MJB & A
an ERM Group company

CONCORD, MA - WASHINGTON, DC

47 Junction Square Drive
Concord, MA 01742

978-369-5533
www.mjbradley.com

MJB&A Issue Brief ■ October 11, 2019 (updated August 18, 2020)

RGGI Expansion – Implications of Additional States Joining RGGI

The Regional Greenhouse Gas Initiative (RGGI) is a regional market-based emissions reduction program, in effect since January 2009, that caps carbon dioxide (CO_2) emissions from electric generating units in ten northeastern states.[1] While program participation had been static since 2012, that changed at the beginning of this year, when New Jersey rejoined RGGI and began participating in allowance auctions. More recently, Virginia has also completed the regulatory process to join RGGI and will begin participating in 2021. Pennsylvania is also currently advancing a draft regulatory proposal to join the program. This issue brief reviews the status of each state's process and explores potential impacts on emissions, allowance prices, and generation portfolio mix.

New Jersey

After withdrawing from RGGI in 2011, New Jersey reentered the program in 2020. The state's efforts to rejoin stemmed from a January 2018 executive order, one of the earliest directives from then-newly-elected Governor Phil Murphy. The executive order directed state agencies to take necessary regulatory and administrative measures to ensure New Jersey's return to full participation in RGGI.[2] Subsequently, in June 2019, the New Jersey Department of Environmental Protection (NJDEP) finalized a rulemaking to rejoin RGGI and govern compliance entities' participation in the program and a second rulemaking to direct the distribution of RGGI auction proceeds.[3]

On March 11, 2020, New Jersey entities participated in their first RGGI allowance auction since rejoining the program, purchasing 3.7 million allowances and generating more than $20 million in state proceeds. New Jersey has an initial CO_2 emissions budget of 18 million short tons in 2020. This emissions budget will decline to 12.6 million short tons by 2030, a 30 percent decline that is consistent with the RGGI Model Rule.

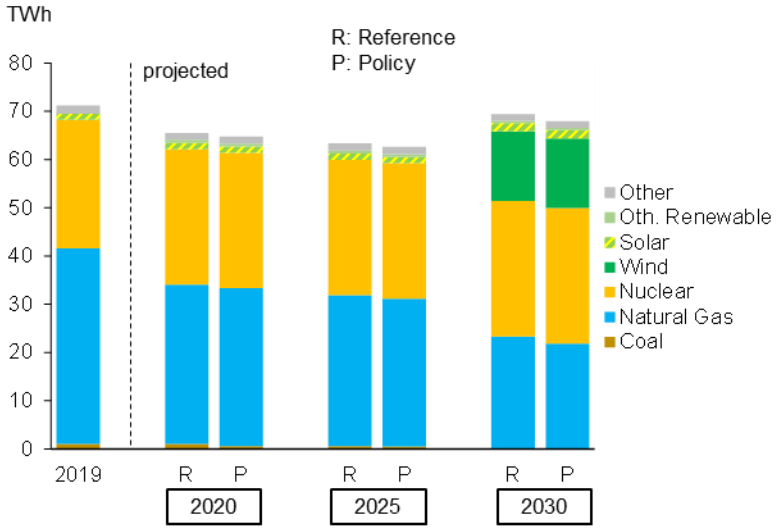
In both 2017 and 2018, electric generating units in New Jersey emitted about 19 million tons of CO_2 annually.[4] This suggests that the RGGI budget for New Jersey would become just about binding in the early years of the 2020-2030 period. Even in the latter years, non-RGGI-related mandates that result in lower fossil-fired generation (e.g., the state Renewable Portfolio Standard (RPS) program, offshore wind directive, etc.) could make the RGGI budgets relatively easy targets with which to comply.

Modeling by NJDEP released in early 2019 suggests that joining RGGI with the emissions budget as defined in NJDEP's final rule will have relatively minimal impact on New Jersey's overall generating portfolio mix (see

1 Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.
2 Executive Order No. 7, New Jersey Governor Phil Murphy (January 29, 2018). Available at: https://nj.gov/infobank/eo/056murphy/pdf/EO-7.pdf.
3 N.J. A.C 7:27C, "New Jersey Carbon Dioxide (CO_2) Budget Trading Program" (June 17, 2019). Available at: https://www.state.nj.us/dep/aqes/docs/njac7_27c.pdf; N.J. A.C 7:27D, "Global Warming Solutions Fund" (June 17, 2019), available at: https://www.state.nj.us/dep/aqes/docs/njac7_27d.pdf.
4 MJB&A analysis based on EPA Air Markets Program Data.

Figure 1).[5] Relative to the Reference case (in which New Jersey does not join RGGI), electric output from fossil-fired generators does decline somewhat after the state joins RGGI—between two and six percent through 2030, as seen in the Policy case. However, the total amount of electricity generated in-state remains more or less unchanged due to implementation of the directive to install 3.5 gigawatts (GW) of offshore wind capacity by 2030, a New Jersey state mandate that is unrelated to RGGI.[6] As a result, the share of renewable resources in New Jersey's generation portfolio jumps from 1.3 percent in 2017 to roughly 24 percent in 2030 without RGGI (compared to roughly 24.5 percent with RGGI participation). Because the modeling projects that the increased renewable generation will likely displace fossil-fired output, even without RGGI, New Jersey's electric sector emissions decline through 2030 to the point where the state's RGGI budget would be barely binding (roughly 12 million short tons of CO_2 in 2030 in the Reference Case, compared to a budget of 12.6 million). Thus, New Jersey's participation in the RGGI program is not projected to have a significant impact on RGGI allowance prices.

Figure 1: Historic and Projected Generation Mix (New Jersey)



However, New Jersey's participation in RGGI is expected to increase state spending on clean energy and other opportunities—the state has estimated that it will generate $80 million a year in RGGI allowance auction proceeds.[7] In accordance with NJDEP's June 2019 rule, auction revenue will be distributed among three state agencies:

- New Jersey's Economic Development Authority will use 60 percent of revenue to fund projects and programs to achieve emission reductions from commercial, institutional, and industrial facilities;
- New Jersey's Board of Public Utilities will use 20 percent to support low- and moderate-income customers and the broader residential sector; and
- NJDEP will use the remaining 20 percent to support emission reduction initiatives of local governments and to enhance the stewardship and restoration of the state's forest and tidal marshes.

According to a recently released three-year strategic funding plan, together the three agencies intend to allocate roughly 75 percent of total allowance proceedings for the years 2020 through 2022 to clean and equitable

[5] NJDEP's modeling assumes that both VA and NJ join RGGI in the Policy case. Modeling data and additional information are available at: https://njparentlink.nj.gov/dep/aqes/rggi-document-archive.html.

[6] Of note, since the publication of this modeling in January 2019, Governor Murphy has since increased the state's offshore wind capacity mandate. Executive Order 92, signed on November 19, 2019, raised the mandate from 3.5 GW by 2030 to 7.5 GW by 2035. According to an offshore wind solicitation schedule released by the Governor's Office in February 2020, the state will procure 3.5 GW of offshore wind capacity to begin operation by roughly 2029 and will procure the remaining capacity over three subsequent solicitations by 2035.

[7] New Jersey BPU, "Murphy Administration Releases RGGI Strategic Funding Plan; Announces New Investments in Climate Change Reduction, Environmental Justice and Clean Energy" (April 17, 2020). Available at: https://www.nj.gov/bpu/newsroom/2020/approved/20200417.html.

transportation initiatives. Remaining funding will be allocated to the development and funding of a New Jersey Green Bank and to coastal rehabilitation and forest management.[8]

Virginia

Virginia completed the regulatory process to join RGGI in July 2020 and will become a full participant in the program beginning in 2021.

Regulations finalized by the state's Department of Environmental Quality (VA DEQ) in May 2019 established an initial carbon cap of 28 million short tons of CO_2 in 2020 that will decline to 19.6 million short tons by 2030, a budgetary decline consistent with the RGGI Model Rule. Under these initial regulations, allowances in Virginia would have been sold through a consignment auction, with auction revenues returned to covered sources to be used by the utilities to benefit customers.[9] While the state legislature's final 2019 budget initially restricted Virginia from participating in RGGI,[10] following changes in Virginia legislature's political makeup (Democrats won majorities in both chambers in November 2019), the state adopted legislation authorizing its participation in RGGI and directing VA DEQ to sell allowances through multi-state RGGI auctions and distribute the proceeds for specified purposes.[11]

Accordingly, on August 3, 2020, VA DEQ finalized a revised regulation that shifts the state's approach from using a consignment auction to one in which Virginia will fully participate in direct auctions, requiring generators to purchase allowances through the regional RGGI auction.[12] These newer regulations will bring Virginia's participation in RGGI into line with other RGGI states. The revised regulation also removed Virginia's 2020 carbon budget and reflects the state's participation beginning on January 1, 2021, with an initial baseline budget of 27.2 million short tons of CO_2. Auction revenues will be directed to low-income energy efficiency programs (50 percent) and flood protection and coastal resilience (45 percent), with remaining funds covering any administrative costs (5 percent).

When considering the impacts of Virginia joining the RGGI program, it is important to note that Virginia also has a number of climate and clean energy programs that the legislature passed in 2020, including the Virginia Clean Economy Act. The Act creates a mandatory RPS that requires Dominion Energy and AEP to deliver retail electricity from 100 percent eligible resources by 2045 and 2050, respectively, and establishes a schedule by which these generators must retire carbon-emitting electricity generating units (EGU), with most oil- and coal-fired EGUs to retire by the end of 2024. The legislation also establishes near-term mandates for energy storage and offshore wind procurement, as well as energy efficiency savings.[13]

---

8 State of New Jersey, RGGI Strategic Funding Plan: Years 2020 through 2022," (April 16, 2020). Available at: https://nj.gov/rggi/docs/rggi-strategic-funding-plan.pdf.

9 The finalized regulations were "trading ready" with RGGI in that they were similar to the RGGI Model Rule and allowed compliance entities in Virginia to trade RGGI allowances from other states. Covered sources and the Department of Mines, Mineral, and Energy (DMME) were required to sell the allowances through a consignment auction; revenue would then be returned to covered sources. Five percent of consignment auction revenue was to be directed specifically to energy efficiency and renewable energy projects.

10 H.B. 1700 included a provision that would prohibit the use of any state funds "to support membership or participation in [RGGI] until such time as the General Assembly has approved such membership." A separate provision in the bill required that any revenue generated through any regional climate change compact, such as RGGI or the Transportation Climate Initiative, be deposited in the general fund for appropriation by the General Assembly.

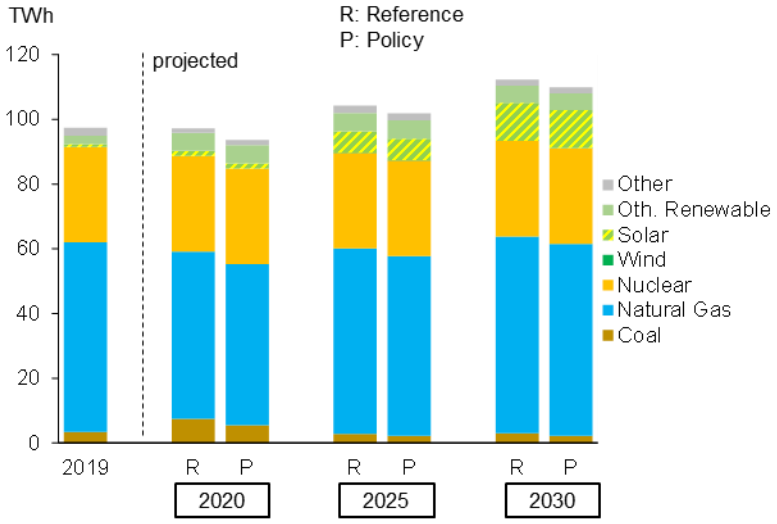
11 Clean Energy and Community Preparedness Act (signed on April 22, 2020). Available at: https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+CHAP1280.

12 9VAC5-140: CO2 Budget Trading Program General Provisions (effective July 10, 2020). Available at: http://register.dls.virginia.gov/vol36/iss25/v36i25.pdf.

13 Virginia Clean Economy Act (signed by Governor Northam on April 11, 2020). Available at: https://lis.virginia.gov/cgi-bin/legp604.exe?201+cab+HC10227SB0851+RCSB2&201+cab+HC10227SB0851+RCSB2.

Virginia has indicated that it is considering developing new modeling to reflect the projected impacts of these and other developments that are expected to impact the state's electric generation mix and customer rates, as well as the impact of the state's switch from a consignment to direct auction. Modeling released in November 2017, which considered legislative and regulatory drivers in effect at that time (including Virginia's consignment auction approach), suggested that under the RGGI budgets for the state, overall electricity generation in Virginia would be marginally lower, by about four and two percent in 2020 and 2030, respectively, than under the Reference case, largely due to lower fossil-fired generation (see Figure 2).[14] At the same time, the share of renewable resources in Virginia's portfolio mix is projected to rise sharply from under three percent in 2017 to more than 15 percent in 2030, due to steep increases in grid-scale solar. However, this increase in renewable generation would happen regardless of Virginia's participation in RGGI.

Figure 2: Historic and Projected Generation Mix (Virginia)



Pennsylvania

Pennsylvania's Department of Environmental Protection (PA DEP) is currently developing a proposed rulemaking to join RGGI, in accordance with an October 2019 executive order from Governor Tom Wolf.[15] If the state were to join, it would be the RGGI program's largest emitting participant, with roughly 85 million short tons of state-wide electric sector CO_2 emissions in 2017.[16] By comparison, the ten-state RGGI region's combined unadjusted budget in that year was 84.3 million short tons.[17]

PA DEP's draft proposed rulemaking, released in April 2020, proposes an initial emissions allowance budget of 78 million short tons in 2022 that would decline 25.5 percent to roughly 58 million short tons in 2030, consistent with the trajectories of other RGGI state budgets.[18] The draft proposed rulemaking also includes several provisions that are departures from the RGGI Model Rule, including:

---

14 VA DEQ's modeling assumes that only VA joins RGGI in the Policy case. Modeling data and additional information is available on VA DEQ's website at: https://www.deq.virginia.gov/Programs/Air/GreenhouseGases/CarbonTrading.aspx.

15 Governor Tom Wolf's Executive Order 7, signed on October 3, 2019, directed DEP to develop and present, by July 2020, a proposed rulemaking package that would allow the state to join RGGI. The Executive Order required the proposal to include a CO_2 budget consistent with the stringency as outlined by RGGI states, be consistent with the RGGI Model Rule to allow for the trading of allowances with other states, and provide for annual or more frequent allowance auctions. The Executive Order also instructed DEP staff, along with the Public Utility Commission, to engage with the PJM Interconnection on ways to promote integration to preserve competitive electric markets and minimize emissions leakage. Available at: https://www.governor.pa.gov/newsroom/executive-order-2019-07-commonwealth-leadership-in-addressing-climate-change-through-electric-sector-emissions-reductions/.

16 U.S. Energy Information Administration, "State Carbon Dioxide Emissions Data" (October 31, 2018). Available at: https://www.eia.gov/environment/emissions/state/.

17 RGGI Program Overview and Design. Available at: https://www.rggi.org/program-overview-and-design/elements.

18 PA DEP, Draft Proposed Rulemaking: CO_2 Budget Trading Program (April 23, 2020). Available at: http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2020/4-23-20/Draft%20Proposed%20CO2%20Budget%20Trading%20Program%20Rulemaking%20Annex%20A%20.pdf.

- an allowance set aside for waste coal-fired power plants (12-16 percent of Pennsylvania's annual budgets between 2022 and 2030; unused allowances would go to energy efficiency programs, non-emitting energy projects, and other abatement programs[19]);
- provisions to retire allowances from the state's annual budget to offset emissions associated with onsite use of electricity and thermal energy at cogeneration facilities;[20] and
- compliance exemptions for cogeneration facilities that supply 15 percent or more of their total useful energy to any entity (not including energy sent to an interconnected manufacturing facility).

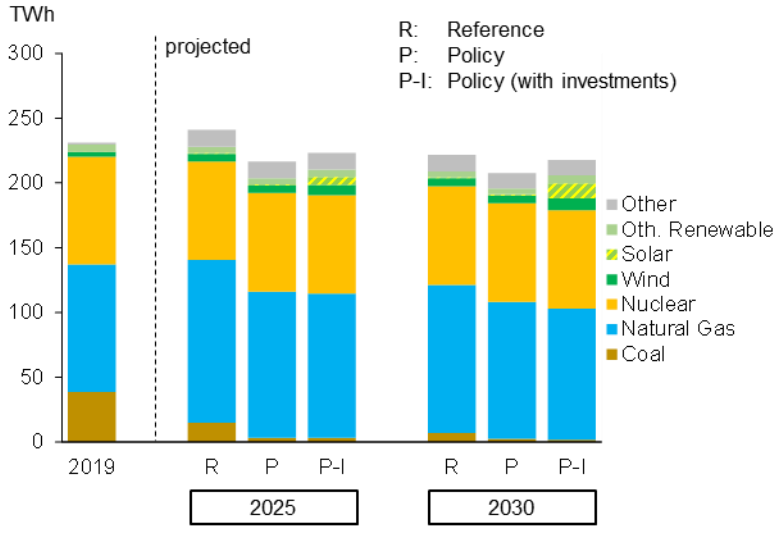
The draft rule would also allow PA DEP to withdraw from RGGI's multi-state allowance auctions and to instead conduct its own allowance auctions if PA DEP finds that certain conditions are no longer met.[21]

PA DEP's April 2020 draft proposed rulemaking does not address allocation and use of auction revenue in detail, other than to direct that revenue be deposited in PA DEP's Clean Air Fund—to be used fully on energy efficiency, clean and renewable energy investments, and GHG abatement programs in Pennsylvania. PA DEP intends to work with stakeholders to develop an auction revenue investment plan.

PA DEP estimates that allowance auctions will generate about $320 million in proceeds in 2022. Modeling released by PA DEP of Pennsylvania's participation in the RGGI program under the proposed budgets includes two Policy cases—with and without investment of allowance auction revenue.[22] In the Policy case that includes the investments, auction revenue is allocated equally between energy efficiency programs, clean and renewable energy investments, and GHG abatement programs.

Results of the modeling broadly suggest that Pennsylvania's participation in the RGGI program under the proposed budgets would accelerate certain trends that are already underway in the state's electric sector. For example, in the Reference case, where Pennsylvania does *not* join the RGGI program, coal-fired generation in the state is projected to decline by more than 82 percent

Figure 3: Historic and Projected Generation Mix (Pennsylvania)



19 PA DEP states that this would be similar to the voluntary renewable set-aside account from the RGGI Model Rule, but with additional flexibility.

20 For the purposes of RGGI compliance, cogeneration units would only be responsible for emissions related to electricity that is being sent off-site or to the grid.

21 These conditions are: "1) A multistate auction capability and process is in place for the participating states. 2) The multistate auction can provide benefits to Pennsylvania that meet or exceed the benefits conferred on Pennsylvania through its own Pennsylvania-run auction process. 3) The multistate auction process is consistent with the process described in §§ 145.401- 145.409. 4) The multistate auction process includes monitoring of each CO_2 allowance auction by an independent monitor to identify any collusion, market power or price manipulation." *See* §145.401 of the draft proposed rulemaking.

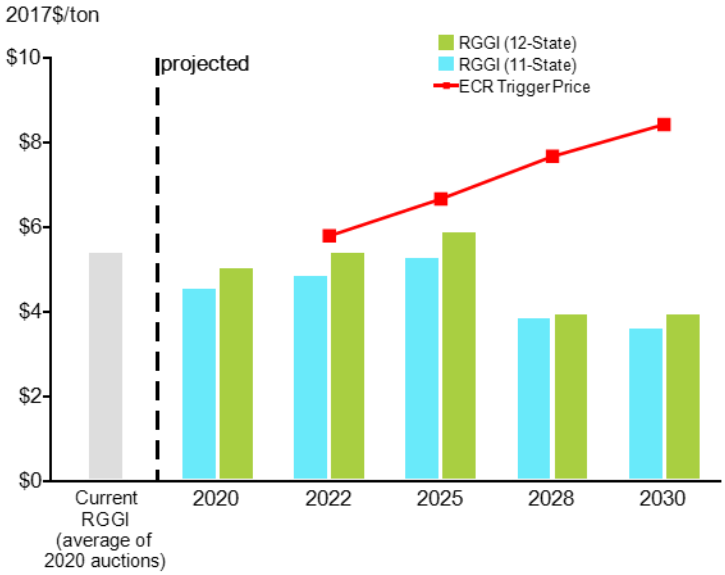
22 The modeling presentation and results are available on PA DEP's website at https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx. The modeling assumes in the Reference case and in both Policy cases that New Jersey joins RGGI in 2020 and Virginia in 2021.

from 2019 levels by 2030, accounting for three percent of Pennsylvania's total in-state generation in that year (see Figure 3). Under both Policy cases, coal's share would decline further to just one percent of Pennsylvania's total in-state generation in 2030. At the same time, the results project increases in the share of natural gas-fired generation—from 43 percent in 2019 to about 51 percent in 2030 under the Reference case and the Policy case in which investment of auction revenues is not considered.

In the Policy case that includes auction revenue investments, natural gas' share of total in-state generation rises more modestly to 46 percent in 2030, as clean and renewable energy investments drive significant additional wind and solar newbuilds in Pennsylvania. According to the modeling results, the combined share of wind and solar in this scenario is projected to grow more than six-fold between 2019 and 2030, accounting for almost 10 percent of the state's total in-state generation by 2030, up from just 1.5 percent in 2019. Partially as a result, the total amount of electricity generated in-state and net exports (Pennsylvania is a net exporter of electricity) under this Policy case would remain very similar to those under the Reference case. By comparison, in the Policy case without auction revenue investments, the boost to solar and wind's share would be far more modest (increasing to three percent of Pennsylvania's generation by 2030). As a result, relative to the Reference case, total in-state generation and net exports in 2030 are lower by six and 18 percent, respectively.

The modeling data also show that with Pennsylvania's participation in RGGI, allowance prices in 2030 will rise to between $3.99 and $4.43 per ton (auction revenue investment results in lower allowance prices), up from the projected price of $3.63 per ton (in 2017 dollars) if Pennsylvania did not join RGGI, representing a 10-22 percent increase. However, allowance prices are projected to remain low in absolute terms throughout: in all years and all cases they remain below the ECR[23] trigger price leading the model to withhold up to 10 percent of the allowances in most states (see Figure 4).

Figure 4: Projected and Historic Allowance Prices



PA DEP also carried out an economic and health benefits analysis based on the above modeling results to estimate the impact of joining RGGI on the state. The analysis found that by 2030, participating in RGGI and accounting for auction revenue investment would lead to a net increase of more than 30,000 jobs in Pennsylvania and add $1.9 billion to the state's GDP.[24] The same analysis also shows that

[23] Beginning in 2021, RGGI is introducing an Emissions Containment Reserve (ECR) under which states may withhold up to 10 percent of the allowances in their base budgets per year. Maine and New Hampshire do not intend to implement the ECR mechanism.

[24] This MJB&A Issue Brief details PA DEP's modeling projections for the agency's "balanced" RGGI revenue investment scenario, in which auction revenue is equally allocated between energy efficiency, renewables, and GHG abatement. While PA DEP modeled two additional revenue investment scenarios ("ratepayer assistance" and "general fund"), PA DEP stated in an August 2020 webinar that the modeling found that the balanced scenario provided the greatest economic and emissions benefits out of the three and also noted that it is the only scenario that would not require legislative approval to implement. PA DEP's economic modeling is available on the agency's website at: https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx.

Pennsylvania's participation in RGGI could result in monetized cumulative health benefits through 2030 of between $2.8 billion and $6.3 billion, due largely to reduced NOx and SO_2 emissions.

The draft proposed rulemaking will next be reviewed by the Pennsylvania Environmental Quality Board (EQB). Of note, three PA DEP advisory committees (the Air Quality Technical Assistance Committee, the Citizens Advisory Council, and the Small Business Compliance Advisory Committee) have declined to recommend the draft rulemaking to EQB.[25] While the committees' votes are not binding, their feedback has prompted the Governor's office to extend the rulemaking process by an additional six weeks to allow time for additional consultations and discussions. EQB is now expected to review the draft proposed rulemaking at their next meeting on September 15, 2020. The Governor's office has indicated that this additional time will not affect the ultimate timeline for the regulation to go into effect.[26]

At the same time, the Pennsylvania state legislature is considering a bill that would require PA DEP to obtain legislative authorization before joining RGGI. The bill passed in the Republican-controlled House of Representatives in early July by a vote of 130 to 71.[27] Governor Wolf has stated that he would veto this bill if passed by the legislature; overriding such a veto would require a two-thirds majority vote in each chamber. With half of all state senate seats and all state house seats up for election this November, legislative dynamics could shift in a few months and any changes could affect the likelihood of Pennsylvania joining RGGI. Additionally, any final rulemaking to join RGGI is expected to be challenged in court.

Next Steps

In Pennsylvania, the DEP will submit a proposed rulemaking to join RGGI to EQB for approval by September 15, 2020. Following approval, PA DEP will open a public comment period and hold public hearings on the proposal. PA DEP will also work with stakeholders to develop an auction revenue investment plan. It will be important to watch how the upcoming November 2020 elections may alter the legislative and regulatory dynamics in Pennsylvania. The earliest that Pennsylvania expects to participate in RGGI is the beginning of 2022.

Virginia will begin participating in allowance auctions beginning in 2021.

---

25 In May, the PA DEP Air Quality Technical Assistance Committee (AQTAC) voted 9 to 9, with one abstention, to not approve a motion to recommend PA DEP move the draft rulemaking forward to EQB for consideration, failing to acquire the necessary majority vote. Later that month, the PA DEP Citizens Advisory Council voted 9 to 4, with one abstention, to not approve a motion to recommend that PA DEP advance its proposal to EQB for consideration. Most recently, on July 22, 2020, the Small Business Compliance Advisory Committee voted 4 to 3 to decline to recommend that PA DEP advance its draft rulemaking to EQB. Issues raised by the three advisory committees include those regarding economic impacts, emissions leakage, environmental justice concerns, and perceptions of a compressed timeline to develop the rulemaking and insufficient consultation of stakeholders.

26 Office of Pennsylvania Governor Tom Wolf, "Governor Wolf Reaffirms Commitment to Combat Climate Change, Provides Update on RGGI Process" (June 22, 2020). Available at: https://www.governor.pa.gov/newsroom/governor-wolf-reaffirms-commitment-to-combat-climate-change-provides-update-on-rggi-process/.

27 Pennsylvania General Assembly, House Bill 2025 (2019-2020). Available at: https://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2019&sInd=0&body=H&type=B&bn=2025.

Contacts

For more information on this topic, please contact:

Carrie Jenks
Executive Vice President
cjenks@mjbradley.com
(978) 369-5533

Amlan Saha
Senior Vice President
asaha@mjbradley.com
(978) 369-5533

Sophia Hill
Policy Analyst
shill@mjbradley.com
(978) 369-5533

About Us

MJB&A, an ERM Group company, provides strategic consulting services to address energy and environmental issues for the private, public, and non-profit sectors. MJB&A creates value and addresses risks with a comprehensive approach to strategy and implementation, ensuring clients have timely access to information and the tools to use it to their advantage. Our approach fuses private sector strategy with public policy in air quality, energy, climate change, environmental markets, energy efficiency, renewable energy, transportation, and advanced technologies. Our international client base includes electric and natural gas utilities, major transportation fleet operators, investors, clean technology firms, environmental groups and government agencies. Our seasoned team brings a multi-sector perspective, informed expertise, and creative solutions to each client, capitalizing on extensive experience in energy markets, environmental policy, law, engineering, economics and business. For more information, we encourage you to visit our website: www.mjbradley.com.