME to each auction on a quarterly pro rata basis in accordance with procedures specified by the department."* The RGGI states understand the "quarterly pro rata basis" to mean that generators must consign one quarter of their yearly total of conditional allowances at each auction, rather than distributing the consigned amount over the quarterly auctions at their own discretion. RGGI states suggest that this language be made more explicit in the Virginia rule: "*One quarter of the annual conditional allowance allocation shall be consigned by the CO_2 budget source…or the holder(s) of a public contract with DMME to each auction in accordance with procedures specified by the department."*	The proposal has been revised accordingly.
138. Richard Ball	A baseline as high as 33 or 34 MMT of CO_2, as proposed, would be much too high and lead to much less	Support for the proposal and the commenter's

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	reduction in Virginia CO_2 emissions by 2030 than is feasible and desirable. For example, the ICF/DEQ Policy scenarios show very low reductions in CO_2 emission reductions. Emissions have already been coming down since 2016 and most projections indicate that a trend in that direction is likely to continue in that direction even in the absence of the proposed regulation. I offer several lines of evidence for that, including calculations of actual 2017 emissions in Virginia for overall electric power emissions and emissions specifically from likely EGUs covered by the regulation. If the baseline is set in the range of 30-34 MMT of CO_2, the program might fail to achieve CO_2 reductions that are substantially greater than what would happen even in the absence of the ED 11 program. My conclusion is that it would be feasible to achieve reductions under a base cap of 28 MMT with an aggressive, but feasible solar or wind expansion program and phasing out a substantial amount of higher ED 11 CO_2 carbon sources along with considerable natural gas generation while maintaining a steady level of total Virginia generation. It also implies that it makes little sense to continue expanding natural gas generating sources since they are likely to be constrained in their generation. A steady level of generation would be consistent with an aggressive program of energy efficiency measures, which might be implemented as a result of new legislation enacted in the 2018 session of the General Assembly. RGGI expects Virginia to reduce its baseline cap, although they did not specify a particular value. In my analysis, I have borrowed results on the likely list of ED 11 EGUs that will be covered under ED 11 and the associated estimated generation, and CO_2 emissions from the comments submitted by the Virginia Chapter of the Sierra Club. Another conclusion is that the ICF modeling results published by DEQ in the autumn contained some out-of date assumptions due to subsequent events. I conclude that: the ICF results were furnished in autumn, 2017 before actual 2017 results for Virginia were known and before SB 966 was passed in the 2018 Session of the General Assembly, and before the announcement of retirement plans for a number of EGUs, so those factors could not be reflected in the modeling. In particular, CO_2 emissions by 2020 EGU-covered units in 2017 was overestimated in the ICF modeling as 32 MMT CO_2 , compared with the Sierra Club's estimate of 29 million tons based on actual 2016 data. Those factors also may have led to overestimation of subsequent modeled results for 2020 through 2030. Hence I look at likely emission reductions for other baseline cap values than just 33 MMT under several different policy assumptions.	observations on the base cap are appreciated. As discussed in the response to comment 37, the base cap has been set at 28 million tons.
139. Southern	DEQ has broad legal authority to promulgate regulations	Support for the proposal is

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Environmental Law Center (SELC)	to reduce CO_2 pollution through an emissions trading program. Specifically, the board is authorized to regulate air emissions, which includes CO_2. The Virginia Code authorizes the Air Board to "develop a comprehensive program for the . . . abatement and control of all sources of air pollution in the Commonwealth." This power includes the ability to "promulgate regulations . . . abating, controlling and prohibiting air pollution[.]" The law defines "air pollution" as "the presence in the outdoor atmosphere of one of more substances which are or may be harmful or injurious to human health, welfare or safety, to animal or plant life, or to property, or which unreasonably interfere with the enjoyment by the people of life or property." CO_2 clearly qualifies as a "pollutant" subject to board regulation. Indeed, it is well settled on a national level that CO_2 is a pollutant needing regulation. The Supreme Court held in Massachusetts v. EPA that GHG, including CO_2, are "without a doubt" pollutants under the Clean Air Act. Subsequently, EPA determined that GHG emissions endanger the public health and welfare. Virginia Code requires the board to “make . . . such investigations and inspection and do such other things as are reasonably necessary to carry out the provisions of this chapter . . . including the achievement and maintenance of such levels of air quality as will protect human health, welfare and safety[.]" At the state level, carbon pollution is a clear threat to Virginian’s health, welfare and safety. Virginia's coast faces the highest level of sea level rise on the Atlantic Coast of the U.S. Sea level rise is also a threat to public and private property, including the Norfolk Naval Base and the Hampton Roads region, which is becoming increasingly vulnerable to flooding. A report issued by the Virginia Institute of Marine Science predicts sea level rise will increase in the Hampton Roads area by more than a foot between 2018-50. Moreover, in Virginia, climate change is exacerbating chronic respiratory diseases. Because of the clear danger carbon emissions pose to human health, welfare and safety, it is well within the board’s broad legal authority to regulate these harmful pollutants. Linking to RGGI preserves Virginia’s autonomy, while addressing the threat carbon emissions pose to the state in a cost-efficient manner.	appreciated. As discussed here and, for example, the response to comment 76, the board clearly has the authority to address demonstrated negative GHG effects in accordance with its mandate to protect public health and welfare.
140. SELC	Covering new and existing fossil fuel-fired units prevents a market perversion where power generators could shift generation away from regulated plants to new, unregulated power plants, which would not produce a reduction in statewide carbon emissions. We are also glad to see that the regulation applies to all CO_2 emitted from co-firing units that include at least one fossil fuel-fired unit. However, the final regulation should include all electric power facilities that emit CO_2, regardless of fuel type. Specifically, the regulation should apply to any 25 MW unit that burns biomass.	See the response to comment 67 for detailed discussion of how biomass will be treated.

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	The science is clear that burning certain biomass, particularly forest-derived biomass, increases net atmospheric CO_2 for 35-100 years or more, compared to fossil fuels. Numerous studies have shown that burning chips or pellets made from standing trees puts more CO_2 in the atmosphere than continuing to burn coal in existing or new power plants. One report showed the use of whole trees from naturally regenerated forest in the U.S. for power production could result in four times the amount of carbon in the atmosphere versus burning coal over a 100-year timeframe. Thus, it is critical that the regulation cover all net carbon emissions. Straightforward carbon accounting protocols such as those advocated by the Partnership for Policy Integrity (PFPI) demonstrate that even under the best case scenario, emissions from wood-burning plants exceed those from fossil fuel-fired plants for periods of one to two decades and beyond. As a result it is most reasonable to include all biomass stack emissions under the cap. Should DEQ wish to provide some credit to generators who are burning true wastes or residues, PFPI has offered a calculator that can be used to find the net emissions over the regulatory time frame. This framework would appropriately weight emissions from industrial facilities burning black liquor as having nearly zero net emissions, as the framework assumes that black liquor would be burned for disposal even if energy recovery does not occur. It would also reflect the net impact of burning wood residues more accurately than the current effective assumption that emissions are zero, when biomass facilities are not covered under the cap. DEQ should amend the regulation to include "any unit combusting carbon-based fuels that serves an electricity generator with a nameplate capacity equal to or greater than 25 MWe . . . and any sources that includes one or more such units shall be a CO_2 budget sources, subject to the requirements" of the regulation.	
141. SELC	SELC supports a 33 million ton base budget and 3% reductions annually thereafter, but encourages DEQ to consider actual emissions data from 2019 to determine whether the 2020 cap should be revised down. Contrary to concerns raised in comments to the NOIRA, compliance with Version 1 is in fact readily achievable. Dominion's 2017 IRP created a Plan Alternative for Clean Power Plan compliance which readily met the Virginia limit of 27,830,174 tons of CO_2 by 2030. Version 1 of the regulation requires 23.10 million ton cap by 2030. However statewide carbon emissions in 2017 were 31.2 million tons, which are lower than the Version 1 baseline of 33 million tons. Also note that SB966, passed by the General Assembly in 2018, proposes 5,000 MW	As discussed in the response to comment 37, a cap of 28 million tons has been set. The regulation has been amended to specify that the department will review the base budget and recommend appropriate adjustments in the base budget for 2031 and succeeding years, considering the best

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	of renewable, carbon-free generation and over $1 billion in energy efficiency investment between now and 2028. With this new landscape, we encourage further modeling to predict what 2018 and 2019 emissions are likely to be and recommend a starting baseline that is the lower of Version 1 or DEQ's updated forecast for actual 2019 carbon emissions. This allows DEQ to avoid setting a baseline cap that is higher than actual emissions in the first compliance year. A lower initial base budget and more stringent overall cap by 2030 also better achieves the goal of reducing CO_2 emissions, growing Virginia's clean energy economy, and protecting the public health and welfare. We support the decision to implement a 3.0% per year reduction in carbon emissions over 10 years beginning in 2020. This results in a base budget of 23.10 million tons by 2030. While this is a good initial reduction and sensible 10-year goal, SELC encourages a 10 year review provision. This 10-year review provision would ensure that Virginia continues to reduce its carbon emissions beyond the initial 10-year goal and determine emissions reduction goals beyond 2030.	available science and all relevant information and policies available from any CO_2 multi-state trading program in which Virginia is participating. In the context of the RGGI program as a whole, it is important to remember that the program is subject to routine program review. As discussed elsewhere, the RGGI states routinely review and evaluate how current strategies are working, and look ahead to what changes are needed to the program to insure its ongoing effectiveness. RGGI's comprehensive program reviews will consider program successes, impacts, and design elements. As part of this process, DEQ will evaluate where Virginia needs to go with respect to budgets and allowances. In order to be transparent and effective, this must be effected through the program review process in concert with the other RGGI states.
142. SELC	SELC supports the 5% set aside to assist DMME in efforts to abate and control air pollution, although we encourage DEQ to evaluate whether a 10% set aside would produce more benefits than it would increase costs for covered entities. SB966's commitment to energy efficiency is a notable improvement on the role efficiency will play in Virginia's energy future, but there can always be better and more diverse initiatives to bring this lowest-cost resource to Virginia. Despite being the lowest-cost energy resource, energy efficiency measures are also among the most labor-intensive, which means that the effect of every dollar spent on efficient has greater economic ramifications that dollars spent on more traditional, supply-side energy resources. A recent study by Applied Economic Clinic of Virginia's possible energy efficiency future found that under a "medium efficiency" scenario, total annual electricity sales in Dominion's territory could actually decrease. As Virginia's in-state generation fleet becomes less carbon intensive as a product of SB966, a decrease in total	Support for the proposal is appreciated. As discussed in comments 51 and 83, a relatively small 5% set-aside is appropriate in the early stages of the program, although this amount may be revisited as a result of program review.

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	energy sales only amplifies the possible reduction in statewide carbon emissions. The study also confirmed that a "medium efficiency" scenario could lower customer bills by up to 0.3% by 2028. The 5% (or possible 10%) set aside can play a key role in helping Virginians achieve lower carbon pollution and lower electricity bills.	
143. SELC	The proposal includes several important cost management mechanisms, similar to those provided for in the RGGI program. SELC supports the inclusion of these provisions as they are designed to provide enhanced market flexibility and stability, and have proven to be important in establishing a successful cap-and-trade program. Consistent with the RGGI program, the regulation allows covered entities to bank unlimited CO_2 allowances. SELC supports this provision, so long as it is clear banking can occur for allowances purchased at auction. Banking provides flexibility and has been shown to encourage sources to reduce their emissions sooner and below required levels. Banking ensures that all CO_2 reductions have a long-term economic value, and not merely short-term value for immediate compliance purposes. By using banking, participants are very adept at smoothing the supply of allowances over time--for example, banking allowances in early compliance periods in anticipation of increased allowance scarcity in later periods. Research on other cap-and-trade programs without banking indicates that such programs typically result in "just-in-time" emission reductions, rather than encouraging cost-effective, long-term emissions reductions. The budget adjustment for banked allowances is necessary due to the high volume of allowances banked during early compliance periods where the volume of RGGI allowances far exceeded actual emissions. Although the RGGI states significantly lowered the regional cap to more closely reflect actual emissions, participants had already banked large numbers of allowances. In 2014, for example, there were an estimated 140 million tons of banked allowances, significantly exceeding that year's emission cap of 91 million tons. Even with the significant cap reduction in 2014, emission reductions were unlikely to occur without further adjustment to account for the volume of banked allowances. These adjustments have been in place for several compliance periods, with the third such adjustment period applying to allocation years 2021-25. Virginia sensibly includes this adjustment, which should further the goal of reducing CO_2 emissions in an economically efficient manner. SELC supports the CCR allocation, although improvements should be considered in the coming years to ensure that such reserves are only triggered during truly unexpected price spikes. In the event the allowance	DEQ agrees that RGGI's cost management mechanisms will ensure that the emissions cap is maintained while managing prices and assuring a stable market.

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	price exceeds a specified price ("trigger price"), the CCR mechanism introduces a limited quantity of additional allowances into the auction to increase the supply and thereby reduce the cost. After being implemented in 2014, the CCRs have already been triggered twice, which raised concerns that the containment mechanism is not functioning as intended. Instead of being reserved for truly extreme and unexpected market spikes, the CCR trigger prices may have been set too close to anticipated allowance prices, resulting in 15 million reserve allowances being added to the market. Some have argued that these additional allowances were unnecessary, given the large quantities of banked allowances. In 2017, after another design review, RGGI implemented several changes to the CCR mechanism, which should help prevent unnecessary allowances from being released into the market. For example, the trigger price was initially set at $4 in 2014 raising to $10 in 2017, and thereafter escalating by only 2.5% each year. Now the trigger price will be set a $13.00 in 2021 and increase by 7% every year. Additional changes to the CCR mechanism should be considered. Most importantly, the proposal, consistent with the RGGI program, provides that every year, additional allowances--up to 10% of the emissions cap--can be allocated and sold at auction in the event of a trigger. While this mechanism should help to contain cost, it also effectively increases the overall cap. Virginia, along with other participants in the RGGI auction process, should consider whether additional modifications could better balance carbon emission reduction with cost concerns. For example, it may be more effective to generate CCRs by borrowing allowances against future years or from allowances unsold at auction, rather than generating additional allowances. This sort of program-level borrowing would maintain the overall emissions cap across the initial 10 year program, while still protecting against short-term price spikes. SELC also supports the ECR. There is inherent price uncertainty in a market-based cap-and-trade program due to factors such as natural gas price volatility, variable electricity demand, uncertainties associated with nuclear projects, and evolving renewable energy programs. Where prices are significantly higher than anticipated, the CCR is designed to increase supply and reduce cost. Prior to 2017 changes, however, there was not an analogous mechanism if prices were lower than anticipated. Instead, the RGGI program relied only on a reserve price--a minimum acceptable bid. In 2017, the RGGI program changed its model rule to incorporate an ECR, which Virginia has incorporated into the regulation. In the event allowance prices fall below established triggers, Virginia, like other RGGI states, will withhold up to 10% of its allowances from circulation. According to	

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	the RGGI model rule, the ECR trigger price is set at $6.00 in 2021 and will rise at 7% each year. This cost management mechanism should help further Virginia's overall policy goal of reducing carbon emissions in the event that emission reduction costs are lower than projected. Initial modeling of this mechanism indicates that it should further incentivize carbon emission reductions. In situations of low demand and low prices, i.e., situations where the emissions containment reserve is likely to be triggered, a cap-and-trade program is typically not driving emission reductions. Modeling of the emission containment reserve should better align incentives for individual actors in the region and make the auction price more responsive to supply.	
144. SELC	SELC supports the 3-year review, updating output-based allowance allocation method. This method of allocating allowances based on a rolling average of emissions over the past 3 years ensures that where generators do not use the full amount of allowances received over 3 years, these allowances can be retired or banked, and not hoarded by the generator. To the extent any parties express concern about leakage, we believe DEQ has adequately addressed that issue with its continually-updating output system. In any event, emissions leakage is not likely to become an issue. Some critics have argued leakage would occur in RGGI states, yet studies have found that these concerns have not materialized. Indeed, RGGI's most recent Monitoring Report found no evidence of significant leakage. Moreover, Dominion Energy's 2017 IRP demonstrated Clean Power Plan compliance was possible without significant increases in purchased power. While Plan CT is not an exact match to the proposed trading program, it demonstrates Dominion's ability to comply with a significant carbon emissions reduction program without resulting in emissions leakage. Thus, while leakage is unlikely to become an issue under the proposed system of emissions reduction, the allocation method used in the proposal should address concerns raised by those who fear leakage to be an issue with cap and trade systems.	DEQ agrees that the 3-year review, updating output-based allowance allocation method will best control allowance distribution while avoiding potential leakage.
145. SELC	The regulation should ensure the program is the most economically advantageous for customers and families. While we support banking of allowances, we only support banking of allowances that a unit has purchased in the market, not banking of allowances received at no cost from DEQ and not submitted to the RGGI auction. Article 9 must make clear that all generators are required to sell all allowances back into the consignment auction. Without a full-market participation requirement, a generator could hoard a large share of CO_2 allowances in order to influence prices or prevent competitors from obtaining allowances. To ensure this anti-competitive behavior does not occur, the regulation must ensure 100% of conditional allowances make it to the consignment auction. While the system appears	The commenter's concerns are appreciated. The definition of "conditional allowance" has been amended to specific that a conditional allowance becomes a CO_2 allowance once it has been sold to an auction participant. The RGGI states suggested this change to clarify the relationship between a conditional allowance and a CO_2 allowance. DEQ agrees that collaboration

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	designed in such a way, additional language could help clarify this important point. Generators initially receive conditional allowances for free, prior to selling into and buying back from the consignment auction. Systems with free allowances have commonly led to windfall profits for generators, to the detriment of customers. However, free allocation systems can be done in a way that prioritizes customers. The final regulation should include a review mechanism to prevent these windfalls for generators and ensure that customers benefit. One means to achieve this is through SCC review of how these windfall profits are used. Indeed there are a number of ways that customers could benefit from allowance profits, whether directly through rate credits, or indirectly through greater emissions reductions, investments in energy efficiency, or other reductions in compliance costs. SELC urges the board to collaborate with the SCC in its review of how generators use windfall profits in order to achieve the greatest level of carbon emissions reduction in the most economically advantageous way for customers. For instance, one possible windfall could occur where a generator sells more allowances in RGGI than it buys back for its own compliance, making it a net seller. In that scenario, the generator is revenue positive as a result of the trading program, but DEQ will have information regarding how many allowances that utility received, how many it surrendered in compliance, and what the various market prices were, which DEQ could make public and also provide to the SCC as it reviews utility earnings and expenses in upcoming triennial rate cases and annual fuel factor dockets. DEQ should also include some failsafe mechanism to ensure that the generator does not profit from the trading program at customer expense as a result of inadequate SCC oversight.	with the SCC is an important element of ensuring that the carbon trading program operates properly in the context of SCC responsibilities
146. Virginia Chapter of the Sierra Club, Appalachian Voices; Virginia Interfaith Power and Light; Environment Virginia; Chesapeake Climate Action Network.	Virginia's proposal to develop a CO_2 trading program that links to the existing RGGI program is an appropriate mechanism to begin reducing CO_2 emissions in Virginia. Although improvements should be made, we support action to limit and reduce CO_2 emissions from power plants and to link to RGGI's larger market. The proposal's goal of reducing CO_2 by 30% from 2020-30, at an annual rate equal to 3% of the base year allowances, is modest and can readily be achieved as demonstrated by planned actions that will reduce emissions and by actual experience in the RGGI states. Importantly, the proposal intends to achieve actual CO_2 reductions, not reductions in carbon intensity which can disguise emissions increases as decreases in the rate of emissions-per-MWH of generation. Dangerous climate change is driven by actual CO_2 emissions and atmospheric CO_2 levels, not the intensity of emissions. While Virginia could potentially implement CO_2 reduction	Support for the proposal is appreciated. DEQ agrees that linking to RGGI will benefit the Commonwealth by protecting public health and welfare in a fiscally responsible way.

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	requirements without tradable emissions allowances, linking Virginia's proposed plan to RGGI is a good choice. Through 2016, RGGI states had reduced CO_2 emissions from covered power plants by 40% from 2008. RGGI reduced CO_2 emissions at faster rates and with lower costs and greater benefits than predicted. Moreover, those emissions reductions were achieved while customer bills were reduced and while the economies of participating states grew. Reductions in air pollution in RGGI states have improved health outcomes. RGGI's program has been so successful that its member states recently agreed to build upon CO_2 reductions already achieved, so that covered sources reduce CO_2 by an additional 3% per year for 10 years between 2020-30, achieving an overall reduction of more than 65% compared to its initial 2009 cap. Joining this established CO_2 market will help Virginia reduce CO_2 smoothly and cost-effectively, and would avoid the potential pitfalls from implementing a Virginia-only market. The market for allowance trading will enable power plant operators to buy or sell allowances as appropriate to their individual circumstances, while aggregate CO_2 emissions decline. Since RGGI is both very successful and the only functioning CO_2 market in the eastern U.S., it would make no sense to go it alone. Under a consignment auction approach, the value of allowances will go to covered power generators, and utilities will be able to use the funds, subject to regulatory oversight, to reduce electricity rates and to support incremental investments in zero-carbon energy sources and energy efficiency. Such zero-carbon energy investments will further mitigate electric energy costs by reducing fuel purchase requirements. In its 2017 IRP proceeding, Dominion acknowledged that solar costs have fallen dramatically and that solar is now the cheapest form of energy. Both utility and non-utility generators should be required or encouraged to invest such funds in renewable energy and energy efficiency, or, at minimum, to pass consignment revenues through to retail customers. The allocations of conditional allowances can be reconsidered if consignment revenues are not used to advance the rule’s goals. The emission reductions contemplated by ED11 are readily achievable. RGGI's market began full operation in 2009. By 2012-14, the average annual CO_2 emissions from the 2009 baseline had been reduced by 35.7%; and annual emissions in 2016 were 40% below those in 2008. Those reductions occurred in far less than 10 years, and RGGI reduced caps to reflect the more rapid progress. RGGI is now planning to reduce its CO_2 cap by an additional 3%/year from 2021-30, thereby achieving a 65% reduction from its initial 2009 allowance cap. Significantly, AEP recently announced its voluntary	

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	commitment to reduce its CO_2 emissions from power production by 60% from 2000 levels by 2030 and by 80% by 2050. Its planned CO_2 reductions will be achieved through increased reliance on wind and solar energy, retirements of coal-fired plants, natural gas, greater energy efficiency and grid modernization, and the reductions are to be achieved even as electric demands may increase with greater electrification of the economy. Although AEP's planned reductions fall short of what will ultimately be needed to adequately mitigate global warming, they nevertheless illustrate that willing electric utilities can substantially reduce CO_2 emissions, consistent with customer and shareholder interests. AEP explains that its new clean energy strategy is driven by investors, business risks and the known need to reduce CO_2 in order to limit the global average temperature rise to less than 2°C. In short, the proposal is modest, achievable and reflects the unquestionable need to shift to clean energy as soon as practicable.	
147. Virginia Chapter of the Sierra Club et al.	The mix of generation and emissions is changing rapidly and will change more by 2020. The proposed initial aggregate cap of 33-34 million tons for 2020 is too high and out of date. A too-high initial cap will distort RGGI's markets by artificially inflating the pool of allowances. It would fail to produce real reductions in CO_2 and could lead to higher emissions. The 2020 cap should be set below 30 million tons, subject to updating the 2020 level in a proceeding to be held in early 2019. Updating the 2020 baseline based on the latest available information would be fair to the public and all parties. At the same time, setting a cap below 30 million tons would reflect the most current information and would give better planning notice to owners of budget sources than overstated estimates of 33-34 million tons. However, if the baseline is set at 33-34 million tons, then the annual rate of reductions should be increased to 3.5% per year, which would still be slower than RGGI's average annual reduction over its first 10 years. Changes in the fuel mix are occurring now and more changes are expected. The 2020 baseline should take into account all planned fossil fuel retirements and deactivations between now and 2020. It should also recognize that approved new natural gas facilities will displace emissions from coal plants that remain open. Between 2016-17, natural gas use in Virginia's electric power sector rose, while coal-combustion fell and retail sales fell. From 2016-17, the capacity factors of two of Virginia's largest coal-fired plants dropped by over 40%, and the CO_2 emissions just from those plants dropped by 4,989,186 tons, from 11,783,154 in 2016 to 6,793,968 tons in 2017. Recent additions of natural gas-fired generation have occurred and more are expected; they will continue to push out dirtier coal-fired plants. Traditional coal plants emit roughly 2.75 times as much	A base cap of 28 million tons has been selected; see the response to comment 37 for more information.

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	CO_2 per MWH than new combined cycle plants, so the trend is toward a much lower CO_2 baseline in 2020. We estimate that the addition of the Greensville plant could displace 7 million tons of CO_2 from coal plants even at a modest 70% capacity factor. Beyond 2017, a number of retirements are expected. In its 2017 IRP, Dominion discussed potential fossil fuel plant retirements. On January 16, 2018, Dominion announced a number of retirements by filing with PJM deactivation requests for 9 fossil fuel units. Collectively, these units have a combined nameplate capacity of over 1,700 MW and emitted around 2.4 million tons of CO_2 in 2016, or 7% of the state's reported power emissions. In addition, Dominion announced the planned retirement of Yorktown 1 & 2. The Spruance and Edgecombe Genco plants have also notified PJM of their intent to retire in 2019 and 2020. Combined, this merchant capacity reflects another 300 MW of capacity and 1 million tons of annual CO_2 emissions. These announced retirements (which would account for 3.4 million tons of CO_2) and any other planned retirements or cold storage of units should be incorporated into calculation of the 2020 baseline. We looked at data for units that operated in 2016-17 and are not scheduled for retirement, and found that 2017 CO_2 emissions from covered fossil-fuel units that will still be operating in 2020 were approximately 29 million tons and the trend was downward, particularly for coal-fired units. The 2020 baseline should incorporate planned renewable energy developments through 2020. Energy from utility scale solar and wind is cheaper than from fossil fuels, and many customers are willing to provide the capital for small-scale solar. The estimates should reflect the improved prospects for renewables, which were boosted by recent legislation as well as by the low cost of solar and wind generation. According to the 2017 Virginia Solar Energy Development and Energy Storage Authority Annual Report, there are presently 219 MW of solar installed and an additional 2,703 MW under development. The PJM queue identifies 8 solar projects with a combined nameplate capacity of 717 MW with projected in-service dates between 2018-20 that would interconnect in Virginia. It is likely that additional solar will be added through 2020 as a result of third-party investments or arrangements with utilities, such as the agreement between Dominion and Amazon to install solar. Recent legislation calls for approximately 5.5 GW of solar generation by 2028. These developments must be accounted for in developing the baseline. Since Dominion serves an integrated system in Virginia and North Carolina, the 2020 cap should also take into account solar connected to Dominion's system in North Carolina which will tend to reduce Dominion's need to	

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	generate energy in Virginia. Dominion has emphasized the growing electric demand for data centers. However, such loads are specifically asking for renewable energy. Those loads will add more to zero-carbon generation than to fossil fuel generation. A group of data companies submitted a September 2017 letter to the SCC in Dominion's IRP docket. They asked regulators to take energy resource preferences into account when deciding on future energy infrastructure projects to meet energy load growth from data centers. Citing economic, environmental and market needs, they explained why they wanted more renewable energy and why the IRP under-deploys renewable energy. Thus, demands for solar energy will limit future CO_2 increases even if load grows. This should be considered in setting a baseline below 30 million tons. Electric loads have flattened in recent years. Virginia's retail electricity usage declined between 2016-17. To the extent DEQ's analysis of the 2020 cap relies on Dominion's load forecasts, it should step back. Dominion's forecasts of load growth have been consistently overstated. Virginia's baseline should also account for the state's untapped energy efficiency potential and reflect savings that can be achieved by 2020 and beyond. Electricity generators should not get a higher CO_2 cap for 2020 because Virginia's utilities failed to meet the goal for efficiency-driven demand reductions of 10% compared to 2006 demand. Virginia should not reward its utilities with a higher baseline for CO_2 emissions, which would elevate emissions caps for at least a decade, based upon an indifferent approach to efficiency.	
148. Virginia Chapter of the Sierra Club et al.	We strongly support the proposed definition of "fossil fuel-fired" which would cover most co-firing of biomass and fossil fuels. However, the requirement to purchase CO_2 allowances should be extended to cover all biomass generation meeting the otherwise applicable size requirements. The requirement to purchase allowances should extend to new and existing biomass-fueled units, particularly those that burn wood-based biomass, which is the least likely to result in CO_2 recapture within a time frame helpful to avoiding the looming climate crisis. The premise for exempting generators that burn biomass is that the emitted CO_2 will eventually be recaptured by regrowth of the feedstock and that is sufficient to mitigate the climate damages from current CO_2 emissions. Those assumptions are faulty in several respects. Biomass burns less efficiently than coal or natural gas so more biomass must be burned to produce each MWH of electricity, resulting in CO_2 emissions that are substantially higher than from coal and natural gas. Co-pollutants from biomass combustion are large and	The commenters' concerns about biomass are recognized; see the response to comment 67 for more information.

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	harmful to human health. Gradual deterioration of wood residues occurs over many years, but the net CO_2 emissions impacts from burning even residues remain large. Adverse climate and health impacts from burning biomass will not be offset by resequestration of CO_2 in the future, even assuming that the biomass is replaced with comparable forests. Exempting biomass from carbon prices would undercut beneficial investments in zero-carbon alternatives, which mitigate climate harms in the near- and long-term. There is no support for the assumption that forests will be regrown in a sustainable way or in sufficient quantities to recapture that CO_2. Furthermore, past investments in large biomass facilities do not deserve special treatment any more than past investments in fossil fuel-fired facilities. The public and climate are harmed by CO_2 emissions in both cases. The climate crisis will never be resolved if previously built emitters are granted exemptions. In any event, value of allowance auction revenues can be passed through to customers to mitigate cost impacts.	
149. Virginia Chapter of the Sierra Club et al.	The rule should be amended to require continued annual reductions of the CO_2 cap beyond 2030, at the same annual quantities as from 2021-30, until the rule is modified. This could be achieved by altering 9VAC5-140-6190 C to state: "For 2031 and each succeeding calendar year, the Virginia CO_2 Budget Trading Program base budget will be reduced by the same annual quantity as the reduction between 2029 and 2030." Continuing to reduce CO_2 at the same annual rate would mean a reduction of approximately 1 MM tons/year, which would achieve a 90+% reduction by 2050. The key is to clearly indicate that reductions will continue until climate stabilization is achieved. If a specific post-2030 target is desired then the rule could provide that yearly reductions of the annual cap will continue, for example, either until the emissions cap on covered sources has been reduced by 90% from the 2020 base budget or until the emissions cap on covered sources has been reduced by the same percentage as has been achieved by RGGI member states relative to their pre-auction emissions. Since RGGI's announced 2030 reduction target is more than 65% below its 2009 cap the latter measure would continue reductions until at least that percentage of emissions reduction is achieved in Virginia--or until greater reductions are achieved if RGGI extends its annual reductions beyond 2030. This would assure that Virginia eventually catches up with a level of reductions that RGGI has shown are achievable. At minimum, it is necessary to clarify that the emissions trajectory post-2030 will be at least as stringent as that agreed to by the RGGI states in subsequent program reviews for the post-2030 years. Absent emission reductions that continue to at minimum match the stringent of the RGGI program beyond 2030, Virginia would be unable to continue to link its program with the RGGI states and reap the benefits of	The proposal has been amended to clarify that CO_2 reductions will indeed continue to be required after 2030; see the response to comment 141.

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	the larger carbon market.	
150. Virginia Chapter of the Sierra Club et al.	Climate change disproportionately harms the poor and other disadvantaged communities. Residents near and downwind of fossil-fuel power plants suffer disproportionate health impacts from co-pollutants such as particulates, SO_2, ozone, and mercury, and are disproportionately low-income or minority. Generating electricity with biomass also produces high levels of harmful air pollution. In contrast, solar, wind and efficiency do not produce any carbon pollution or co-pollutants. Over half a million people in Virginia live within three miles of a power plant that was to be covered by the Clean Power Plan. Of these, 52% are minority and 34% are low-income, while Virginia has a total minority population of 35% and low-income population of 26%. According to the U.S. Office of Minority Health, black people are three times more likely to die from asthma-related causes than white people. Capping and steadily reducing aggregate CO_2 emissions and co-pollutants will generally improve health outcomes in Virginia and benefit all communities, including disadvantaged communities. This positive benefit from reducing CO_2 has been documented in RGGI states, which have experienced improvements in health outcomes since RGGI's carbon limits took effect. RGGI states have also seen dramatic reductions in SO_2. It is possible that trading could allow some fossil fuel plants to use allowances to continue or increase polluting operations. As a result, localized harms may occur even if the rule produces overall progress. It is therefore critical that DEQ commit to conduct EJ and emissions studies; to continuously monitor and report concentrations of CO_2 and non-CO_2-pollutants to ensure that disproportionate concentrations do not harm particular communities or regions; to investigate detected concentrations as well as any complaints of disproportionate local impacts and to pursue appropriate remedial actions. We urge DEQ to consider amending the rule to prohibit plants fired with coal, biomass or heavy oil from acquiring allowances to increase their annual emissions over historic levels without first obtaining a permit.	DEQ agrees that disadvantaged communities must be specifically addressed in the context of wider EJ programs at the state level and has amended the proposal accordingly; see the response to comment 55.
151. Virginia Chapter of the Sierra Club et al.	The proposal to cover existing units serving a generator of 25 MWe or larger is generally consistent with RGGI's existing rule. However, the rule should be amended to state that the 25 MWe threshold only needs to be crossed once to trigger coverage by the rule. This is important so that coverage cannot be avoided through manipulation of a unit's size or configuration. 9VAC5-140-6040 A should be modified to state that the rule covers units serving all generators having a nameplate capacity of 25 MWe or more "at any time on or after" a fixed date. To be consistent with RGGI's model rule, it would be reasonable to adopt January 1, 2005 as the on-	The applicability limit is indeed designed to be consistent with the RGGI Model Rule. Current state regulation (9VAC5-20-70) prohibits circumvention of air quality requirements by constructing multiple facilities in a piecemeal fashion in order to avoid regulation. DEQ believes that the declining emissions

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	or-after date. Alternatively, the on-or-after date could be shortly prior to the first notice that a plant might be covered by CO_2 regulations. The rule should be modified to require new units serving generators with a nameplate capacity less than 25 MWe to obtain emissions allowances. We suggest the threshold for new generators be set at 15 MWe or less. This is needed in order to send CO_2 regulatory and price signals to a broader pool of new generators and to prevent gaming that would undermine the regulation's CO_2 reduction goals and that would be unfair to existing generators. Within the RGGI region, there are recent proposals for multiple generation fossil fuel-fired units each just below the 25 MWe compliance threshold. Since economic efficiencies and operating efficiencies would ordinarily support larger units, the sizing appears to be driven by a desire to emit CO_2 without limits, thereby undercutting public health and the goals of the regulation. Since it is essential to reduce future emissions, there is no reason to encourage new generation that emits CO_2. With coverage of new units, the rule would better protect the public from CO_2 and co-pollutants, remove an incentive for building less efficient fossil fuel generators, and protect the integrity of allowance markets. Since developers would have notice of the allowance requirement for new generation, no unfairness would result from imposing a lower size threshold for such generation. Units placed in service after January 1, 2019 would fairly be considered new.	cap will encourage the development of renewable energy and energy efficiency, not the construction of multiple smaller facilities which, as the commenter points out, are less efficient.
152. Virginia Chapter of the Sierra Club et al.	Allocations of conditional allowances is a pragmatic choice designed to implement tradable emissions allowances. However, recipients of economically-valuable conditional allowances should be encouraged to use that value to promote the carbon-reduction purposes of the rule, not to produce windfalls. The proposal presumes that utilities will utilize revenues received from the consignment-and-auction process for the benefit of customers, either through incremental investments in energy efficiency or zero-carbon generation or applying the revenues to reduce retail rates. While this seems to be a reasonable assumption in light of SCC regulation of utilities, it is not a guarantee. DEQ should monitor how the auction revenues are utilized and consider adjusting the method for allocating allowances if the revenues are not used to advance the purposes of the rule. Recipients of allowances should be required to report annually how the auction revenue funds were used, including whether they were passed through to retail customers, used to reduce CO_2 emissions, used for other corporate purposes, or retained as earnings. Generators in other RGGI states do not expect funding from the auctions, and Virginia companies should not get auction revenues unless they promote the purposes of the rule.	The commenter correctly asserts that the SCC regulates and monitors utilities in order to assure that customers are protected. It is unclear how additional reporting requirements would ensure that these goals are effected.
153. Virginia	We support consigning a portion of the conditional	As discussed in comments

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Chapter of the Sierra Club et al.	allowances to holders of public contracts with DMME for the abatement and control of CO_2. RGGI member states use a much larger share of their auction revenues for such purposes by supporting measures to increase energy efficiency or zero-carbon renewable energy within their borders. It is reasonable for Virginia to do so with at least part of the revenues from the consignment auction process. Nevertheless, 5% is a small starting point. Consideration should be given to reallocating conditional allowances from non-utility generators or utilities to public contractors for implementing energy efficiency and renewable energy, particularly if the covered generators do not invest their auction revenues to expand zero-carbon energy solutions in Virginia.	51 and 53, a 5% set-aside is a reasonable figure in the early stages of the program.
154. Virginia Chapter of the Sierra Club et al.	Dominion's Mt. Storm is a large coal-fired electric generating facility located in West Virginia that is included in Virginia retail rates and is dispatched through PJM. DEQ should consider inviting Dominion to include Mt. Storm as a CO_2 budget source subject to the program, provided that the arrangement does not violate any West Virginia CO_2 rule and is acceptable to RGGI. The plant is old and a substantial source of CO_2 and other pollutants. We are not aware of any barrier to Dominion's agreeing to subject this plant to Virginia's CO_2 program, which would affect PJM's economic dispatch of the plant, but not require any plant modifications or state permits. Dominion and its customers could benefit from phasing down Mt. Storm's operations and shifting CO_2 allowances to newer, cleaner facilities located in Virginia.	Unless and until West Virginia links to the RGGI program, it is unlikely that they would expect for Mt. Storm to submit to RGGI requirements.
155. Virginia Chapter of the Sierra Club et al.	The proposal wisely does not provide for creating offset allowances. Offset allowances would require large investments of Virginia's administrative resources to analyze, approve and enforce proposals. Nearly 30% of the RGGI Model Rule text is devoted to standards and procedures for evaluating, approving, and enforcing offset projects. That is not a burden that Virginia should take on, particularly since it may require physical and economic processes beyond those DEQ normally oversees. Further, the value of offsets is dubious. Even if they reduce CO_2 somewhere, offset schemes may not provide ancillary benefits from reducing power plant emissions of CO_2, including benefits from reducing co-pollutants. Indeed, offset projects may increase the danger that local pollution will increase as a result of purported CO_2 reductions at remote locations as has happened under California's program.	DEQ agrees with the commenter that implementing offsets is not desirable at this time; see the response to comment 26.
156. Tenaska Virginia Partners, L.P.	DEQ projects annual CO_2 emissions from covered facilities to be 36.8 million tons in 2019. Under the 34 million ton alternative, a 7.6% reduction would be required in the first year of the program. If the more stringent 33 million base budget were used, a 10.3% reduction would be required. These are 2.5-3.5 times the proposed 3% annual cap decline in subsequent years. Tenaska strongly suggests DEQ consider a higher base	See response to comment 37 for a discussion of how the final base cap was determined. DEQ is assisting affected sources in meeting compliance costs by

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	budget, such as 35 million tons, in the event the 2019 emission projection is proven accurate. At the very minimum, 34 million tons should be used. Tenaska strongly favors the "generation updating" approach, whereby covered facilities are allocated allowances according to their respective historical annual net generation as compared to the total aggregate generation from covered facilities, averaged over the immediate 3 calendar years, updated annually (i.e., on a rolling 3-year average). Tenaska believes this approach best meets the intent of the regulation, in that it incentivizes more efficient units that emit less CO_2 per unit of power produced. Note that Regulatory Advisory Panel (RAP) participants favored this option. As presented during RAP meetings, Tenaska's Virginia Generating Station in Fluvanna County currently operates under a long-term contract or "tolling agreement" with a third party, whereby the third party procures the fuel and purchases the generated electricity. The term of the agreement is 20 years and expires in May 2024. Under the terms of the agreement, Tenaska believes it has the ability to pass through to its customer costs for things such as emissions allowances, whether they be for the Acid Rain Program, CSAPR, or any future carbon trading scheme. However, Tenaska's customer has taken the position that Tenaska does not have such a pass through right. These costs are projected to be $2.30/MWh in 2020 and $3.78/MWh in 2031, representing an increase of 14.6-18.9% over the projected wholesale power price. To the extent Tenaska is required to purchase allowances and is unable to pass through those costs to its customer, it will be disadvantaged compared to other generators that can either recoup those costs or that have no costs due to their location in another PJM state without a carbon pricing scheme (e.g., Pennsylvania and West Virginia). Several RGGI states and every major proposed federal CO_2 cap and trade legislation has recognized this predicament and provided various forms of relief, such as creating an allowance set-aside for free allocations or offering allowances at a reduced price. Tenaska requests DEQ also recognize this and either create a set-aside sufficient to cover net allowance obligations for LTC holders or simply exempt LTC holders for the life of the applicable contracts. The set-aside would be less disruptive to the program as it would alleviate units entering and exiting.	issuing allowances. The amount of compliance costs covered by the allowances will depend on business decisions made by any individual facility. If a facility stays within the budget, it will not incur costs.
157. Tenaska Virginia Partners, L.P.	We encourage DEQ to expand the scope of the regulation to include additional sources and seek meaningful reductions in other sectors of the economy (via alternative pathways), including mobile sources, if the dire consequences referenced are to be avoided.	As discussed in the response to comment 65, this exemption is appropriate. While DEQ agrees that other pathways

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	One such way is to remove the exemption in 9VAC5-140-6040 B for units that generate electricity and heat "for the primary use of operation of the facility." CO_2 emissions from such facilities are no less potentially harmful than those from units that generate electricity for off-site use. Neither the RGGI Model Rule nor the environment make such a distinction and neither should DEQ.	to CO_2 reductions are important, the scope of the regulation is limited by executive order and state law. DEQ believes that the 5% DMME set-aside as well as other ongoing programs such as the Grid Transformation and Security Act of 2018 will provide additional incentives for energy efficiency and renewable energy.
158. U.S. Green Building Council (USGBC)	We agree with the proposal to link Virginia with RGGI, creating opportunities for cost and resource reduction. DEQ should reconsider the 2020 emissions baseline to ensure it meets the objective of capping emissions. The 33 million ton baseline is higher than the 2017 carbon emissions of 31.2 million tons, while energy productivity is increasing. These data suggest that a lower baseline will be more successful at driving reductions. Subsequent to DEQ projections, the General Assembly passed SB966, which could affect the baseline generation from fossil fuel power plants and their carbon emissions. We recommend increasing the 5% set aside. Such set-aside funds are critical to expand DMME programs, which for some sectors are the primary potential source of energy efficiency assistance given SCC limitations on efficiency programs. The majority of the set aside should directly benefit low and moderate income persons and areas. It is well established that disadvantaged populations are disproportionately impacted by air pollution. Moreover, programs aimed at increased efficiency in low and moderate households have a co-benefit of reducing their vulnerability to electricity rate increases. The regulation should provide for DMME to actively seek public input on use of the set aside including how the proposed use benefits target populations. DMME and DEQ should study and monitor potential impacts of the regulation on low and moderate income households, and periodically report findings to the public.	See comment 37 for a discussion of how the final base cap was determined. As discussed in the responses to comments 51 and 53, a 5% set-aside is appropriate in the early stages of the program. The specifics of how this set-aside will be managed will be determined by DMME. DEQ agrees that vulnerable communities must be addressed, and the program contains multiple opportunities to do so; see the response to comment 55 for more information.
159. Environmental and Regulatory Law Clinic, University of Virginia	Given the climate change-related threats facing our state--and considering the sources of pollution in Virginia that contribute directly to those threats--it is entirely appropriate and necessary for the board to initiate a regulatory program linking Virginia to RGGI. The Office of the Attorney General issued an official advisory opinion that analyzed the relevant statutory and administrative authority and concluded "that the State Air Pollution Control Board is legally authorized to regulate GHG emissions." Specifically, the Attorney General	Support for the proposal is appreciated. DEQ agrees that the board and department have the legal authority to develop the proposed regulation; see the response to comment 76 and, for example, comment 139.

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	noted that the board is authorized to regulate "air pollution" in the state, and observed that GHGs unquestionably fall within the definition of "air pollution." The Attorney General further concluded that because of its "broad statutory authority" under Va. Code § 10.1-1307(A), the board can exercise its regulatory authority through imposition of a "statewide cap on GHG emissions." The board also has the authority to maximize the efficiency and efficacy of a statewide cap by linking the program with RGGI. A state-led program is not preempted by the federal Clean Air Act, and is, in fact, specifically authorized by the Clean Air Act's state law savings clause (42 USC § 7416).	
160. Virginia Loggers Association (VLA)	Virginia's land cover is approximately 62% forested; in total, 15.8 million acres of forest with about 12.2 million acres are owned by private individuals, corporate and non-profit organizations. The majority of Virginia's forests are owned by individuals. Timber production is an important part of Virginia's economy and environment. The most recent study released by Governor McAuliffe shows that our forest products industry is the third largest contributor to Virginia's economy. The study revealed that almost $9.3 billion were added directly due to forests. Most of these forests are managed through the most current science enabling our forests to be productive for timber products and environmental benefits. Our forests are healthy and have increased in volume since inventory studies in 1940s. Virginia's forests are growing at a faster rate than harvest removal and mortality. The latest inventory shows that softwood annual growth to annual harvest is at a ratio of 2.2:1 and hardwood annual growth to annual harvest is 2.4:1. Our forests clean the air, sequester carbon, and improve water quality, wildlife habitat and recreational opportunities while producing products for many. Biomass is an important component of Virginia's energy policy. Many of our members invested millions of dollars in equipment to provide biomass to utilities across Virginia. We ask that any regulation recognize the investments made by our mills and logging businesses as well as the renewable natural qualities of forests. Some areas of the proposal would require our mills to invest further for monitoring biomass sources currently not required. We ask that you remove any additional requirements on biomass based sources. Continue to treat biomass as carbon neutral. Finally, we ask that DEQ maintain the current exemption of industrial boilers.	The commenter's concerns are appreciated. See the responses to comments 65 and 67 for further detail.
161. Virginia Energy Efficiency Council (VAEEC)	Energy efficiency is one of the most cost-effective tools to reduce energy consumption and dependence on fossil fuels, which in turn helps reduce carbon emissions. We applaud the inclusion of the 5% set aside for energy efficiency programs. Expanding energy efficiency provides Virginia residents with affordable energy bills and healthier, more comfortable homes. Last year, the American Council for an Energy-Efficient Economy	Support for the proposal is appreciated. DEQ agrees that energy efficiency is an essential component of reducing carbon emissions.

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	(ACEEE) listed Virginia as one of the most improved states in their 2017 State Energy Efficiency Scorecard. Moving from 33rd to 29th place underscores the work VAEEC, our members and our partners have done to advance energy efficiency policies and initiatives. But there is more that can be done to help Virginia break into the top 25. The passage of the Grid Transformation and Security Act paves the way for greater opportunities as well. These programs, in addition to the energy efficiency carve out will propel Virginia into the spotlight as a leader on energy efficiency.	
162. Virginia Coal and Energy Alliance (VCEA)	The benefits provided by the coal and coal-related industries should only be placed at risk if the justification for doing so is clear--that is, if the benefits from the burden placed on those industries are greater than the benefits they provide. Unfortunately, the justification provided for the CO_2 Trading Rule is anything but clear, as it unfairly compares an underestimated assessment of real-world local costs and economic impacts to a theoretical and now-rejected overestimate of global benefits. The justification proffered for the proposal contains a logical disconnect. The justification, which is based on the Report of the EO 57 Work Group, proceeds as follows: 1) climate change causes certain harms in Virginia (e.g., heavy storms, water shortages, and warmer temperatures); 2) therefore, reducing the GHG emissions in Virginia will reduce those harms and benefit Virginia. However, that assumes that reducing CO_2 emissions will address harms here. Contrary to that assumption, reducing emissions in Virginia will not have any impact on the earth's climate. Emissions from Virginia--indeed, the entire U.S.--are such a small portion of total global emissions that any reductions are almost certain to have no meaningful effect. The benefits alleged in support of the rule are based almost entirely on the "social cost of carbon," a metric crafted by a disbanded interagency working group under the Obama Administration. The Trump Administration has rejected that metric and directed that it no longer be used to justify federal regulations. The social cost of carbon analysis admits a critical point: "[e]ven if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change." That confirms that even those in favor of climate change policies must recognize that the reductions from any one country, much less any one region or state, will not change anything. The social cost of carbon itself is flawed because it relies on a highly speculative evaluation of global benefits, followed by an unfair comparison of those worldwide benefits to domestic costs incurred within the U.S. alone. Not only is that comparison unreasonable, since	The board is within its legal authority to address carbon pollution, which poses serious threats to the Commonwealth, through a cap-and-trade program; see the responses to comments 61 and 76.

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	worldwide benefits will always dwarf the costs incurred by a single nation, it also represents a break from the manner in which the impact of regulations has always been evaluated. U.S. costs have always been compared to U.S. benefits in order to provide a fair basis for the comparison, even for regulations that may benefit other countries. With the withdrawal of the social cost of carbon from federal policy, federal agencies must now return to that more reasonable and well-understood approach, and DEQ should do the same. The other justification relies on co-benefits associated with reductions in other pollutants, such as NO_X, SO_2, and particulate matter, which can directly impact human health (unlike CO_2). Co-benefits are not a reasonable basis upon which to justify the rule because the other pollutants are already well controlled by other Clean Air Act programs. Only a small portion of the state is nonattainment for ozone, due to its proximity to the D.C. metropolitan area, not emission sources located in Virginia, and sufficient rules are in place to address those air quality concerns. The rest of the state complies with EPA standards set to protect public health, and no further reductions are needed to maintain compliance with those standards. Claiming that reductions in other pollutants as a justification amounts to double-counting of air quality benefits already achieved and paid for. Although the rule would adopt a seemingly small 3% per year reduction, those compounding reductions will be more significant than the analysis suggests because it ignores and essentially prohibits growth in emissions that would otherwise occur. Whereas the supporting analysis claims a reduction of 30% (from 33-34 million tons in 2020 to 23-24 million tons in 2031), in effect it will actually require reductions of nearly 50% when compared to what would otherwise occur without the program (40-50 million tons). The result will be an increase in the cost of electricity of over 7% and present a significant burden on the coal and coal-related industries. The assertion that emission reductions of a similar magnitude under the proposed rule will have only a minimal impact on the economy of the state is difficult to believe. To combat concerns about the impacts to the economy and the cost of electricity, an analysis was prepared to focus on individual utility bills. The conclusion of that study suggests that the impact to ratepayers will be minimal. However, if that is in fact the case, it must mean the analysis assumes the regulation will not significantly affect the market; that is, the study must have assumed that the market itself would likely encourage nearly the same emission-reducing behavior based solely on the demand for and supply of energy. But if that is true, then	

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	the regulation would not be responsible for any of the emission reduction benefits claimed. The supporters of the proposal cannot have it both ways--either the program will require reductions that would not otherwise occur under existing market forces, in which case significant costs will be incurred in working against the market, or else the market would already encourage the reductions now sought via regulation, in which case the regulation is unnecessary. The General Assembly has already decided that the CO_2 Trading Rule is not in the best interest of Virginia and passed HB1270 to prohibit the very type of program contemplated by the proposal. The Governor vetoed the law and is charging ahead via executive fiat to establish such a program. This scenario is similar to what has transpired at the federal level. Despite the fact that Congress rejected efforts over more than a decade to enact a climate trading program, the Obama Administration decided to establish one through executive authority by issuing the Clean Power Plan, which was based on a few ambiguous and general sentences of the Clean Air Act. So too here, given that the authority claimed by the Attorney General as the basis of the regulation is merely the general authority "to promulgate regulations, including emergency regulations, abating, controlling and prohibiting air pollution." Legislatures grant bold powers in clear terms, and executive agencies should not try to invent bold powers out of ambiguous language. This principle should have equal effect at the federal and state levels, since both governments are based on the same fundamental principle: the legislative branch makes the laws, and the executive branch wields only the authority granted to it by the legislature. Nothing in the Clean Air Act clearly authorized EPA to issue the Clean Power Plan, and that is likely why the Supreme Court stayed it. Those same concerns appear relevant to the proposal, but perhaps to an even greater extent. Unlike Congress, which has been unable to pass a climate change bill, the Virginia legislature did pass one, but one that prohibits what the executive branch is now trying to do on its own. That executive action is only legal if the legislature has already authorized such a program in a previous statute, but it did no such thing. Rather, the statute claimed to be the underlying authority for the regulation is the same type of highly general authority found in the Clean Air Act. Such general grants of authority to issue regulations to address air pollution provide no clear authority for the policy shift the Governor seeks to implement, which represents a decision of economic and political significance. The Governor should not invent that authority, particularly in light of the statement to the	

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	contrary recently made by the legislature.	
163. Virginia Conservation Network (VCN); Virginia League of Conservation Voters (VaLCV)	VCN and VaLCV encourage DEQ to select an emissions baseline that best achieves the goals of reducing statewide carbon pollution. This baseline should be the most stringent, lowest possible science-based figure supported by modeling. For additional details on the stringency of the carbon program, as well as modeling results, please see the technical comments from our partners at NRDC, Sierra Club, and SELC. We are thankful that the regulation covers both current and future fossil fuel-fired units. We were glad to see the inclusion of co-firing units that include at least one fossil fuel-fired unit; however, it should include all electric power facilitates that emit carbon, regardless of fuel type. Specifically, the regulation should apply to any unit at or above 25 MW that burns biomass. For additional details on biomass, please refer to the comments submitted by the National Wildlife Federation. We appreciate and support the 5% set aside of allowances to assist DMME in efforts to address carbon emissions. We encourage DEQ to consider increasing this to 10%, with the understanding the benefits of increasing this figure should be greater than the costs associated for covered sources.	Support for the proposal is appreciated. The commenters' specific issues are discussed elsewhere. See the response to comment 37 for a discussion of the baseline emissions cap, comment 67 for a discussion of biomass, and comment 51 for set-asides.
164. Veolia North America	We commend DEQ for exempting certain industrial combined heat and power (CHP) units from the regulation. CHP plays an important role in the state's clean energy and resilience goals and merits additional support. CHP units deserve special treatment as they have been designed to optimize the efficient production of heat and power for industrial facilities. While the exemption sets a positive policy direction, it needs to be modified to ensure that it rightfully applies to all relevant industrial CHP units. The exemption only contemplates the CHP unit being owned by the industrial end user rather than by a third party. This is counter to the trend of more industrial end users moving to outsource ownership, operation and maintenance of their central utilities. In this model, the industrial company can focus on executing its core business while relying on a specialized third party whose core business is owning, operating and maintaining industrial utilities on a safe, cost effective and reliable basis. As such, the ownership status of the CHP unit is not relevant to the key issue: does the CHP exist to primarily provide service to the industrial end user? Relying on "primary use" intent, rather than regulating CHP ownership, would better focus the regulation on GHG reduction while also allowing the industrial and manufacturing sector in Virginia greater flexibility to achieve this regulatory purpose. We suggest that DEQ remove the phrase "owned by an individual facility and" from the industrial exemption.	DEQ agrees that the phrase "owned by an individual facility" should be removed. Under the RGGI Model Rule, facilities that provide less than 10% of their power output to the grid are exempted from compliance obligations; the proposal has been revised accordingly. The regulation has also been amended in order to address CHPs with more clarity; see the response to comment 74.

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	To qualify for the exemption the useful energy output (thermal and electric) of a CHP needs to be "for the primary use of operation of the facility"; however, "primary use" is not defined. We urge DEQ to clarify the meaning of primary use by considering the magnitude of a CHP's generation of useful thermal energy (UTE) relative to useful electrical energy and by the application of an appropriate CHP efficiency standard. One of CHP's benefits is that it can produce both UTE and electricity from a single fuel source. It is not uncommon for a host to have a high need for thermal energy and a low need for electricity. In order to efficiently service an industrial facility's steam load, a CHP unit may need to be designed in a way that exports a substantial portion of its electric power to the grid. The need to export to the grid is important in circumstances where utility franchise rights prevent third party CHP facilities from delivering power to industrial sites. The integrity of the industrial exemption will be maintained if the focus is on UTE. The industrial exemption can be strengthened by adding an efficiency requirement. This will provide CHP units incentive to maximize requirements of its host rather than exports to the electrical grid. The Virginia legislature recognized the need to encourage CHP systems in the Grid Transformation and Security Act, which requires that the total efficiency, including the use of thermal energy, for eligible CHP facilities meet or exceed 65% (Lower Heating Value) annually. A similar requirement for the industrial exemption would ensure consistency. Veolia recognizes the concept of tying the industrial exemption to a unit "voluntarily restricting its electrical output to the grid (through permit condition) to less than or equal to 10% of the units annual gross generation of the unit." This approach too narrowly restricts what industrial facilities can do with electric generation and conflicts with the broader intent of primary use. Recognizing that not all CHP units will qualify for the exemption, but acknowledging that these units still deliver valuable GHG reductions, we recommend a UTE exemption. CHP units over 25 MW that do not qualify for the industrial exemption, must procure CO_2 allowances for all emissions, including those associated with UTE (i.e., microgrid, district energy, process steam, hot water). Absent production at a CHP unit, the UTE would be produced by conventional methods, such as standalone boilers. These conventional methods of generating UTE are not subject to the regulation, and thermal generation-only unit owners are not required to procure CO_2 emissions allowances. If CHP units over 25 MW are required to procure CO_2 allowances for all emissions, including those associated with UTE, it will create a counterincentive and potentially increase GHG emissions. To avoid this, the regulation should exclude	

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	CO_2 emissions associated with UTE from a CHP unit. When determining the RGGI emissions allowance compliance obligation for a CHP unit, emissions associated with UTE of that unit should be deducted from the unit's total emissions. There is precedent for adopting a UTE exemption based on existing UTEs in federal and state agency carbon trading programs. EPA's Clean Power Plan included a UTE exemption for CHPs. Several RGGI states have adopted a UTE exemption in different forms. For example, Massachusetts has an exemption for any CHP CO_2 budget source that allows the CHP unit to subtract from its total CO_2 emissions the amount of CO_2 emissions attributable to the production of useful net thermal energy. The Massachusetts regulation acknowledges that, absent production in a cogeneration unit, UTE would be produced in a standalone boiler. These boilers do not have a compliance obligation under any RGGI program, and have no mandated efficiency targets. With this UTE exemption structure, a generation unit has an incentive to maximize useful outlets for its waste heat. The Massachusetts UTE exemption is the most effective and straightforward approach, and we encourage DEQ to adopt a similar exemption. Under this approach, emissions associated with UTE are calculated on a formulaic basis and are subtracted from a CHP's compliance obligation. Note that the exemption is only for emissions associated with UTE. CHP units that fall under RGGI will still be required to procure allowances for any emissions not associated with UTE. However, with the UTE exemption, CHP will be on equal footing with conventional generators whose only output is electricity. By reducing a unit's environmental compliance costs, the UTE exemption removes a potential barrier for investment in CHP. The ability for a CHP unit to exclude emissions from UTE from its compliance obligation will become even more important in the future. With the RGGI emissions cap declining each year, it is likely that RGGI allowance prices will continue to increase. As RGGI allowance prices increase, they will drive up compliance costs and increase the economic disincentive faced by CHP units. Without a UTE exemption, there will be a similar adverse effect on existing facilities that have the option of using CHP to generate UTE or using stand-alone boilers. As the costs of CHP rise due to higher RGGI compliance costs, the dispatch of equipment may change resulting in more standalone generation of UTE and higher regional carbon emissions.	
165. Virginia Forest Products Association	VFPA does not support joining RGGI because it would raise electric power and natural gas rates. This is a grave concern to our small businesses, as even small sawmills without kilns have electric bills that average	The commenter's concerns are recognized. See the response to comment 67 for a discussion of

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(VFPA)	$6,000/ month. Kiln dryers add substantially to that monthly bill, and larger mills with kilns have monthly electric bills in excess of $20,000. Our primary competition is in North Carolina, not the RGGI states, and an increase in our utility rates will put us at a competitive disadvantage. A more critical concern is the potential impact if emissions from the combustion of biomass are treated as GHG. Lumber production produces manufacturing residuals in the form of mulch, sawdust and chips. Even a small mill can produce 25 tons per day of dust and chips each. There is a ready supply of wood residuals from sawmills in the state that require a variety of markets. Having ready outlets to dispose of residuals is critical; we can't saw lumber if we can't move residuals off the yard. We are extremely concerned that disincentivizing the burning of biomass for power could negatively impact sawmills, loggers, and landowners by reducing or eliminating that market. The boiler fuel outlet for residuals is key to our survival; if it is treated the same as any other fossil fuel but costs more for the utility to procure, they will no doubt select the less expensive option since the benefit is removed. The science on the carbon neutrality of woody biomass is solid, and VFPA supports the comments and supporting data submitted by AF&PA and AWC. Harvesting wood for energy does not contribute to net carbon emissions in cases where the harvesting, measured over a broad region, is offset by wood growth and associated carbon sequestration. The most recent data from the U.S. Forest Service indicate that timberlands in Virginia, the U.S. south, and the entire country have highly positive net growth/removal ratios. The Virginia Department of Forestry's Reforestation of Timberlands Program has reforested 1.8 million acres since the program's inception. This program provides cost-share assistance to landowners in planting, replanting, and managing forest acreage. Since 1970, landowners and industry have reforested 4 million total acres in Virginia. U.S. Forest Service data from 2016 shows growth/removal ratios for timberlands in Virginia, the U.S. South, and the nation as a whole are 2.29, 1.76, and 1.94, respectively. In other words, Virginia's timberlands are growing more than twice as much wood as harvested, while timberlands in the south grow 76% more than is harvested. When environmental organizations cite the cutting of trees by the forest product industry as inherently negative, they ignore the cyclical nature of managed timberlands. The most significant pressure on forests is permanent conversion to non-forest uses, such as development. However, strong markets for wood are the	biomass. The industrial exemption will be maintained; see the response to comment 65.

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	most powerful incentive to keep forests in production. From the sawmills' perspective, markets for the finished product and residuals on the back end are as important as the supply of trees on the front end. A balance in supply and demand will keep businesses and forests healthy. A 2014 article in the Journal of Forestry noted that if mill residues were not used for energy, most of these materials would be wastes that would either be incinerated, in which case the atmosphere would see the same CO_2 emissions as if the material had been burned for energy, or disposed of in landfills. The article further states that the net impact of burning for energy on biogenic emissions in terms of warming can be less than zero because of the warming potency of methane generated in landfills. In the past, many sawmills burned wastes on site in large incinerators as there were not enough markets for the materials. Residuals build up quickly in the process of sawing lumber. If today's mills lose too many markets for residuals, the financial burdens of incinerating on site or the costs of landfill tipping fees for disposal of thousands of tons of residuals would force many sawmills to cease operation. From economic and environmental perspectives, treating biomass as carbon neutral in energy production makes dollars and sense. VFPA respectfully requests that Virginia not join RGGI. However, if the state does join RGGI, we ask that biogenic carbon emissions be recognized as carbon neutral regardless of whether other fuels also are co-fired; and that the exemption for industrial boilers be retained. This regulation is designed to address utility electrical generation only; the exemption for on-site industrial generation should remain in the final rule. This is also important because of potential market impacts to saw mills if large industrial users lose this incentive for firing with biomass.	
166. Virginia Chamber of Commerce	The Virginia Chamber recently released Blueprint Virginia 2025, a plan that outlines the business community's priorities and recommendations for making Virginia the best state for business. Throughout our stakeholder engagement process, which included over 6,000 members of the business community, we heard from business leaders on how important affordable, reliable energy is to Virginia's economic competitiveness. Energy affordability was identified by 55% of Blueprint survey respondents as their top energy concern. Unfortunately, RGGI is not consistent with the Chamber and Governor's goal to make Virginia the best state for business, as it will increase electricity rates and make Virginia less competitive. The Chamber supports policies that promote energy independence and the development of a robust supply of energy. We advocate an energy portfolio that promotes	The regulation is designed to impose regulatory requirements only as strictly necessary in order to participate in the highly successful RGGI program without affecting economic competitiveness. As discussed elsewhere, the regulation retains exemptions for certain industrial and biomass facilities, and provides for free allowances. Note that RGGI's "CO_2 Emissions from Electric Generation and Imports in the Regional Greenhouse Gas Initiative:

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	economic development and job growth through traditional and alternative energy investments, and believe that environmental protection and energy independence are compatible goals. It is expected that energy consumption in Virginia will continue to rise, reflecting the increase in population, economic growth, and electrification of the transportation system . To ensure a growing economy, we must develop strategies for an ample supply of affordable and reliable energy. Part of achieving our goal of being the best state for business is to protect our competitive rates for electricity. Business climate rankings factor energy and utility costs into their "cost of doing business index," which can influence our overall position. Favorable energy costs are important in order to remain economically competitive. By joining RGGI or initiating a cap-and-trade program, energy costs for employers and residents will rise. According to a recent Cato Institute study, the RGGI program creates higher electric bills and shifts jobs to non-RGGI states. According to the U.S. Chamber of Commerce's Global Energy Institute, the average electricity rate of the RGGI states is 39% higher than the national average. By contrast, Virginia has the nation's 19th lowest average electricity rates, 12% cheaper than the national average. Virginia's affordable rate provides the state a competitive advantage when it comes to attracting manufacturing and other energy intensive industries, such as high-tech data centers. Any program that would increase electricity rates--such as RGGI--would reduce this competitive advantage. Further exacerbating the negative effects to our economic competitiveness is the problem of carbon leakage. The state's own modeling illustrates the potential impacts of leakage that could result from partnering with RGGI. Participating in RGGI is likely to increase electricity imports into the state. Because many of the neighboring states in the PJM electricity region do not participate in RGGI but are powered by resources with a higher carbon intensity, shifting generation from Virginia into these states may result in an increase in emissions. Under this scenario, Virginia suffers the economic consequences of joining RGGI while achieving no progress toward its environmental goals. While RGGI backers cite the program as a successful cap and trade model, there is little evidence to suggest that the program has been effective at reducing emissions. The Agency Background Document states that a primary advantage to the public of joining RGGI would be "health and welfare benefits associated with controlling carbon pollution." In the Economic Impact Analysis, DPB estimates that the benefits of the state's effort to reduce CO_2 would be between $42-50 million	2015 Monitoring Report" demonstrates that carbon emissions in the RGGI are decreasing in intensity; essentially, carbon intensity is being decoupled from electricity generation. See, for example, the response to comment 61. The regulation has been carefully designed to be least restrictive to Virginia business, does not hurt the state's economic competitiveness, retains an industrial exemption, exempts certain forms of biomass, and provides for free allowances.

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	annually between 2021-30. Note that the social costs of carbon are controversial and uncertain, based on long-term assumptions about the damages that may result from increased carbon emissions. As DPB notes, the $42-50 million of CO_2 reduction benefits are global, not Virginia-specific. DPB states that it is "not possible to quantify the Virginia-specific benefits," but this is not accurate; a number of analysts employ the use of "equity weighting" as a means to compare impacts to different regions. EPA and other federal agencies now use this method to develop domestic-only estimates of the social cost of carbon (SC-CO_2). We can estimate the benefits to Virginia similarly. When applied to calculate a Virginia-specific benefit, the mid-range of OPB's estimate of $46 million in SC-$CO_2$ benefits is reduced to a mere $250,000. This is because, at the mid-range of the program (2025), U.S. GDP is projected to be 20.5% of global GDP, and Virginia GDP is 2.7% of U.S. GDP ($46 million X .205 X .027 = $250,000). Divided by Virginia's estimated reductions of 1 million tons per year, this equates to a benefit to Virginia of 25 cents per ton of CO_2 reduction. Viewed in this Virginia-specific manner, it is difficult to see how the program's costs justify its projected benefits. If Virginia does move forward with this proposal, we ask that the regulation be least restrictive to Virginia businesses, does not hurt the state's economic competitiveness, retains an industrial exemption, treats biomass as carbon neutral, and provides for free allowances as opposed to an auction.	
167. Virginia Housing Alliance	We recommend that the 5% allocation be used for energy efficiency services for renters in multifamily housing. Energy efficiency in multifamily housing can help Virginia meet the state's voluntary goal to reduce electricity consumption for commercial and residential buildings by an amount equal to 10% of 2006 consumption by 2020 in addition to reducing carbon pollution for compliance with ED 11. If used for energy efficiency, the allocation will reduce energy use and carbon emissions, reduce the need for added electric generation, improve public health and environmental quality, boost job creation, and preserve affordable housing. We support Virginia's entrance into RGGI and hope that energy efficiency will be regarded as a necessary and cost effective tool for Virginia's transition to a clean energy future.	DEQ recognizes the value of energy efficiency in multifamily housing as an important tool in reducing carbon pollution; however, the structure of the set-aside and to what programs the allowances will be allocated will be under the purview of DMME, which is the appropriate state agency to implement renewable energy and energy efficiency programs. DMME may, at the appropriate time and in accordance with its regulations and policies, implement a set-aside for energy efficiency in multifamily housing. See the response to comment 51 for more information.
168.	While WestRock generates a considerable portion of its	The commenters' concerns

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WestRock; Covington, Hopewell and West Point mills	own energy at our largest manufacturing facilities, having access to sufficient quantities of utility-provided electricity at reasonable prices is critical for reliability and economic reasons. Some of our mills are entirely energy independent, but others must purchase a significant portion of their electricity from the grid. Our converting operations in Virginia rely heavily on purchased electricity. West Rock spends over $100 million annually on energy in Virginia. As a large electricity consumer in the state that also uses considerable amounts of biomass for energy generation, WestRock will be substantially affected by the proposed rule. We are a member of AF&PA and NCASI, and support the comments submitted by these organizations.	are acknowledged. See the responses to comments 65 and 67.
169. WestRock; Covington, Hopewell and West Point mills	The proposed rule states that if biomass comprises 90% or more of the total heat input to an electric generating unit, the unit and its biogenic CO_2 emissions are not regulated. However, if biomass comprises less than 90% of the heat input to an electric generating unit, biogenic CO_2 emissions are regulated and allowances must be remitted for CO_2 emissions from that unit. This treatment of biogenic CO_2 emissions is arbitrary and capricious. Biomass carbon neutrality does not change based on the amount of biomass fired, nor does it change when biomass is co-fired with other fuels. The treatment of CO_2 emissions from the combustion of biomass represents a significant departure from current U.S. federal law, internationally-accepted carbon accounting protocols, and the RGGI model rule. The carbon benefits of biomass are best understood in the context of the entire carbon cycle. As forests grow, CO_2 is removed from the atmosphere through photosynthesis. This CO_2 is converted into organic carbon and stored in woody biomass. Trees release the stored carbon when they die and decay or are combusted. As the biomass releases carbon in the form of CO_2, the carbon cycle is completed. The carbon in biomass will return to the atmosphere regardless of whether it is burned to produce energy, allowed to biodegrade, or lost in a forest fire. Overall, the flow of forest CO_2 is carbon positive when forests are sustainably managed and the forest system remains a net sink of CO_2 from the atmosphere. Carbon stock accounting shows that carbon storage in U.S. forests is positive and currently offsets about 12% of total U.S. CO_2 emissions annually. In Virginia, the growth of the state's forests offsets about 14% of the total annual CO_2 emissions. In 2014, the ratio of the forest's annual growth compared to harvest volume was more than 2.1:1 for softwood and 2.2:1 for hardwood. This amounts to an annual surplus of 8.4 million tons of softwood and 14 million tons of hardwood. Biomass residuals from the manufacturing process are used as the primary fuel to power paper mills. If these residuals are landfilled	The commenters' discussion of biomass and forest lands is appreciated. As discussed in the response to comment 67, certain biomass facilities will not be subject to the program. RGGI states allow CO_2 budget units that co-fire eligible biomass to deduct CO_2 emissions attributable to the burning of eligible biomass from their compliance obligation in accordance with the RGGI model rule. DEQ has amended the proposal to indicate that a CO_2 allowance is a limited authorization to emit up to one ton of CO_2 that has been generated as a result of combusting fossil fuel. The regulation has also been amended in order to address CHPs with more clarity; see the response to comment 74.

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	instead of being used as fuel, they would release GHG to the atmosphere, increasing emissions of methane, which has a global warming potential 25 times higher than CO_2. In addition to utilizing residuals, more than 97% of electricity produced by pulp and paper mills is generated through the use of highly efficient CHP. CHP provides energy efficiencies in the range of 50% to 80% at forest products mills. In the 2018 Consolidated Appropriations Act, Congress directs EPA, DOE, and USDA to ensure that federal policy relating to forest bioenergy is consistent across all federal agencies and recognizes the benefits of forest biomass for energy, conservation, and responsible forest management. Several states also have laws recognizing the carbon neutrality of biomass, including Washington and California, and RGGI itself states: "CO_2 emissions from eligible biomass reduce the total CO_2 allowance compliance obligation of the emitting unit. Emissions from eligible biomass should be deducted from the regional total of CO_2 emissions for purposes of calculating emissions from CO_2 budget sources subject to RGGI CO_2 allowance compliance obligations." Biomass CO_2 emissions are either not reported or reported separately or for information purposes in many domestic and international GHG regulations and protocols, including the World Resources Institute/World Business Council for Sustainable Development, and the U.N. Intergovernmental Panel on Climate Change. The board seeks comment on the potential impacts of the rule on forest land preservation. Studies show that recognizing the carbon neutrality of biomass will not negatively impact forest inventories due to the availability of lower cost renewable fuel options. In one such study, the Energy Information Administration (EIA) modeled the potential impact of the Clean Power Plan on the use of biomass for energy generation. In all EIA scenarios, co-firing biomass was projected to decrease under the CPP. In the long term, biomass is not a strategic, large scale, cost-effective alternative to fossil fuel. EIA modeling shows that standalone biomass energy plants are not considered cost competitive. In a recent article, EIA discusses the costs of various electricity generation technologies. The article shows that by 2022, onshore wind will have a lower levelized cost than biomass in all U.S. regions, and solar photovoltaic will be less costly than biomass in some regions. Subsidies will tend to make solar and wind even more competitive. Studies also show that demand for biomass helps prevent forest land from being converted to other uses. A Department of State report shows that demand for forest products will increase forest carbon stocks through landowner investment. Markets for biomass and other	

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	forest products stimulate forestland ownership and encourage investment in healthy forest management practices. Farmers and forest owners, as with all business owners, respond to markets and produce more when demand increases. The most significant deforestation threat in the U.S. is forest conversion. Current forest inventories and the net sink are subject to the protections of a state law that caps the amount of biomass that Virginia utilities may use for energy under the Renewable Portfolio Standards program. Virginia Code 23 VAC 56-585.2 states: "Utilities participating in such program shall collectively, either through the installation of new generating facilities, through retrofit of existing facilities or through purchases of electricity from new facilities located in Virginia, use or cause to be used no more than a total of 1.5 million tons per year of green wood chips, bark, sawdust, a tree or any portion of a tree which is used or can be used for lumber and pulp manufacturing by facilities located in Virginia, towards meeting RPS goals, excluding such fuel used at electric generating facilities using wood as fuel prior to January 1, 2007." To the extent the regulation requires the monitoring and reporting of GHG emissions, WestRock urges the board to allow covered facilities to separately calculate and report biogenic and fossil fuel CO_2 emissions as is currently allowed under various established GHG reporting protocols.	
170. WestRock; Covington, Hopewell and West Point mills	The proposal excludes industrial sources from coverage, and WestRock supports this. EO 57 and ED 11, the authorities upon which the proposal is based, limit the scope of the rulemaking to the electric power generation sector. ED 11 states that the DEQ Director shall, in coordination with the Secretary of Natural Resources, "develop a proposed regulation for the State Air Pollution Control Board's consideration to abate, control, or limit CO_2 from electric power facilities." EO 57 is similar. These directives manifest a clear intention to exclude industrial sources. Neither the Economic Impact Assessment, the proposed emissions cap, nor the allowance allocation and price modeling conducted by DEQ and its consultants included emissions from industrial sources. Similarly, the charge given to the Regulatory Advisory Panel did not include industrial sources. Inclusion of industrial sources is unnecessary and cannot be justified on a cost/benefit basis. According to EIA, industrial sources in Virginia emit 11.6 million tons of CO_2 and comprise 11 % of emissions in the state compared to 30% by the electric utility sector, and 43% by the transportation sector. EPA data indicates that GHG emissions from Virginia's industrial sector have decreased 31% since 2000. On the other hand, including	The industrial exemption is discussed in the response to comment 65. Consistent with the RGGI model rule, the proposal has been amended to remove the phrase "owned by an individual facility" in order to ensure that facilities are not be penalized for employing more energy efficient and less polluting generating systems that may be operated by a third party on behalf of the primary facility. The regulation has been amended in order to address CHPs with more clarity; see the response to comment 74.

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	industrial sources would cost Virginia businesses $18.9 to $41 million. The exemption is consistent with the intent and scope of the existing RGGI program, which does not regulate emissions from industrial sources. In fact, except for the purposes of reporting, there do not appear to be any industrial sources listed in the RGGI CO_2 Allowance Tracking System's list of regulated sources. Including industrial sources would not only put the state at odds with other RGGI participating states, it would put Virginia industry at a competitive disadvantage. RGGI allowance prices are based on the marginal cost to reduce GHG emissions from the utility sector and do not reflect the ability for industrial sources to reduce emissions. Subjecting industrial facilities to allowance markets that are not reflective of their own marginal costs would be unfair and poor public policy. The exemption should be clarified by adding the definition of electric generating unit found in VA Code 10.1-1328 to distinguish between industrial and electric power facilities as it relates to the term "primary use." Steam and electricity generation at an industrial facility is almost without exception for the primary use of the facility. However, actual flows of electricity may reflect buy-sell contractual arrangements or engineering constraints. It is not uncommon for an industrial CHP facility generating electricity to meet the primary needs of its operation, to export all that it generates and purchase 100% of its electricity needs. For the purposes of determining "primary use of the operation," it is imperative that net electricity flows be considered to ensure that industrial generation is not unintentionally included simply by virtue of contractual arrangements or the nature of its physical connection to the grid. Although WestRock owns its onsite CHP operations, in some cases CHP operations may not be owned by the facility where they are located due to financing arrangements. To promote the use of CHP, DEQ should remove the requirement that fossil fuel power generating unit located at an industrial facility also be owned by the facility.	
171. WestRock; Covington, Hopewell and West Point mills	If the rule is promulgated, electricity costs in Virginia will rise. DEQ's economic analysis suggests that the impact of this cost increase will be no more 1.1% by 2031. However, other studies suggest that the increase in electricity prices may be far more significant. According to a report cited by VMA in its comments, electricity costs in the RGGI states rose by 4.6% between 2007-15, which was 64% higher than the increase in electricity costs in a sampling of 5 non-RGGI states. Increases in the cost of electricity for large consumers like WestRock may make Virginia a less attractive place for investment than neighboring states without carbon reduction mandates. Increases in electricity costs may lead to the	As discussed in the response to comment 91 and elsewhere, while generation shifts are common in a regional electricity market, there are many reasons to believe that the trading program is unlikely to cause generation shifts and, if it does cause some shifting, reasons to doubt those shifts will lead to emissions

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	use of more imported electricity from areas without CO_2 reduction mandates, which may undermine any environmental improvements from the proposal. We encourage the retention of free allowances and a cap of 34 million tons (or higher), both of which may help moderate the cost of the program. WestRock, the industrial sector, and the utility sector have significantly reduced their GHG emissions through capital investment in more energy efficient energy generation, production processes and the use of lower carbon fuels. This trend is expected to continue both through ongoing capital investment and as part of the commitments made by WestRock and others to meet voluntary GHG reduction goals.	leakage. The RGGI states have not found leakage to be a problem for the program in 10 years the program has operated. The program is quite modest relative to other cost factors in the regional electricity markets and any shifting is likely to substitute one gas plant for another, meaning the emissions consequences are not significant. The Virginia program includes an allowance allocation approach that will directly counteract any leakage pressure, because in-state generators will be rewarded with valuable allowances when they operate, while generators outside Virginia will not be so rewarded. In addition, vertically integrated utilities can self-schedule their generators to run knowing that they will receive allowances at no cost under the program, offsetting any compliance cost the generators might otherwise incur. For all of these reasons, leakage is not expected to present a problem. DEQ expects to monitor this issue as RGGI has done and will address the issue should it be necessary in a future program review. The cap will be 28 million tons (see comment 37), and the allowances will be provided at no cost.
172. Wild Virginia	Article 1 states that the trading program is "designed to reduce anthropogenic emissions of CO_2." However, if the rule applies only to fossil fuels and not other carbon emitting generation, it cannot achieve its goal. According to EPA, total CO_2 emissions from the burning of woody biomass in the electric power sector was 22,900,000 tons in 2016. The proposal applies only to fossil fuels, not biomass or municipal waste. This would allow Virginia's wood burners to continue polluting without regulation and reward coal-fired power plants that switch	See the response to comment 67 for further discussion of biomass.

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	to burning wood from forests. Burning wood to produce electricity increases CO_2 and particulate emissions compared with fossil fuels. Besides undermining efforts to expand clean energy sources, burning forests for energy destroys forest ecosystems which are a defense against climate change. The regulation could encourage more biomass generators to be implemented. Westrock operates the world's largest solid bleached sulfate board paper mill in Covington. It is powered by a biomass boiler and a 75 MW steam turbine generator. In 2016, this facility emitted 2,020,927 tons of CO_2. NOVEC's Halifax plant generates 50 MW of energy, sourcing wood and whole trees from a 75-mile radius while claiming that its energy is carbon neutral. The 585 MW Virginia City Hybrid Energy Center co-fires coal with 20% wood. It emitted 3,101,460 tons of CO_2 in 2016. Dominion's 83 MW Pittsylvania station unloads an estimated 3,300 tons of wood daily. Dominion's Altavista plant turns pellets, chips, slash, or whole trees into 51 MW of energy, and in 2015 released 393,183 tons of CO_2. Dominion received regional renewable energy and federal incentives by converting 3 coal-fired plants to burn wood. In 2016, Dominion's conversion from coal to wood in Hopewell and Southampton has more than doubled carbon emissions from those facilities. In 2016, these facilities together emitted 885,063 tons of CO_2. Wood-burning power plants pump about 50% more carbon pollution per megawatt-hour into the atmosphere than coal plants. Combined, Virginia's wood-pellet manufacturing and wood-burning power plants send more than 5 million tons of CO_2 mostly from forest wood into the atmosphere each year. Power plant carbon pollution warms the climate just as effectively whether it comes from burning trees or fossil fuels, which highlights the critical fallacy of treating biomass power plants as "carbon-neutral." Virginia's plan isn't unique in ignoring emissions from wood-burning plants. The problem also exists with California's cap-and-trade plan, RGGI, and the E.U. trading program. Much of the emissions reductions claimed by the E.U. come from converting coal plants to burn wood pellets imported from the U.S. and Canada, then assuming the emissions will be offset by future tree growth. As a result, millions of tons of trees are harvested, pelletized and shipped overseas as fuel. The pellet industry is responsible for logging tens of thousands of forest acres each year. Burning municipal waste is also a large emitter of carbon. For example, the Hampton/NASA Steam Plant released 24,653 tons of carbon in 2016. We request that the regulation include carbon accounting	

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	for all large scale industrial emitters of atmospheric carbon, including biomass and solid waste burning energy producing facilities.	
173. World Wildlife Fund on behalf of Eastern Mennonite University Creation Care Council, Emory and Henry College, Hollins University, Lynchburg College, Randolph College, Washington and Lee University	As academic institutions, we understand the importance of reducing carbon pollution and the opportunities provided by clean energy. Colleges and universities are committing to reduce their carbon footprint and increase the use of clean energy, because it is the right thing to do and because it makes business sense. Eleven Virginia colleges and universities have committed to becoming fully carbon neutral no later than 2050. Clean energy allows us to save money, hedge against volatile fossil fuel prices, and lock in predictable energy prices. Market-based carbon-reduction initiatives have been highly effective in reducing electric-sector GHG emissions while fostering economic growth and spurring innovation in clean energy technology. We recognize the importance of strong, stable policies that aim to account for the cost of carbon emissions and provide market certainty, allowing colleges and universities to plan and invest for the future. In Virginia, the proposed carbon reduction program would incentivize investments in renewable energy and energy efficiency--creating good-paying jobs for our graduates and others across the state, attracting world-class students, faculty, and staff to our institutions, improving the well-being of our communities, and making Virginia an even more attractive place to live and work. The regulation will be beneficial for Virginia's economy as a whole. This smart initiative will grow Virginia's nascent clean energy industry, help the state stay competitive, reduce energy costs, and improve the resiliency of our electrical grid. It will help utilities transition to a cleaner electric grid while offering more options for higher education institutions, businesses, and residents to access cost-competitive renewable energy. Our institutions value an affordable, reliable, and clean electricity supply, and we commend the Northam Administration for its commitment to lead Virginia in the transition to a low-carbon economy. We appreciate the many months of compiled research and feedback the previous administration gathered from energy stakeholders to develop forward-thinking carbon reduction measures. Steady carbon reduction policies will signal that Virginia is committed to embracing clean energy innovation, allowing institutions like ours to thrive for years to come.	Support for the proposal is appreciated. DEQ agrees that the program will benefit the state's economy while reducing carbon pollution and its negative impacts on health and welfare.

Public Participation

Please include a statement that in addition to any other comments on the regulatory change, the agency is seeking comments on the costs and benefits of the regulatory change and the impacts of the regulated community. Also, indicate whether a public hearing will be held to receive comments.

In addition to any other comments on the regulatory proposal, the board is seeking comment on the costs and benefits of the revisions to the proposal, the potential impacts of the revisions to the proposal and any impacts of the revisions on farm and forest land preservation. Also, the board is seeking information on impacts of the revisions on small businesses as defined in § 2.2-4007.1 of the Code of Virginia. Information may include 1) projected reporting, recordkeeping and other administrative costs, 2) probable effect of the regulation on affected small businesses, and 3) description of less intrusive or costly alternative methods of achieving the purpose of the regulation.

The department is seeking comment on whether 9VAC5-140-6050 C 1 should be amended to specify that the total CO_2 emissions related to CO_2 allowances only includes emissions resulting from the combustion of fossil fuel. Specifically, the department seeks input as to whether such an amendment to the standard requirements would provide clarity and consistency with the fossil fuel-focus of EO 11, or if such an amendment would be redundant because "fossil fuel-fired" is already defined in 9VAC5-140-6020 C and referenced in 9VAC5-140-6040 A, and is not needed to assure limitation of the rule to fossil fuel-fired facilities.

The Governor encourage comments is how to treat CO_2 emissions from CO_2 budget units that do not combust fossil fuels exclusively.

Anyone wishing to submit written comments for the public comment file may do so by mail, email or fax to the agency contact: Karen G. Sabasteanski, Policy Analyst, Office of Regulatory Affairs, Department of Environmental Quality, P.O. Box 1105, Richmond, Virginia, 23218 (email karen.sabasteanski@deq.virginia.gov, fax 804-698-4510). Comments may also be submitted through the Public Forum feature of the Virginia Regulatory Town Hall web site at: http://www.townhall.virginia.gov. Written comments must include the name and address of the commenter. In order to be considered, comments must be received by 11:59 pm on the last day of the public comment period.

A public hearing will not be held following the publication of this stage of this regulatory action.

Detail of Changes

Please list all regulatory changes and the consequences of the changes. Explain the new requirements and what they mean rather than merely quoting the text of the regulation.

If the regulatory change will be a new chapter, describe the intent of the language and the expected impact. Please describe the difference between existing regulation(s) and/or agency practice(s) and what is being proposed in this regulatory change. Delete inapplicable tables.

If the regulatory change is intended to replace an emergency regulation, please follow the instructions in the text following the three chart templates below. Please include citations to the specific section(s) of the regulation that are changing.

Detail of changes made since the previous (original proposal) stage:

Current chapter-section number	New chapter-section number, if applicable	New requirement from previous stage	Updated new requirement since previous stage	Change, intent, rationale, and likely impact of updated requirements

None	Article 1	CO_2 Budget Trading Program General Provisions	--	--
None	9VAC5-140-6010	Purpose	Amended to state that the rule is to be effected in a manner protective of health and the environment.	Needed for clarity.
None	9VAC5-140-6020 C	Definition of "allocate"	Amended to reflect relocation and renumbering of DMME provisions (see 9VAC5-140-6211).	Needed for clarity.
None	9VAC5-140-6020 C	Definition of "allowance"	Deleted.	Replaced with the new term "CO_2 allowance." Needed to ensure the proper functioning of the RGGI allowance market.
None	9VAC5-140-6020 C	Definition of "alternate CO_2 authorized account representative"	Deleted.	Needed in order to be consistent with new RGGI terminology.
None	9VAC5-140-6020 C	Definition of "CO_2 allowance"	Added.	Replacing "allowance." Needed to ensure the proper functioning of the RGGI allowance market
None	9VAC5-140-6020 C	Definition of "CO_2 authorized alternate account representative"	Added.	Needed in order to be consistent with new RGGI terminology.
None	9VAC5-140-6020 C	Definition of "CO_2 Budget Trading Program"	Amended.	Needed for consistency with the RGGI Model Rule and to ensure Virginia's ability to participate in the program.
None	9VAC5-140-6020 C	Definition of "CCR allowance"	Amended to indicate that the CCR allowance is conditional.	Needed for clarity.
None	9VAC5-140-6020 C	Definition of "CO_2 CCR trigger price"	Amended to include the correct prices.	Needed in order for the program to operate properly.
None	9VAC5-140-6020 C	Definition of "CO_2 ECR trigger price"	Amended to include the correct prices.	Needed in order for the program to operate properly.
None	9VAC5-140-6020 C	Definition of "CO_2 offset allowance"	Added.	Needed in order for offsets from other states to be recognized.
None	9VAC5-140-6020 C	Definition of "conditional allowance"	Amended to clarify the relationship between a conditional allowance and a CO_2 allowance.	Needed in order for the program to operate properly.
None	9VAC5-140-	Definition of	Added.	Needed for clarity and in

	6020 C	"conditional CCR allowance"		order for the program to operate properly.
None	9VAC5-140-6020 C	Definition of "consignment auction"	Amended to refer to the correct auction entity.	Needed for clarity.
None	9VAC5-140-6020 C	Definition of "fossil fuel-fired"	Amended to change the amount of fuel comprised of fossil fuel from 10% to 5%.	Needed for consistency with the RGGI Model Rule and to ensure Virginia's ability to participate in the program.
None	9VAC5-140-6020 C	Definition of "maximum design heat input"	Deleted.	This term is not used in the proposal and must be removed.
None	9VAC5-140-6020 C	Definition of "minimum reserve price"	Amended to change the price from $2.00 to $2.32.	Needed for consistency with the RGGI Model Rule and to ensure Virginia's ability to participate in the program.
None	9VAC5-140-6020 C	Definition of "receive"	Amended to be more specific.	Needed for consistency with the RGGI Model Rule and to ensure Virginia's ability to participate in the program.
None	9VAC5-140-6020 C	Definition of "RGGI, Inc."	Deleted.	Needed for consistency with the RGGI Model Rule and to ensure Virginia's ability to participate in the program.
None	9VAC5-140-6020 C	Definition of "state"	Deleted.	Needed in order for clarity. "Participating state" replaces this more general term.
None	9VAC5-140-6020 C	Definition of "total useful energy"	Added.	Needed in order for the industrial exemption (9VAC5-140-6040 B) to operate properly.
None	9VAC5-140-6020 C	Definition of "useful net thermal energy"	Added.	Needed in order for the industrial exemption (9VAC5-140-6040 B) to operate properly.
None	9VAC5-140-6030	Measurements, abbreviations and acronyms.	Unused terms removed.	Needed for clarity.
None	9VAC5-140-6040 B	Applicability.	Amended to clarify industrial facilities exempt from the rule.	Needed to address third-party industrial suppliers while maintaining consistency with the RGGI Model Rule.
None	9VAC5-140-6050 C 1	CO_2 requirements, holding allowances for compliance		The department is seeking comment on whether an amendment is needed to 9VAC5-140-6050 C 1 to specify that the total CO_2 emissions related to CO_2 allowances only includes

				emissions resulting from the combustion of fossil fuel.
None	Article 2	CO_2 Authorized Account Representative for CO_2 Budget Sources.	--	--
None	9VAC5-140-6090	Alternate CO_2 authorized account representative.	The term "alternate CO_2 authorized account representative" is amended to "CO_2 authorized alternate account representative."	Needed in order to be consistent with new RGGI terminology.
None	9VAC5-140-6100	Changing the CO_2 authorized account representatives and the alternate CO_2 authorized account representative; changes in the owners and operators.	The term "alternate CO_2 authorized account representative" is amended to "CO_2 authorized alternate account representative."	Needed in order to be consistent with new RGGI terminology.
None	9VAC5-140-6110	Account certificate of representation.	The term "alternate CO_2 authorized account representative" is amended to "CO_2 authorized alternate account representative."	Needed in order to be consistent with new RGGI terminology.
None	9VAC5-140-6130	Delegation by CO_2 authorized account representative and alternate CO_2 authorized account representative.	The term "alternate CO_2 authorized account representative" is amended to "CO_2 authorized alternate account representative." In subsection H, "must" has been changed to "shall."	Needed in order to be consistent with new RGGI terminology, and to reflect correct regulatory style.
None	Article 5	CO_2 Allowance Allocations	--	--
None	9VAC5-140-6190 A	Base budgets.	The initial CO_2 base budget has been set at 28 million tons, declining by 3% per year through 2030.	Needed in order to realize the program goal of reducing carbon pollution at a certain rate of a specified time period.
None	9VAC5-140-6190 C	Base budgets.	Amended to establish specific post-2030 adjustments.	Needed to ensure continuing compliance into the future.
None	9VAC5-140-	Undistributed and	Amended to correct	Needed for clarity and in

	6200	unsold CO_2 allowances.	the term "conditional allowance" and to replace "may" with "will."	order for the program to operate properly.
None	9VAC5-140-6210 A	CO_2 allowance allocations.	Amended to clarify the allocation of allowances.	Needed for clarity.
None	9VAC5-140-6210 B	CO_2 allowance allocations.	DMME provisions have been moved to a separate new section (9VAC5-140-6211); succeeding sections renumbered accordingly.	Needed for clarity.
None	9VAC5-140-6210 ~~D~~ C	CO_2 allowance allocations.	Amended to more clearly explain how the CCR allowances will be allocated, including a new equation for calculating the pro rata distribution of CCR allowances.	Needed for clarity and in order for the program to operate properly.
None	9VAC5-140-6210 ~~E~~ D	CO_2 allowance allocations.	Amended to more clearly explain how the ECR allowances will be allocated.	Needed for clarity and in order for the program to operate properly.
None	9VAC5-140-6210 ~~F~~ E	CO_2 allowance allocations.	Minor corrections.	Needed for clarity.
None	9VAC5-140-6210 ~~I~~ H	CO_2 allowance allocations.	Timing requirements amended in order to provide more detail as to how and when conditional allowances will be allocated.	Needed for clarity.
None	9VAC5-140-6210 I	None.	New subsection added to clarify that implementation of the CCR, ECR and banking adjustment will depend on the extent of the CO_2 trading program.	Needed for clarity.
None	9VAC5-140-6211	None.	Section added for DMME provisions moved from 9VAC5-140-6040 A 2.	Needed for clarity.
None	Article 6	CO_2 Allowance Tracking System	--	--
None	9VAC5-140-6230	Establishment of accounts.	The term "alternate CO_2 authorized account representative" is amended to "CO_2	Needed in order to be consistent with new RGGI terminology.

			authorized alternate account representative."	
None	9VAC5-140-6260 A 3	Compliance.	Amended in order for Virginia to recognize offsets generated by other RGGI states.	Needed in order to participate in the RGGI program.
None	Article 8	Monitoring, Reporting and Recordkeeping	--	--
None	9VAC5-140-6330 A	General requirements.	Minor correction.	Needed for clarity.
None	Article 9	Auction of CO_2 CCR and ECR allowances	--	--
None	9VAC5-140-6430	Consignment auction.	Amended to indicate that one quarter of the annual conditional allowance allocation will be consigned by the CO_2 budget source or the holder of a public contract with DMME to each auction. At the completion of the consignment auction, a conditional allowance sold at auction becomes a CO_2 allowance.	Needed for clarity and in order for the program to operate properly.
None	9VAC5-140-6435	None.	New section added to enable the use of a direct auction without consignment in accordance with requirements established by the Virginia General Assembly.	Needed in order for the program to operate properly in the event of a legislative requirement.
None	Article 10	Program Monitoring and Review	--	--
None	9VAC5-140-6440	None.	Article added.	Specifies that in conjunction with program monitoring and review, impacts specific to Virginia will be evaluated, including economic, energy and environmental impacts, and impacts on vulnerable and environmental justice communities. Needed in order to clarify that these specific impacts will be monitored and evaluated.

Compendium of all new provisions:

New chapter-section number	New requirements	Other regulations and law that apply	Intent and likely impact of proposed requirements
Article 1	CO_2 Budget Trading Program General Provisions	--	--
9VAC5-140-6010	Purpose	None.	Establishment of the Virginia component of the CO_2 Budget Trading Program. Needed to provide clarity.
9VAC5-140-6020	Definitions	None.	Terms defined. Needed to assure that the regulation is understood and will operate properly.
9VAC5-140-6030	Measurements, abbreviations and acronyms.	None.	Needed to assure that the regulation is understood and will operate properly.
9VAC5-140-6040	Applicability		Defines sources to which the regulation applies. Needed in order that the regulation apply to certain affected sources. Implementation of this regulation will have an impact on those sources that are directly subject to the requirements of the rule.
9VAC5-140-6050	Standard requirements	None.	General requirements for permits, monitoring, holding and management of CO_2 allowances, excess emissions, recordkeeping and reporting, and liability. Needed in order for the program to operate properly.
9VAC5-140-6060	Computation of time	None.	How to define the beginning and ending of an activity. Needed in order for the program to operate properly.
9VAC5-140-6070	Severability	None.	Clarifies that the remainder of rule is not rendered invalid by the invalidity of another part of the rule. Needed in order for the program to operate properly.
Article 2	CO_2 Authorized Account Representative for CO_2 Budget Sources	--	--
9VAC5-140-6080	Authorization and responsibilities of the CO_2 authorized account representative	None.	Details how this individual is selected and authorized, and their key roles. Needed in order for the program to operate properly.
9VAC5-140-6090	Alternate CO_2 authorized account representative	None.	Details how this individual is selected and authorized, and their key roles. Needed in order for the program to operate properly.

9VAC5-140-6100	Changing the CO_2 authorized account representatives and the alternate CO_2 authorized account representative; changes in the owners and operators	None.	How changes are made to account representatives, and owners and operators. Needed in order for the program to operate properly.
9VAC5-140-6110	Account certificate of representation	None.	How account representatives are to be certified. Needed in order for the program to operate properly.
9VAC5-140-6120	Objections concerning the CO_2 authorized account representative	None.	How to deal with any disputes relevant to the account representative. Needed in order for the program to operate properly.
9VAC5-140-6130	Delegation by CO_2 authorized account representative and alternate CO_2 authorized account representative	None.	Enables the account representatives to delegate their authority to other persons. Needed in order for the program to operate properly.
Article 3	Permits		
9VAC5-140-6140	General CO_2 budget permit requirements	None.	References pertinent permitting regulations. Needed to assure that existing permitting requirements are met.
9VAC5-140-6150	Submission of CO_2 budget permit applications	None.	Requires a budget permit application by a certain date. Needed in order for the program to operate properly.
9VAC5-140-6160	Information requirements for CO_2 budget permit applications	None.	Lists elements concerning the CO_2 budget source for which the application is submitted. Needed in order for the program to operate properly.
Article 4	Compliance Certification		
9VAC5-140-6170	Compliance certification report	None.	Requires the source to certify whether each CO_2 budget unit was operated in compliance with the requirements of the CO_2 Budget Trading Program. Needed in order for the program to operate properly.
9VAC5-140-6180	Action on compliance certifications	None.	Explains how the compliance certification is reviewed. Needed in order for the program to operate properly.
Article 5	CO_2 Allowance Allocations		
9VAC5-140-6190	Base budgets	None.	Base budgets are established from 2020 onward. In the original proposal, the board sought comment on whether the initial Virginia CO_2 Budget Trading Program base budget for 2020 should be 33 million tons or 34

			million tons, and declining accordingly by 3% per year. Needed to effect the carbon pollution reduction that ED 11 require of this regulation.
9VAC5-140-6200	Undistributed and unsold CO_2 allowances	None.	Explains how the department may retire undistributed and unsold allowances. Needed for the program to operate properly.
9VAC5-140-6210	CO_2 allowance allocations	None.	Describes how the department will allocate allowances. CCR and ECR allowances as described in Tables 140-5A and B are tied to the 2020 base budget and as such the board is seeking comment as to whether these numbers should be tied to a base budget of 33 million tons or 34 million tons. Needed to effect the carbon pollution reduction that ED 11 requires of this regulation.
9VAC5-140-6211	CO_2 allowance allocations, DMME allowances	None.	Requires that 5% of the base or adjusted budget allowances be allocated to DMME. Needed in order to assure the development of programs that lower electricity demand and reduce the cost of the program.
9VAC5-140-6215	CO_2 allocation methodology		Describes the methodology for allocating allowances using net electric output. Needed for the program to operate properly.
Article 6	CO_2 Allowance Tracking System	--	--
9VAC5-140-6220	CO_2 Allowance Tracking System accounts	None.	Establishes a system in order for tracking compliance accounts. Needed in order for the program to operate properly.
9VAC5-140-6230	Establishment of accounts	None.	Explains how compliance accounts are established and managed. Needed in order for the program to operate properly.
9VAC5-140-6240	CO_2 Allowance Tracking System responsibilities of CO_2 authorized account representative.	None.	Requires that all submissions pertaining to the account are made only by the authorized account representative. Needed in order for the program to operate properly.
9VAC5-140-6250	Recordation of CO_2 allowance allocations	None.	Describes how the department records allowances. Needed in order for the program to operate properly.
9VAC5-140-6260	Compliance	None.	CO_2 allowances that meet certain criteria are available to be

			deducted in order for a source to comply with the CO_2 requirements for a control period. Needed in order for the program to operate properly.
9VAC5-140-6270	Banking	None.	Requires that CO_2 allowances remain in account until deducted or transferred. Needed in order for the program to operate properly.
9VAC5-140-6280	Account error	None.	Allows corrections to be made. Needed in order for the program to operate properly.
9VAC5-140-6290	Closing of general accounts	None.	Describes how to close an account. Needed in order for the program to operate properly.
Article 7	CO_2 Allowance Transfers	--	--
9VAC5-140-6300	Submission of CO_2 allowance transfers	None.	Specifies how to submit transfers. Needed in order for the program to operate properly.
9VAC5-140-6310	Recordation	None.	Describes the recordation of transfers. Needed in order for the program to operate properly.
9VAC5-140-6320	Notification	None.	Explains notification of transfers to each party. Needed in order for the program to operate properly.
Article 8	Monitoring and Reporting	--	--
9VAC5-140-6330	General requirements	None.	Generally requires a source to comply with monitoring, recordkeeping and reporting requirements as provided in this regulation and 40 CFR Part 75. Needed to assure that all pertinent state and federal requirements are met.
9VAC5-140-6340	Initial certification and recertification procedures	None.	Facilities may be exempt under certain circumstances. Needed in order for the program to operate properly.
9VAC5-140-6350	Out-of-control periods	None.	What to do when a monitoring system fails to meet QA/QC or other requirements. Needed to assure compliance.
9VAC5-140-6360	Notifications	None.	Notification requirement. Needed in order for the program to operate properly.
9VAC5-140-6370	Recordkeeping and reporting	None.	Monitoring plan recordkeeping and reporting requirements. Needed to assure compliance.
9VAC5-140-6380	Petitions	None.	How to request approval for an alternative to any requirement of 40 CFR Part 75. Needed to assure compliance.
9VAC5-140-6390	Reserved	None.	

9VAC5-140-6400	Additional requirements to provide output data	None.	Additional steps to be taken when determining output. Needed in order for the program to operate properly.
Article 9	Auction of CO_2 CCR and ECR allowances	--	--
9VAC5-140-6410	Purpose	None.	General purpose of the article. Needed to provide clarity.
9VAC5-140-6420	General requirements	None.	Describes information required in the auction notice, rules for sale of allowances, information on the reserve price, and withholding ECR allowances from an auction. Needed in order for the auction to operate.
9VAC5-140-6430	Consignment auction	None.	How conditional allowances are auctioned at consignment and converted to allowances used for compliance. Needed in order for the auction to operate.
9VAC5-140-6435	Other auction	None.	Allows participation in a direct auction if permitted by the General Assembly. Needed in the event a direct auction is required.
Article 10	Program Monitoring and Review	--	--
9VAC5-140-6440	Program monitoring and review	None.	Requires evaluation of program impacts specific to Virginia, including impacts on environmental justice communities. Needed to monitor impacts on Virginia and certain communities.

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