The Regional Greenhouse Gas Initiative
an initiative of Eastern States of the US

September 23, 2024

RGGI Program Review Updates

States Seek Comments on Updated Program Review Modeling
And on Accommodating Potential Future Participation by Other States

The Regional Greenhouse Gas Initiative (RGGI) participating states today released modeling of an additional regional cap trajectory scenario for stakeholder review and comment, as the RGGI states continue to consider potential updates to RGGI's CO_2 emissions cap and other program elements as part of the ongoing Third Program Review. The RGGI states also are seeking ideas from market participants and other stakeholders on ways to accommodate potential participation by states that may wish to participate in RGGI in the future but that are not currently participating in the Third Program Review, including states that have previously adopted regulations consistent with the current RGGI program.

Background on RGGI Program Review

The RGGI states conduct periodic, comprehensive Program Reviews to evaluate RGGI's impacts, set future program goals, and consider updates to evolve the program. This review process is critical to RGGI's ongoing success. Each Program Review includes consideration of state-specific emission reduction requirements, public meetings to gather input on program design, and technical analysis and modeling of the region's economy and electricity sector. The First and Second Program Reviews, completed in 2012 and 2017, respectively, resulted in changes that have strengthened and improved RGGI's market-based system, providing emissions and health benefits to the region while keeping electricity prices stable and contributing jobs and economic growth. RGGI participating states launched their Third Program Review in Fall 2021.

Additional Cap Modeling Scenario

The RGGI states have previously released power sector modeling of multiple potential future CO_2 emissions cap trajectories, including a no-changes scenario, a scenario extending the current regional cap reduction trajectory beyond 2030, and scenarios to achieve a zero-emissions cap by either 2035 or 2040. The RGGI states today are releasing preliminary power sector modeling of an additional potential cap trajectory scenario for stakeholder review and consideration. Informational slides on the modeled scenario and modeling results are appended to this announcement. Detailed modeling results are available here.

Accommodating Potential Future Participation by Other States

The RGGI participating states recognize that there may be states that wish to participate in RGGI in the future but that are not currently participating in the Third Program Review, including states that have previously adopted regulations consistent with the current RGGI program. The RGGI states are interested in exploring potential market solutions that could enable such states to link to the RGGI market in the future, including potentially at a cap trajectory which may not align with the RGGI cap trajectory resulting from the Third Program Review.

The RGGI states are seeking public and stakeholder comments on potential solutions for accommodating these additional states. To be acceptable, any solution must balance the benefits of greater state participation, including more efficient markets and more overall pollution reduction, while safeguarding any new environmental ambition achieved by the current participating states as a result of the Third Program Review.

In particular, the RGGI states seek stakeholder feedback on potential accommodation mechanisms such as:

- The potential application of allowance trading or compliance ratios between entities in states that have and have not adopted the cap trajectory resulting from the Third Program Review.
- The potential application of volume limits in trading or compliance between entities in states that have and have not adopted the cap trajectory resulting from the Third Program Review.
- The proper basis to determine such potential allowance trading/compliance ratios, or volume limits, including respective emissions cap levels, reduction trajectories, price levels, and/or other relevant factors.
- Other potential mechanisms that would allow for participation by states implementing a cap trajectory that is different than the cap trajectory resulting from the Third Program Review, such as a cap trajectory previously adopted in regulations to be consistent with the current RGGI program, while safeguarding any new environmental ambition achieved by the current RGGI participating states as a result of the Third Program Review.

How to Provide Comment

Please submit written comments on the above topics to info@rggi.org under the subject line "RGGI Program Review Comment." The RGGI states will accept written comments through **October 23, 2024**. The states look forward to receiving this input which will help inform final decisions in the Third Program Review. All comments will be shared publicly on the RGGI website.

Program Review Schedule

Included below is an updated schedule for the Third Program Review. This schedule is subject to change and may continue to be updated over time.

Updated Timeline for Third Program Review	
Sept 2024	Release of updated modeling and announcement of request for comments on this modeling and on accommodating participation by states that may wish to participate in RGGI in the future but that are not currently participating in Program Review.
Fall 2024	States conduct final Program Review modeling and analysis. States release draft Model Rule. **Public Meetings:** to review the draft Model Rule, final modeling results, bills analysis, and further considerations for developing an accommodation

	for states that may wish to participate in RGGI in the future but that are not currently participating in Program Review.
Winter 2024-25	States release updated Model Rule. **Public Meetings:** To review any potential draft proposals resulting from stakeholder feedback for accommodating participation by states that may wish to participate in RGGI in the future but that are not currently participating in Program Review.
Spring 2025 (*Tentative*)	States may release further Model Rule updates to implement potential mechanisms for accommodating participation by states that may wish to participate in RGGI in the future but that are not currently participating in Program Review.

About the Regional Greenhouse Gas Initiative (RGGI)

The Eastern states participating in the sixth RGGI control period have implemented the first mandatory market-based regulatory program in the U.S. to reduce greenhouse gas emissions.

RGGI is composed of individual CO_2 budget trading programs in each state, based on each state's independent legal authority. A CO_2 allowance represents a limited authorization to emit one short ton of CO_2, as issued by a respective state. A regulated power plant must provide CO_2 allowances equal to its emissions for each three-year control period. RGGI's sixth control period began on January 1, 2024 and extends through December 31, 2026. For more information visit www.rggi.org.

About the Regional Greenhouse Gas Initiative, Inc.

The Regional Greenhouse Gas Initiative, Inc. (RGGI, Inc.) was created to provide technical and administrative services to the states participating in the Regional Greenhouse Gas Initiative. RGGI, Inc. is a 501(c)(3) nonprofit organization. For more information, visit: www.rggi.org/rggi-inc/contact.

Regional Greenhouse Gas Initiative Program Review:

Notes on Modeling Materials

September 23, 2024

Current Modeling Framework

Three Integrated Planning Model (IPM) Cases which examine different RGGI policy scenarios and energy development assumptions:

- Exploratory Policy Scenario with only currently procured energy assumed
- Exploratory Policy Scenario with procured energy and energy resources to be developed based on state statutes
- Current RGGI Policy with procured energy and energy resources to be developed based on state statutes

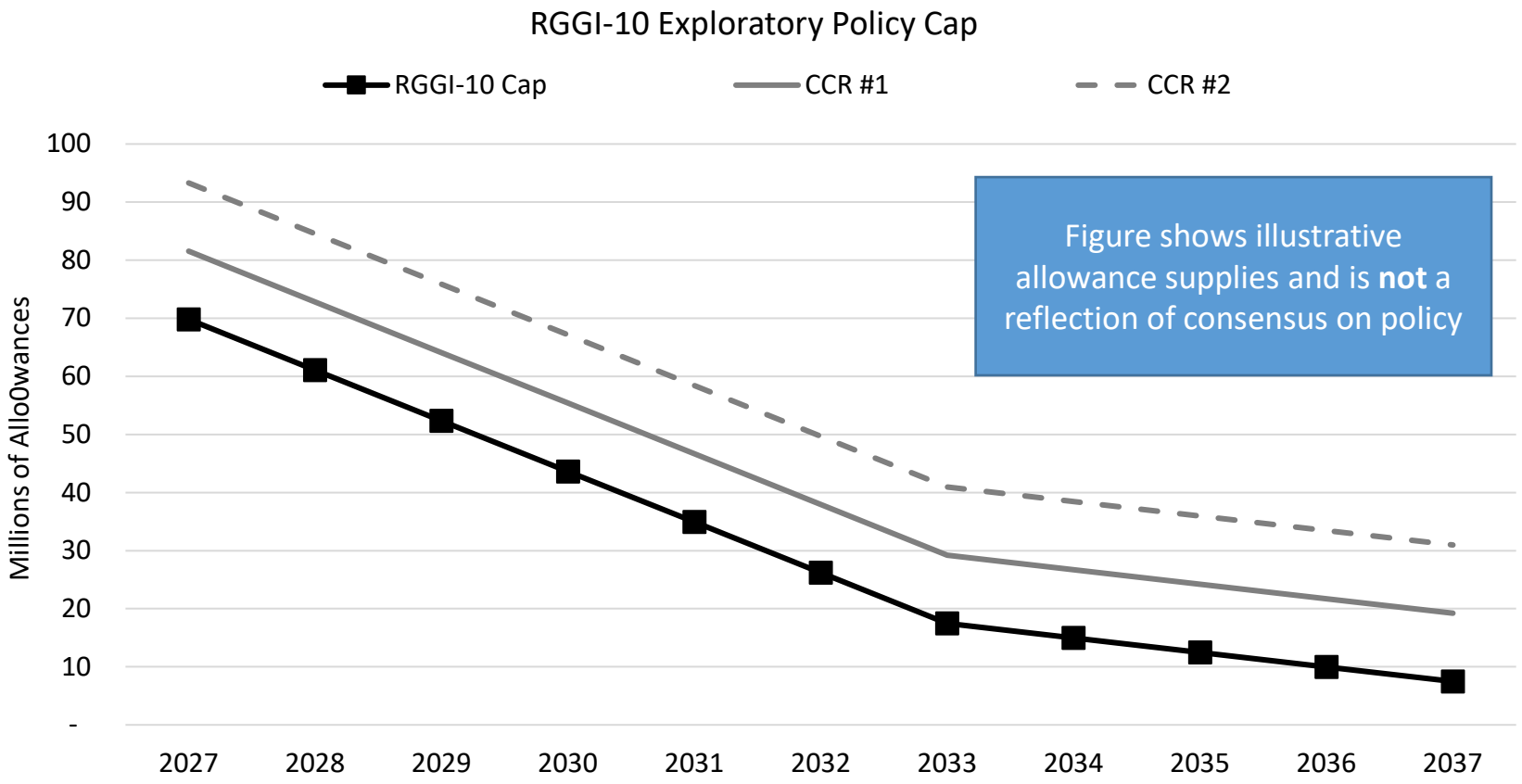
Exploratory Policy Scenario

- The RGGI states have conducted modeling and analysis of an additional exploratory policy scenario.
- This scenario is under consideration along with other modeled scenarios previously released.
- Information on scenarios modeled to date can be found on the RGGI website.

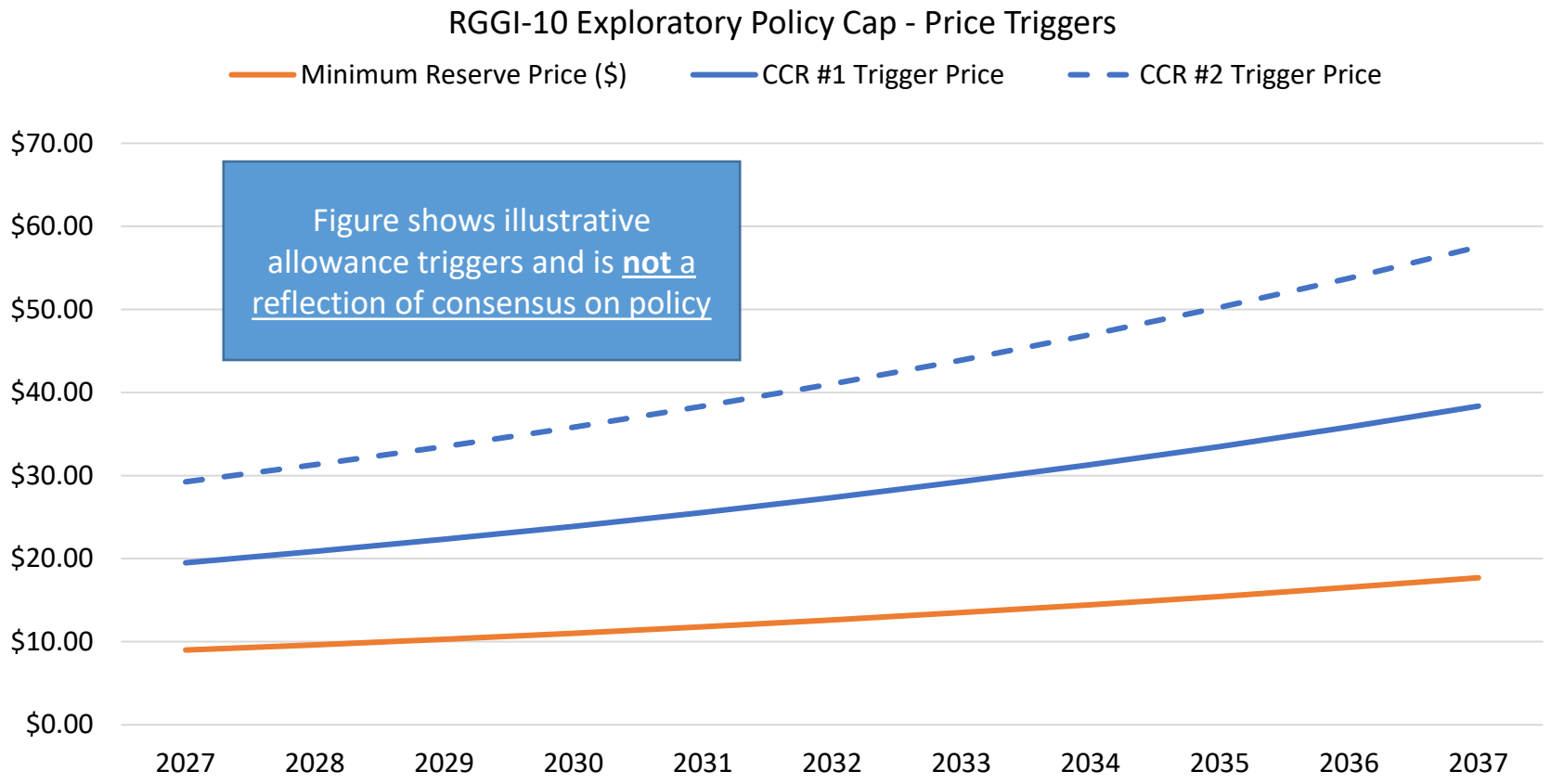
Exploratory Policy Scenario

- **2027 – 2033:** Initial, higher rate of annual reduction in base cap (consistent with a zero-by-2035 rate of decline from the existing 2026 cap level).
- **2033 – 2037:** Subsequent, lower rate of annual reduction in base cap (consistent with a zero-by-2040 rate of decline from the new 2033 cap level).
- The **ECR** is not included.
- The **Minimum Reserve Price** is increased to match the price of the ECR trigger under current policy.
- The **CCR** size is increased to 11.75M tons per year and an **additional** CCR of equal size is available at a higher trigger price.

Exploratory Policy Scenario: Allowance Supply



Exploratory Policy Scenario: Price Triggers



How IPM and the market price allowances differently

- **IPM** predicts allowance prices based on fundamental assumptions about energy generation, electric load growth, and the allowance supply trajectory
- The **market** determines allowance prices based on current dynamics, in particular the balance between supply and demand, and expectations for the future.

IPM Considerations include:	Market Considerations include:
Long-term Fundamentals	Supply and Demand of Allowances
Generation Assumptions & Costs	Short-Term Events
Economic Growth Forecast	Speculation
Government Policies, and more…	Annual Emissions Trends, and more…

RGGI IPM Modeling

RGGI Results Overview

9/19/2024

RGGI Program Review – Modeling Methodology

- Timeline
  - Results for model runs are presented for 2028 – 2037
- Cap and CCR Modeled
  - Two cap scenarios were modeled
    - Flat Cap Scenario consistent with current program design
    - Exploratory Policy Scenario with increased reserve price, declining cap to 2037 and two-tier CCR.
  - Cap levels were held constant beyond 2037
- Assumption Update
  - Renewable cost data has been updated to align with NREL's 2024 release of the Annual Technology Baseline dataset

Assumption	Description	Source
Planning Reserve Margin	Installed reserve margin and locational capacity requirements from 2025-2050 by ISOs	**PJM –** BRA Reserve Requirement Study **ISO-NE** – ICR Requirements for Forward Capacity Auctions **NYISO** – Scoping Plan Integration Analysis
Minimum Run Requirements	Certain states have submitted minimum run requirements to be included in the model	**Provided by states** (incl. Delaware, New Hampshire, New York)
Capacity changes	Include firm builds for the next 5 years (2024-2028), firm retirements (announced in the near term), and recent builds and retirements to capture the changes in the market	**PJM** - Interconnection Queue, Generation Deactivations list **NYISO** – 2024 Gold Book, NY CAC Scoping Plan Documentation, Open NY Data* **ISO-NE** - Interconnection Queue, Status of Non-Price Requirement Requests and Retirement De-list Bids
Transmission Additions	Relevant transmission additions are modeled in New York and Massachusetts	**NY** - TIER 4 New York City Renewable Energy, NYISO Public Policy Transmission Planning Process – CHPE and Clean Path NY **MA** - New England Clean Energy Connect
Gas Prices	Henry Hub gas prices and hub basis by season	Henry Hub spot and future prices from June 2024 through 2025, AEO 2023 for 2030 onwards.
Cost and Performance of the new builds	Nationwide assumption on the cost (CAPEX, VOM, FOM) and performance (heat rate, capacity factor) for the potential builds from 2028 to 2050, regionalized with EPA regional modifier	**Nationwide** - NREL ATB 2024, EIA AEO 2023 **Interconnection Costs:** Lawrence Berkeley National Lab Study on Interconnection Cost By ISO **Regional modifier** – EPA Regional Cost Adjustment Factors (tbl.4-14 EPA platform v6, April 2024)
Federal Tax Credits and Policies	Include ITC, PTC, and relevant tax credits that are new or extended under IRA. Finalized EPA Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired power plants.	**ITC/PTC** - DOE Inflation Reduction Act Summary **Hydrogen** - 26 USC 45V: Credit for production of clean hydrogen **Existing Nuclear** - 26 USC 45U: Zero-emission nuclear power production credit **CCS -** 26 USC 45Q: Credit for carbon oxide sequestration

**For Case B, NYISO buildout is aligned with the NY CAC Scoping Plan, Revised Scenario 2.*

Projected Trends are Consistent with 2023 Modeling Results

Case A and Case B

Federal policies such as IRA and EPA Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired power plants drive emission reductions in 2030s. EPA power plant rules result in emission restrictions on coal and new gas facilities, reducing emissions in the Eastern Interconnect. IRA tax credits expands the deployment of renewables to meet load growth in the late 2030s, reducing thermal generation and emissions.

Case A – Currently Contracted Renewables Only

Lack of other state policy drivers beyond RGGI assumed in Case renders the exploratory policy cap binding and reaching the CCR at times. Thermal generation persist due to load growth and lack of policies and mandates driving renewable deployment. Allowance prices increase to ~$39 by 2037 and reach the CCR trigger in multiple years.

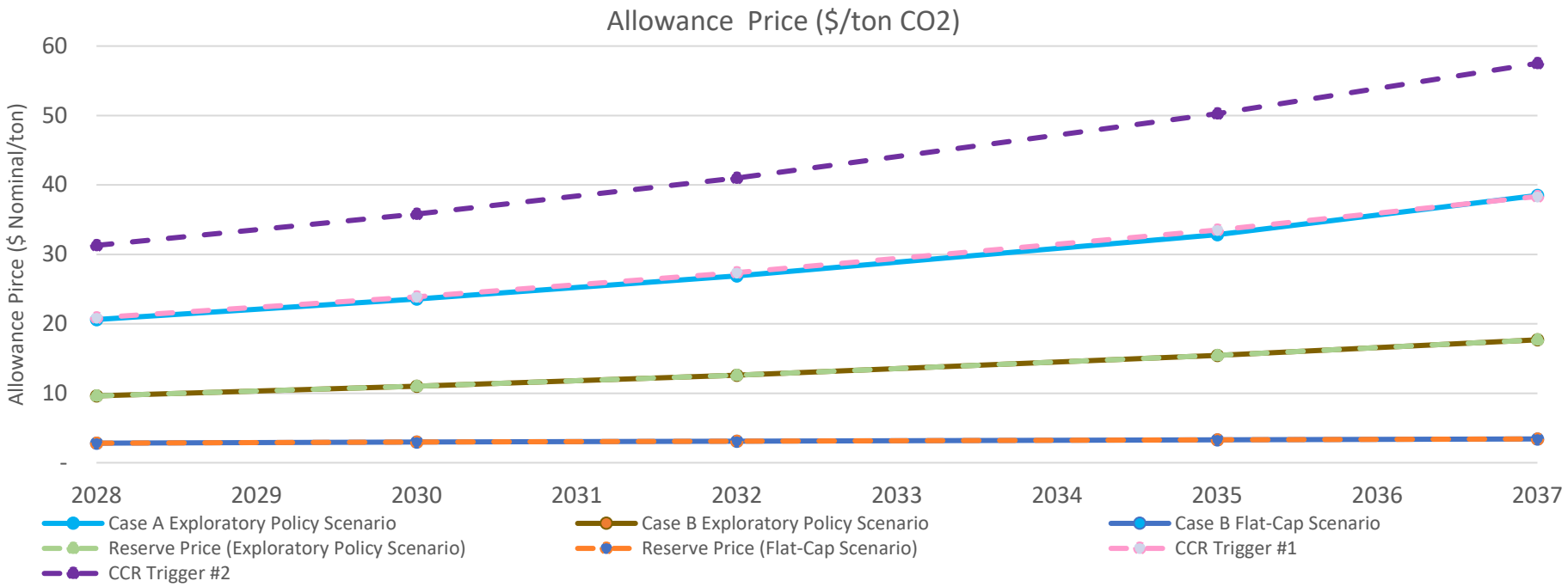
Increasing allowance prices increase energy prices and imports. Lower levels of renewable deployment and increasing allowance prices lead to higher imports and energy prices.

Case B – On-the-Books Policies and Mandates

Allowance prices remain at the reserve price in all years, as state-level policies and mandates in addition to RGGI achieve emission reductions through 2030s. By 2032, emissions are projected to fall to ~50% of 2023 emissions even in a cap scenario.

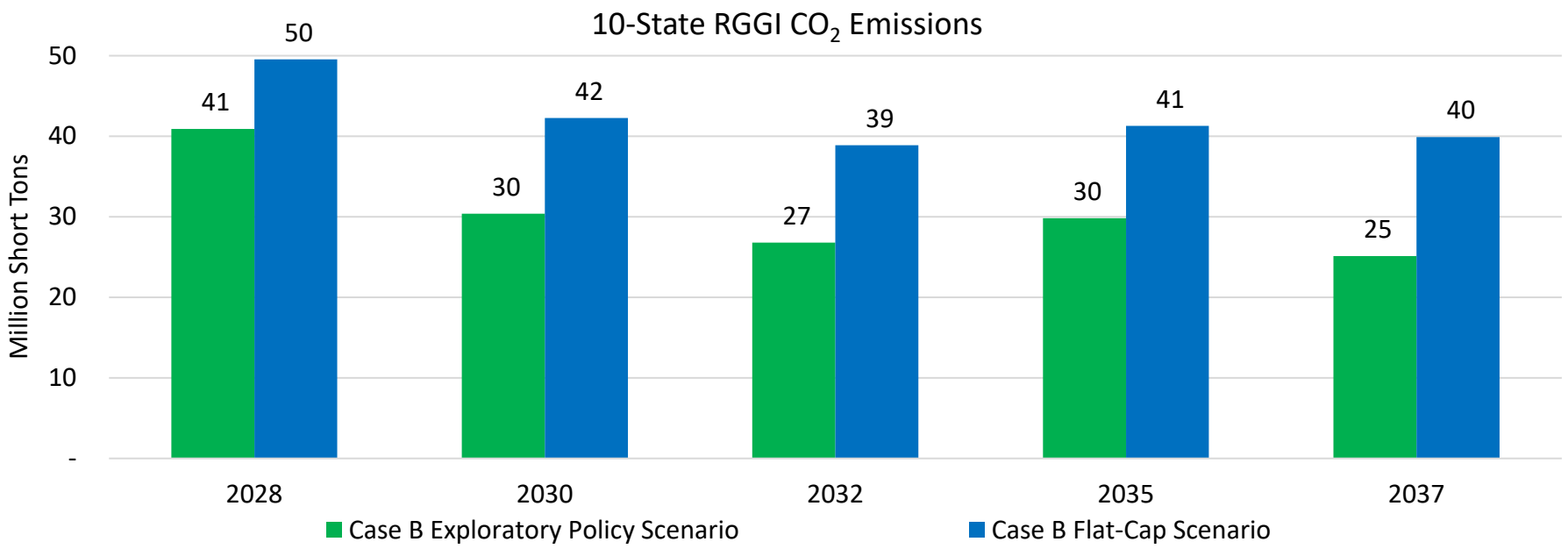
Increased reserve price in the exploratory policy scenario results in additional emission reductions. (~120 Mtons), with incremental reductions between 13% in 2028 and 37% by 2037.

10-State RGGI – Allowance Clearing Prices



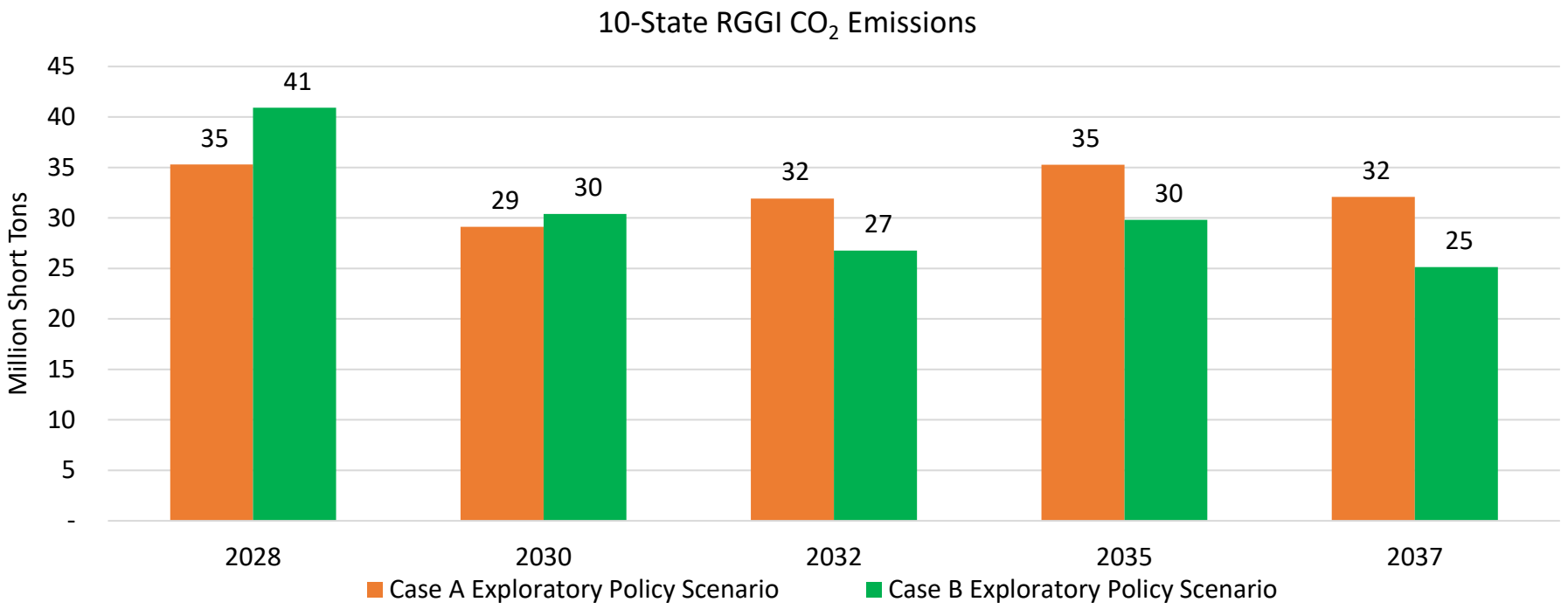
- For both the exploratory policy scenario and the flat cap in Case B, the RGGI allowance prices are at their respective reserve price. Policy mandates and emission targets, along with increased reserve prices, reduce emissions and program is non-binding.
- Case A allowance prices increase to $39 by 2037, with load growth, increased costs of renewables and EPA policies increasing the cost of non-emitting generation absent non-RGGI state policy drivers and triggering the CCR in multiple years.

10-State RGGI Case B – Affected CO_2 Emissions 2028 - 2037



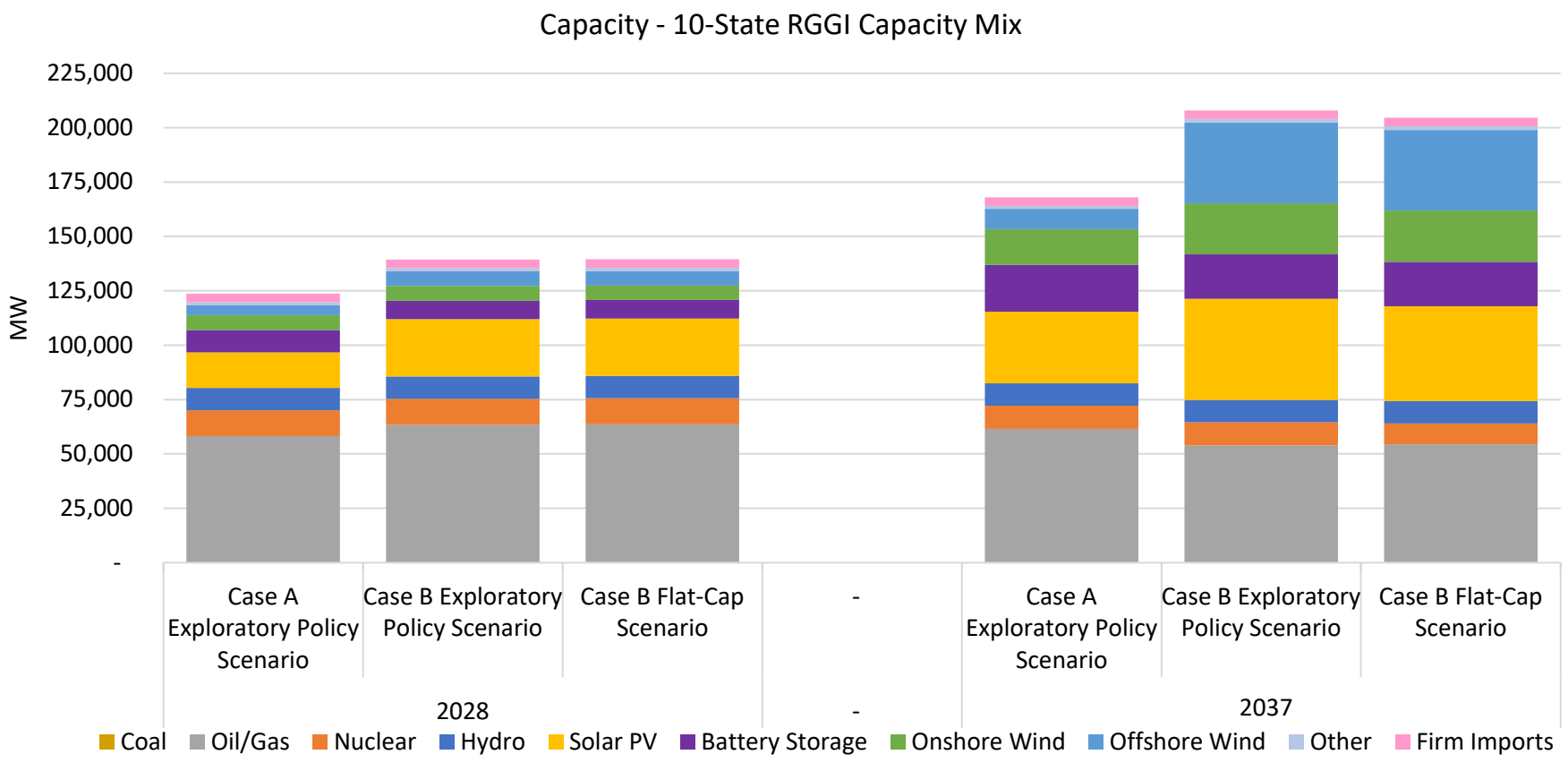
- Higher reserve prices in the exploratory policy scenario reduce emissions relative to the flat-cap scenario.
- Emission reductions between 2028 and 2037 amount to ~120 Million Tons.

10-State RGGI Case A and B Policy Case – Affected CO_2 Emissions 2028 - 2037

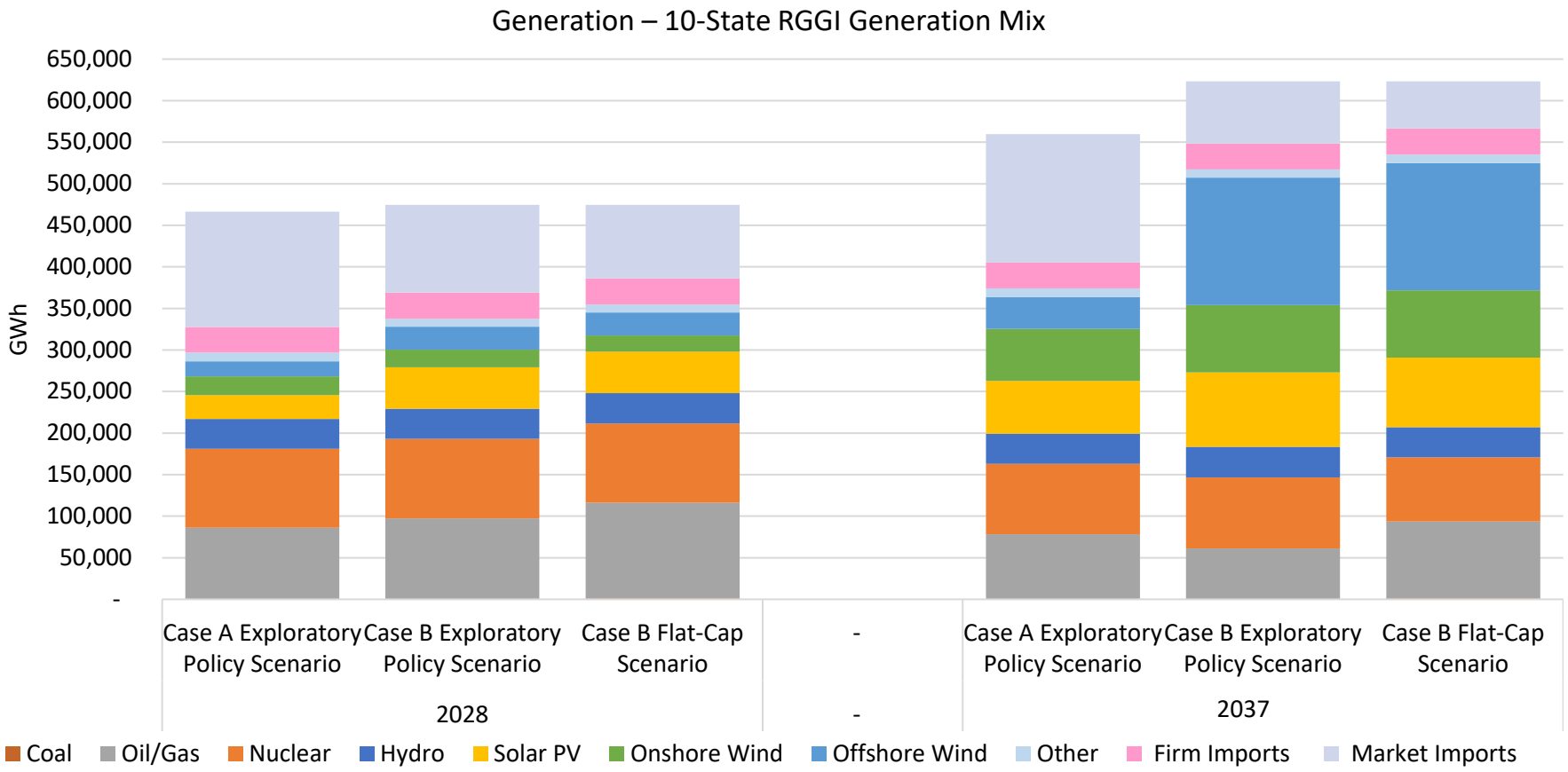


- A binding RGGI cap in Case A leads to increasing allowance prices and release of CCR allowances in 2028 and 2030s.
- Emissions are lower through 2030 to build a bank of allowances for tighter cap years 2032 onwards.

10-State RGGI Capacity Mix



10-State RGGI Generation Mix



Next Steps

- Submit written comments to info@rggi.org by **October 23, 2024**. Use the subject line "RGGI Program Review Comment."
- States will review and incorporate feedback into the electricity sector analysis and program considerations.

Thank You!