

## REGIONAL GREENHOUSE GAS INITIATIVE



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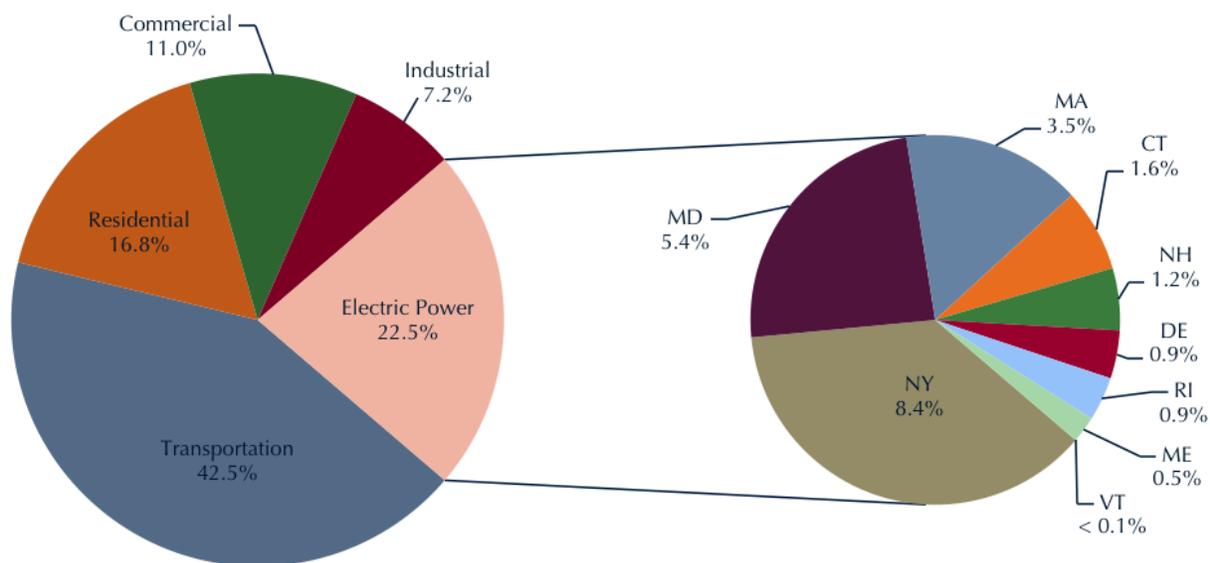
The Regional Greenhouse Gas Initiative (RGGI) was the first mandatory cap-and-trade program in the United States to limit carbon dioxide (CO<sub>2</sub>) from the power sector. It consists of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. RGGI was established in 2005, and administered its first auction of CO<sub>2</sub> emissions allowances in 2008. By 2020, the RGGI CO<sub>2</sub> cap is projected to contribute to a 45 percent reduction in the region's annual power-sector CO<sub>2</sub> emissions from 2005 levels, or between 80 and 90 million short tons (tons) of CO<sub>2</sub>. RGGI requires fossil fuel power plants over 25 megawatts in participating states to obtain an allowance for each ton of CO<sub>2</sub> emitted annually. Power plants within the region may comply with the cap by purchasing allowances from quarterly auctions, other generators within the region, or offset projects.

### **CAP AND TRADE BASICS**

A cap-and-trade system is one of a variety of market-based policy tools being used to reduce greenhouse gas emissions. Market-based policies are often favored as a more cost-effective alternative to traditional command-and-control regulation. A cap-and-trade program sets a clear limit on greenhouse gas emissions and translates this limit into tradable emission allowances (each allowance is typically equivalent to one ton of CO<sub>2</sub>), which are auctioned or allocated to regulated emitters. At the

end of each compliance period, each regulated emitter must submit to the state enough allowances to cover its actual emissions during the compliance period. The total number of allowances minted by the state under the cap for a given year decreases over time to reduce the total amount of greenhouse gas emissions. By creating a market and a price for emission reductions, the cap-and-trade system offers an environmentally effective and economically efficient response to climate change.

**FIGURE 1: RGGI CO<sub>2</sub> Emissions by Sector in 2011**



Source: EPA, State Energy CO<sub>2</sub> Emissions, 2011, [http://www.epa.gov/statelocalclimate/resources/state\\_energyco2inv.html](http://www.epa.gov/statelocalclimate/resources/state_energyco2inv.html)

## RGGI HISTORY

### PROGRAM DEVELOPMENT AND MODEL RULE

In 2005, the governors of Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont signed a **Memorandum of Understanding (MOU)** memorializing an agreement to reduce CO<sub>2</sub> emissions within the northeastern and mid-Atlantic region.<sup>1</sup> In 2007, RGGI was expanded to include Maryland, Massachusetts, and Rhode Island. The ten signatory states agreed to be jointly responsible for carrying out the provisions featured in the MOU.<sup>2</sup>

In doing so, the ten states addressed two key components that led to the ultimate implementation of the RGGI program. First, the states agreed to adopt individual shares of the overall RGGI CO<sub>2</sub> cap by agreeing to implement state-level CO<sub>2</sub> emissions budgets specified in the MOU. Second, the states assumed responsibility for developing a **Model Rule** to serve as a common framework for individual state-level regulations.<sup>3</sup> The ten signatory states jointly released the first Model Rule draft in 2006, and adopted a final version of the Model Rule on December 31, 2008.

The program's compliance obligations began on January 1, 2009. Participating states agreed at the time of the

program's inception in 2005 to conduct a comprehensive two-year Program Review throughout 2012. The Program Review was intended to evaluate the effectiveness of the original Model Rule in reducing the region's CO<sub>2</sub> emissions, as well as the extent to which the program enabled states to invest auction revenues into the region's consumer benefit programs.

Between 2008 and 2013, RGGI operated on the basis of the **original Model Rule**, which served as a regulatory blueprint for each member state.<sup>4</sup> Under the Model Rule framework, each member state enacted individual regulations that covered entities were required to comply with in order to participate in the regional trading program, which featured a regional CO<sub>2</sub> cap of 188 million tons between 2008 and 2011, and was lowered to 165 million tons between 2012 and 2013. The Model Rule identified methods and standards for administering quarterly CO<sub>2</sub> allowance auctions, and also introduced parameters for monitoring and tracking acquisition and transfers of CO<sub>2</sub> allowances between compliance entities through the RGGI CO<sub>2</sub> Allowance Tracking System (**RGGI COATS**).<sup>5</sup> The original Model Rule also established conditions for verifying the eligibility of offset credits.

## FIRST CONTROL PERIOD (2009-2011)

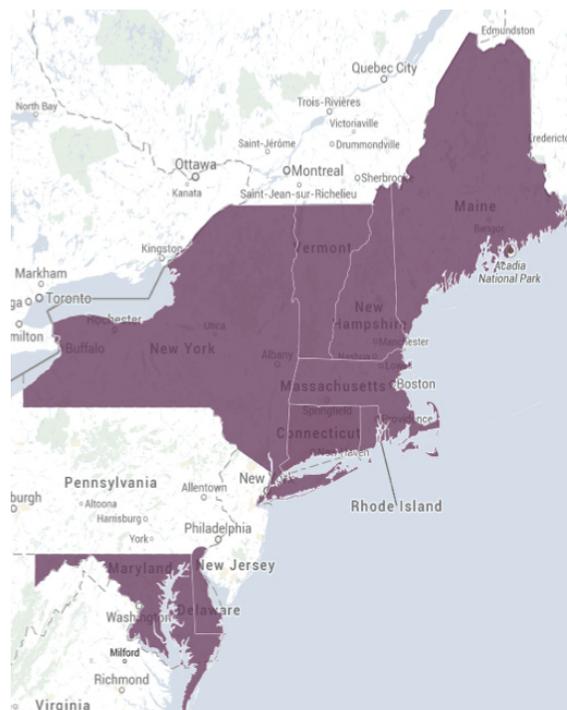
Throughout the first control period between 2009 and 2011, when the allowance submission requirement became effective, RGGI auctioned 395 million CO<sub>2</sub> allowances, or 70 percent of the total 564 million available during the program's first three years.<sup>6</sup> Over the course of the program's first fourteen quarterly auctions, the clearing price for CO<sub>2</sub> allowances ranged as high as \$3.35 and as low as \$1.86.<sup>7</sup> The first control period yielded over \$922 million in revenue from auctions. Throughout this period, the RGGI program covered 211 CO<sub>2</sub> emissions sources. However, CO<sub>2</sub> emissions in the region fell below the cap during the first control period, leaving a surplus of unsold CO<sub>2</sub> allowances. A report issued by the New York State Energy Research and Development Agency attributes the region's decrease in CO<sub>2</sub> emissions to fuel-switching from petroleum and coal generation to less carbon-intensive natural gas generation, lower demand-side electricity load, and increased nuclear and renewable capacity.<sup>8</sup>

At the end of the first control period, New Jersey Governor Chris Christie announced that the state was withdrawing from RGGI. In withdrawing from RGGI, the governor cited that the state's CO<sub>2</sub> emissions were already below its 2020 emissions targets in part due to the increased use of natural gas, and also suggested that increased operational costs to power plants in New Jersey could provide out-of-state generators with a competitive advantage in supplying cheaper, more carbon-intensive power to the state's ratepayers.<sup>9</sup> According to a report issued by the Analysis Group in 2011, revenues generated during the first control period contributed to \$1.1 billion in electricity bill reduction for customers in the RGGI region as a result of substantial state investment of allowance proceeds in energy efficiency programs. The report also determined that lower demand for fossil fuels supplied from outside the RGGI region preserved \$765 million in the local economy.<sup>10</sup>

## PROGRAM REVIEW

Member state agencies and stakeholder groups began compiling comments and analyses in 2011 to develop the **RGGI Program Review**, as required by the RGGI MOU.<sup>11</sup> Because of both the increased use of natural gas and the lower demand for electricity by the region's consumers, the Program Review strongly recommended that the RGGI CO<sub>2</sub> cap be reduced. The Program Review culminated with the release of the **updated Model Rule** on February 7, 2013.<sup>12</sup> The updated Model Rule incorporated feedback from participating

**FIGURE 2: RGGI Member States**



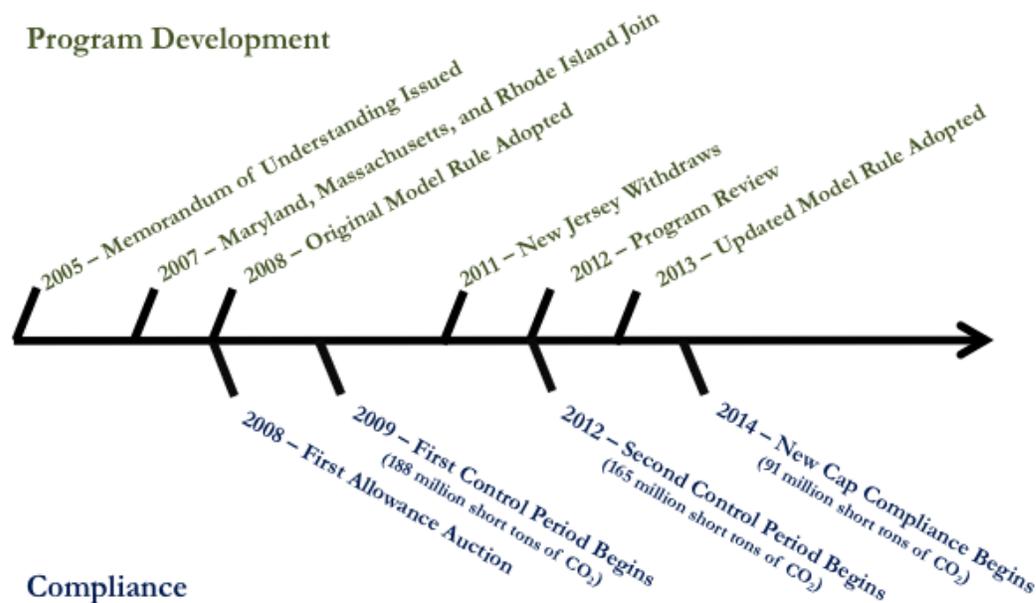
Source: RGGI, *Program Design*, <http://www.rggi.org/design/history>

state agencies and other stakeholders on regulatory adjustments, with an emphasis on increasing compliance flexibility.

## SECOND CONTROL PERIOD (2012-2014)

Following the departure of New Jersey, the RGGI CO<sub>2</sub> cap was reduced to 165 million tons of CO<sub>2</sub> at the beginning of the second control period in 2012. As illustrated in Figure 5, demand for allowances throughout 2012 remained low, with prices never exceeding \$1.93. Demand for allowances, however, increased dramatically upon release of the updated Model Rule, which lowered the 2014 CO<sub>2</sub> budget to 91 million tons. As a result, clearing prices rose as high as \$3.21 during auction, with 100 percent of allowances selling following news of the reduced 2014 cap. Between 2012 and 2013, nearly 80 percent of allowances offered at auction were sold.

**FIGURE 3: RGGI Historical Timeframe**



Source: RGGI, Program Design, <http://www.rggi.org/design/history>

## UPDATED MODEL RULE DETAILS

Starting on January 1, 2014, member states will begin implementing rules contained in an updated Model Rule, which was adopted in late 2013. The 2014 emissions cap of 91 million tons of CO<sub>2</sub> represents a 45 percent reduction from the 2013 cap of 145 million tons of CO<sub>2</sub>. The cap will further decline 2.5 percent annually until 2020, resulting in a cumulative 15 percent reduction of annual emissions from the 2014 cap of 91 million tons of CO<sub>2</sub>. Under the updated Model Rule, CO<sub>2</sub> allowances acquired by compliance entities before 2014 that are already contained in private holding accounts may be used to satisfy an allowance obligation. According to projections, RGGI estimates some 115 million allowances allocated before 2014 have been banked in private holding accounts.<sup>13</sup> To ensure the annual target is met with real reductions rather than with the use of banked allowances, RGGI will reduce the cap each year by a factor that accounts for previously banked allowances.

In addition to reducing the cap, the updated Model Rule introduces a few new policy provisions.<sup>14</sup> One of these is the Cost Containment Reserve (CCR), intended to keep the price of allowances from rising above a program-wide trigger price. The CCR consists of a limited supply

of additional CO<sub>2</sub> emission allowances separate from the annual RGGI Program CO<sub>2</sub> Budget, which are to be made available for purchase when demand for allowances causes the clearing price to exceed the trigger price during a quarterly auction. The CCR is intended to provide some assurance that the auction price will not rise above the CCR trigger price, which changes annually to prices determined during the Program Review process.

The updated Model Rule also adjusts the schedule for demonstrating compliance by introducing a two-year interim control period beginning in 2015. Previously, regulate entities only had to demonstrate compliance at the end of each three-year control period. The interim control period runs throughout the first and second calendar years of each control period,<sup>15</sup> and requires compliance entities to hold allowances equal to 50 percent of their obligation over the two-year interim control period, before submitting 100 percent of the compliance obligation at the end of the three-year control period. The interim control period is intended to prevent regulated entities from using impending bankruptcy to avoid any compliance obligation. Additional details of the updated Model Rule are summarized in Table 1.

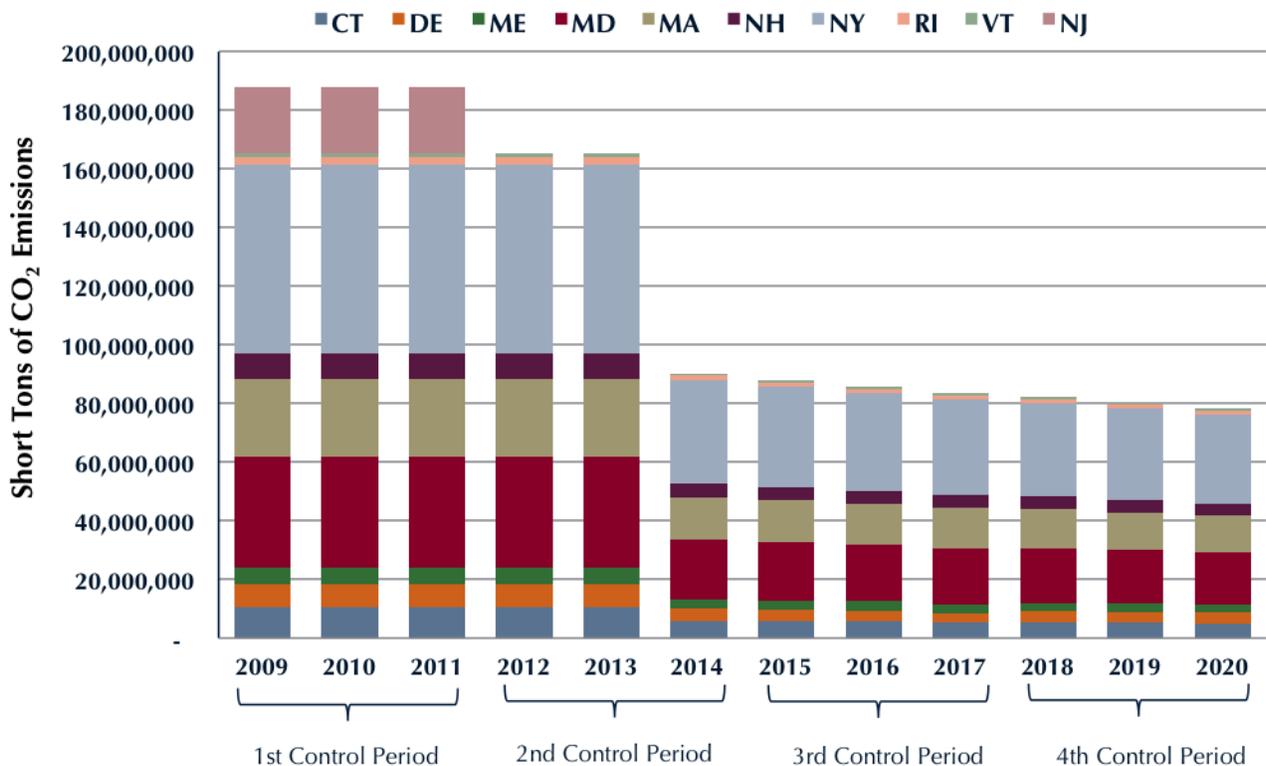
**Table 1: RGGI Cap-and-Trade Details**

ISSUE	DETAILS AND DISCUSSION
<i>Status of Regulation</i>	
Legal Status	Each participating state passed regulations and/or statutes based on the Model Rule framework. Program compliance began on January 1, 2009.
Legal Authority	Regulations in each member state dictate compliance standards as enforced by RGGI member state environmental agencies.
Key Dates	December 20, 2005: States sign Memorandum of Understanding. January 1, 2009: Compliance obligation begins. November 29, 2011: New Jersey withdraws from RGGI. January 1, 2014: Compliance obligation begins under updated Model Rule (see Figure 3 for a full timeline).
Coverage Threshold	Sources with 25 megawatts or greater of nameplate fossil-fuel electricity generation capacity.
Gases Covered	Carbon Dioxide (CO <sub>2</sub> )
Sectors Covered	Fossil fuel electricity generation within RGGI region (does not include imports).
Point of Regulation	Fossil fuel electricity generators (within RGGI member states).
<i>Allowance Allocation</i>	
Regional Emission Targets	188 million tons of CO <sub>2</sub> annually between 2009-2011 (New Jersey included) 165 million tons of CO <sub>2</sub> annually between 2012-2013 91 million tons of CO <sub>2</sub> in 2014, decreasing 2.5% annually through 2020 (see Figure 4 below)
Allocation of Allowances to States	Each member state is assigned a state-level share of the overall RGGI Program CO <sub>2</sub> Budget as defined in the MOU. Together, individual member state CO <sub>2</sub> budgets compose the RGGI CO <sub>2</sub> cap.
Distribution of Allowances to Regulated Entities	Competitive allocation of allowances to electric power sources subject to 100% auction-based distribution
Auction	Quarterly, single round, sealed bid, uniform price Price Minimum: \$2.00 in 2014, rising 2.5% annually Must be purchased at auction in multiples of 1,000 allowances (1 allowance = 1 short ton of CO <sub>2</sub> ) Compliance entities are prohibited from bidding on more than 25% of total CO <sub>2</sub> allowances offered at any auction.
<i>Market Flexibility</i>	
Allowance Banking	Compliance entities may bank CO <sub>2</sub> allowances, without limitation, until the allowances are used to satisfy compliance or transferred to another account.
Allowance Borrowing	RGGI prohibits regulated entities from using future allowances to satisfy compliance in advance of the year associated with the allowance.
Offsets: Quantity	Allowed for 3.3% of total compliance obligation

ISSUE	DETAILS AND DISCUSSION																								
Offsets: Protocols	Eligible offset allowance categories accepted to satisfy program compliance include: (1) landfill methane (CH <sub>4</sub> ) capture and destruction; (2) sulfur hexafluoride (SF <sub>6</sub> ) emissions reduction from power transmission; (3) CO <sub>2</sub> sequestration from afforestation projects per U.S. Forest Projects Offset Protocol; (4) CO <sub>2</sub> reductions from end-use energy efficiency; and (5) CH <sub>4</sub> abatement from agricultural manure management operations.																								
Strategic Reserve	<p>Starting in 2014, the CCR will contain a limited number of allowances each year. These allowances will be made available during any auction in which demand for allowances at prices at or above the CCR trigger price otherwise exceeds the supply of CO<sub>2</sub> allowances available for sale at that auction. The CCR will contain the number of allowances specified below for each year, regardless of whether CCR allowances were sold in previous years. It is possible for the clearing price to exceed the trigger price if the demand for allowances at the trigger price exceeds the total number of available allowances when the CCR is included.</p> <table border="1" data-bbox="532 766 1445 1142"> <thead> <tr> <th data-bbox="532 766 841 840">YEAR</th> <th data-bbox="841 766 1149 840">ALLOWANCES IN RGGI CCR (MILLIONS)</th> <th data-bbox="1149 766 1445 840">CCR TRIGGER PRICE</th> </tr> </thead> <tbody> <tr> <td data-bbox="532 840 841 884">2014</td> <td data-bbox="841 840 1149 884">5</td> <td data-bbox="1149 840 1445 884">\$4</td> </tr> <tr> <td data-bbox="532 884 841 928">2015</td> <td data-bbox="841 884 1149 928">10</td> <td data-bbox="1149 884 1445 928">\$6</td> </tr> <tr> <td data-bbox="532 928 841 972">2016</td> <td data-bbox="841 928 1149 972">10</td> <td data-bbox="1149 928 1445 972">\$8</td> </tr> <tr> <td data-bbox="532 972 841 1016">2017</td> <td data-bbox="841 972 1149 1016">10</td> <td data-bbox="1149 972 1445 1016">\$10</td> </tr> <tr> <td data-bbox="532 1016 841 1060">2018</td> <td data-bbox="841 1016 1149 1060">10</td> <td data-bbox="1149 1016 1445 1060">\$10.25</td> </tr> <tr> <td data-bbox="532 1060 841 1104">2019</td> <td data-bbox="841 1060 1149 1104">10</td> <td data-bbox="1149 1060 1445 1104">\$10.50</td> </tr> <tr> <td data-bbox="532 1104 841 1142">2020</td> <td data-bbox="841 1104 1149 1142">10</td> <td data-bbox="1149 1104 1445 1142">\$10.75</td> </tr> </tbody> </table>	YEAR	ALLOWANCES IN RGGI CCR (MILLIONS)	CCR TRIGGER PRICE	2014	5	\$4	2015	10	\$6	2016	10	\$8	2017	10	\$10	2018	10	\$10.25	2019	10	\$10.50	2020	10	\$10.75
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2020	10	\$10.75																							
<i>Emissions Reporting and Verification</i>																									
Reporting	Compliance entities must report CO <sub>2</sub> emissions quarterly to RGGI member state environmental agencies, as well as the EPA's Clean Air Markets Division (the latter required by federal law of all large greenhouse gas emitters nationwide).																								
Registration	Compliance entities must register with RGGI on the RGGI CO <sub>2</sub> Allowance Tracking System (RGGI COATS).																								
Verification	Member states' environmental agencies must provide allowance verification, as well as additional third-party verification for all CO <sub>2</sub> offset allowances.																								
<i>Compliance and Enforcement</i>																									
Annual Obligation	Compliance entities must hold 50% of their allowance obligation at the end of each Interim Control Period, which includes any year that is not the end of a three-year compliance period.																								

ISSUE	DETAILS AND DISCUSSION
Compliance Period Obligation	RGGI uses three-year control periods to manage compliance. The first two calendar years of each three-year compliance period constitute the Interim Control Period. During the interim control period, compliance entities are required to hold 50% of their total allowance obligation in their compliance account. Entities may also choose to submit these allowances during the interim control period to be deducted from the total number of allowances needed to achieve compliance at the end of the three-year control period
Noncompliance	Firms failing to submit CO <sub>2</sub> allowances equal to annual CO <sub>2</sub> emissions may incur a fine equal to three times the allowance price for each ton of CO <sub>2</sub> emissions exceeding the number of submitted allowances. Additional penalties will be incurred by sources failing to hold allowances accounting for the 50% compliance obligation during an Interim Control Period. Member state agencies may impose state-specific penalties on firms failing to comply with CO <sub>2</sub> allowance obligations.
Trading and Enforcement	An independent market monitor oversees the market to detect attempts of price manipulation or collusion during auctions and exchanges on secondary markets. Participants found in violation are subject to civil or criminal penalties imposed by Title V of the Clean Air Act.

**FIGURE 4: RGGI Annual CO<sub>2</sub> Emissions Cap**



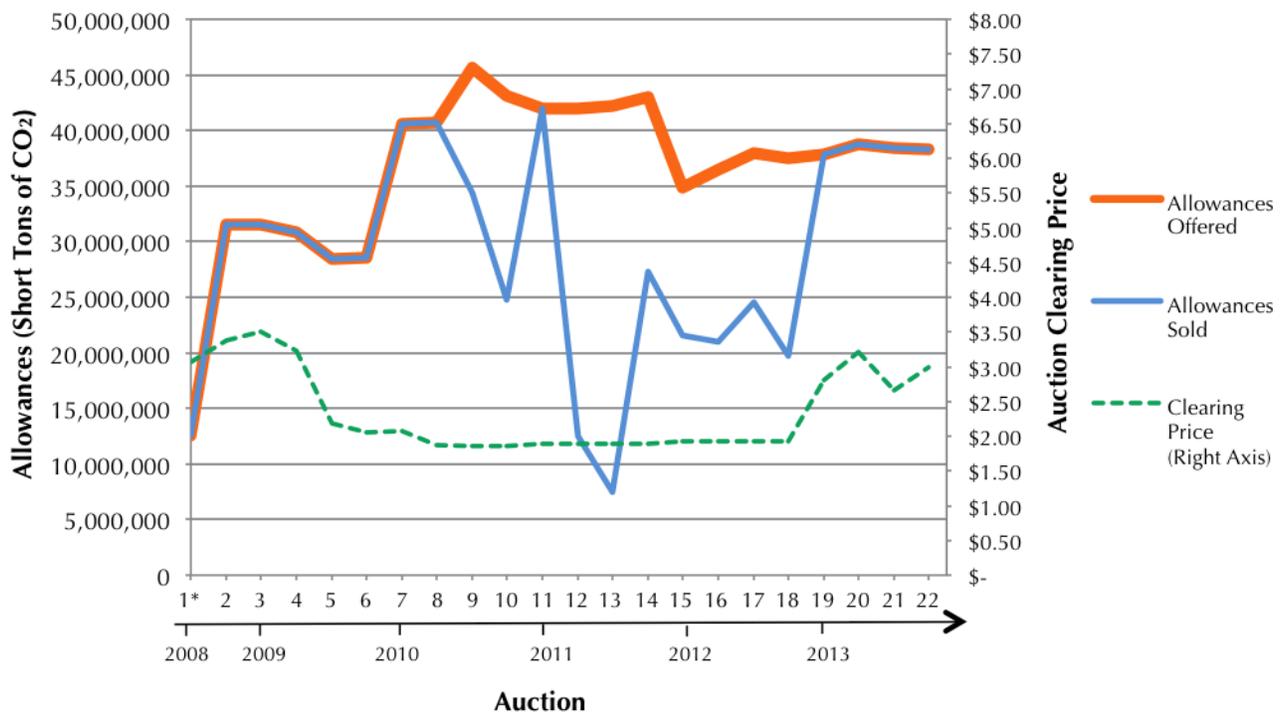
Source: RGGI, Allowance Allocation, [http://www.rggi.org/design/overview/allowance\\_allocation](http://www.rggi.org/design/overview/allowance_allocation)

## ■ AUCTION REVENUE

Since 2008, RGGI allowance auctions have generated roughly \$1.5 billion in cumulative auction proceeds. Member states have agreed under the RGGI MOU to direct at least 25 percent of all revenues generated at auction to consumer benefit, renewable energy, or energy efficiency programs.<sup>16</sup> Based on an investment report released by RGGI in 2012, member state reinvestment totaled over \$617 million between 2009 and 2011, with nearly 71 percent of cumulative reinvestment directed at

renewable energy and energy efficiency initiatives across the RGGI region. The report credited these clean energy and efficiency programs with returning \$1.3 billion in lifetime energy savings to the region's ratepayers, as well as reducing CO<sub>2</sub> emissions in the region by 12 million tons. The report also attributed over \$69 million in funding for direct bill assistance programs for low-income families throughout the region.<sup>17</sup>

**FIGURE 5: RGGI Allowance Auction Results (2008-2013)**



\*First auction included Connecticut, Maine, Maryland, Massachusetts, Rhode Island and Vermont

Source: RGGI. Auction Results, [http://www.rggi.org/market/co2\\_auctions/results](http://www.rggi.org/market/co2_auctions/results)



The Center for Climate and Energy Solutions (C2ES) is an independent nonprofit organization working to promote practical, effective policies and actions to address the twin challenges of energy and climate change.

## ENDNOTES

- 1 Regional Greenhouse Gas Initiative (RGGI) CO<sub>2</sub> Budget Trading Program - Home. “Memorandum of Understanding.” Accessed January 8, 2014. <http://www.rggi.org/design/history/mou..>
- 2 Bloomberg BNA. “RGGI Holds Bipartisan Support in Northeast As Climate Change Issues Debated Nationally” Last modified September 20, 2013. <http://www.bna.com/rggi-holds-bipartisan-n17179877193/>.
- 3 RGGI. “Model Rule.” Accessed January 8, 2014. [http://www.rggi.org/design/history/model\\_rule](http://www.rggi.org/design/history/model_rule).
- 4 RGGI. “Original Model Rule.” Last modified December 31, 2008. <http://www.rggi.org/docs/Model%20Rule%20Revised%2012.31.08.pdf>.
- 5 RGGI. “RGGI CO<sub>2</sub> Allowance Tracking System.” Accessed January 8, 2014. <https://rggi-coats.org/eats/rggi/>.
- 6 First Control Period CO<sub>2</sub> Allowance Allocation.” Last modified December 9, 2013. [http://www.rggi.org/docs/FCP\\_Allowance-Allocation\\_Updated.pdf](http://www.rggi.org/docs/FCP_Allowance-Allocation_Updated.pdf).
- 7 RGGI. “Auction Results.” Accessed January 8, 2014. [http://www.rggi.org/market/co2\\_auctions/results](http://www.rggi.org/market/co2_auctions/results).
- 8 New York State Energy Research and Development Authority. “Relative Effects of Various Factors on RGGI Electricity Sector CO<sub>2</sub> Emissions: 2009 Compared to 2005.” Last modified September 2, 2010. [http://www.rggi.org/docs/Retropective\\_Analysis\\_Draft\\_White\\_Paper.pdf](http://www.rggi.org/docs/Retropective_Analysis_Draft_White_Paper.pdf).
- 9 The New York Times. “Christie Pulls N.J. From 10-State Greenhouse Gas Coalition.” Last modified May 26, 2011. [http://www.nytimes.com/2011/05/27/nyregion/christie-pulls-nj-from-greenhouse-gas-coalition.html?\\_r=0](http://www.nytimes.com/2011/05/27/nyregion/christie-pulls-nj-from-greenhouse-gas-coalition.html?_r=0).
- 10 Analysis Group. “The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States.” Last modified November 15, 2011. [http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic\\_Impact\\_RGGI\\_Report.pdf](http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Report.pdf).
- 11 International Emissions Trading Association (IETA). “Regional Greenhouse Gas Initiative: The Worlds Carbon Markets: A Case Study Guide to Emissions Trading.” Last modified May, 2013. [http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf\\_ieta\\_rggi\\_case\\_study\\_may\\_2013.pdf](http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_rggi_case_study_may_2013.pdf).
- 12 RGGI. “Updated Model Rule.” Last modified December 23, 2013. [http://www.rggi.org/docs/ProgramReview/\\_FinalProgramReviewMaterials/Model\\_Rule\\_FINAL.pdf](http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Model_Rule_FINAL.pdf).
- 13 RGGI. “RGGI IPM Analysis: Amended Model Rule.” Last modified February 8, 2013. [http://www.rggi.org/docs/ProgramReview/February11/13\\_02\\_11\\_IPM.pdf](http://www.rggi.org/docs/ProgramReview/February11/13_02_11_IPM.pdf).
- 14 RGGI. “Summary of RGGI Model Rule Changes.” Last modified February, 2013. [http://www.rggi.org/docs/ProgramReview/\\_FinalProgramReviewMaterials/model\\_rule\\_summary.pdf](http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/model_rule_summary.pdf).
- 15 M.J. Bradley & Associates. “Final RGGI Model Rule Amendments Released.” Last modified February 26, 2013. [http://www.mjbradley.com/sites/default/files/MJBA\\_RGGI\\_Issue%20Brief\\_February2013.pdf](http://www.mjbradley.com/sites/default/files/MJBA_RGGI_Issue%20Brief_February2013.pdf).
- 16 RGGI. “Investment of Proceeds from RGGI CO<sub>2</sub> Allowances.” Last modified February, 2011. [http://www.rggi.org/docs/Investment\\_of\\_RGGI\\_Allowance\\_Proceeds.pdf](http://www.rggi.org/docs/Investment_of_RGGI_Allowance_Proceeds.pdf).
- 17 RGGI. “Regional Investment of RGGI CO<sub>2</sub> Allowance Proceeds, 2011.” Last modified November, 2012. <http://www.rggi.org/docs/Documents/2011-Investment-Report.pdf>.