



**ANNUAL REPORT ON THE MARKET  
FOR RGGI CO<sub>2</sub> ALLOWANCES: 2025**

**Prepared for:**

**RGGI, Inc., on behalf of the RGGI Participating States**

**Prepared By:**



May 2025

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The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort of Eastern states of the US to reduce emissions of carbon dioxide (CO<sub>2</sub>) from the power sector.

RGGI, Inc. is a non-profit corporation created to provide technical and administrative services to the states participating in the Regional Greenhouse Gas Initiative.

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## I. EXECUTIVE SUMMARY

The Regional Greenhouse Gas Initiative (“RGGI”) became the first mandatory cap-and-trade regional initiative to limit CO<sub>2</sub> emissions in the United States in 2009. Electric power generators with generating capacity at or above 25 MW located in the states participating in RGGI have been required to obtain the number of CO<sub>2</sub> allowances equal to the number of short tons of CO<sub>2</sub> they emit.<sup>1</sup>

RGGI distributes CO<sub>2</sub> emissions allowances to the market primarily through auctions, making it distinctive among existing cap-and-trade programs. Ninety-four percent of the CO<sub>2</sub> allowances that have entered circulation initially entered the market through one of the auctions. Through the end of 2025, RGGI has conducted 70 successful auctions, selling a total of 1.51 billion CO<sub>2</sub> allowances for \$10.1 billion.

RGGI is designed to allow additional jurisdictions to become Participating States. When a jurisdiction becomes a Participating State, the annual emissions cap and the number of emission sources rise accordingly. The RGGI CO<sub>2</sub> annual emissions cap was 81.3 million short tons for the ten states participating in 2025.<sup>2</sup> The emissions cap will be reduced to 78.5 million short tons in 2026, but this will be increased in July 2026 to account for the resumption of participation by Virginia. Given the mid-year resumption by Virginia, the 2026 emissions cap will be increased by 50 percent of the 2026 base budget that was planned for Virginia when it initially participated in RGGI in 2021.

In July 2025, RGGI announced the results of the Third Program Review, which set the emission caps for the years from 2027 to 2040. Before considering the resumption of Virginia’s

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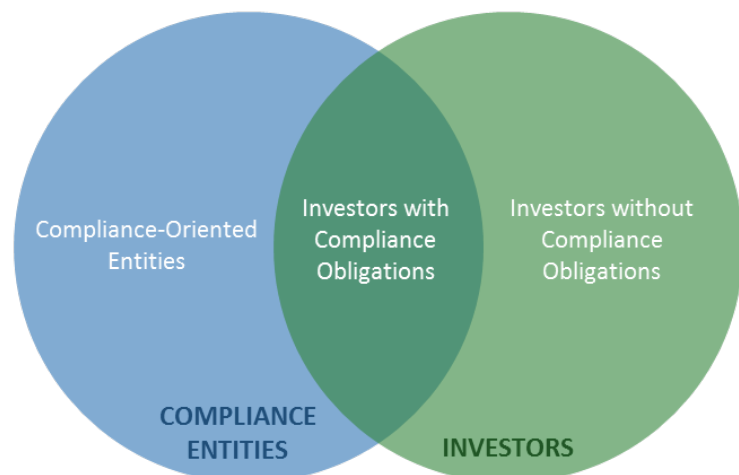
<sup>1</sup> Since 2020, New York uses a limit of 15 MW for units which are physically co-located with an existing budget source and for any unit at a facility with two or more units with 15 MW or greater nameplate capacities.

<sup>2</sup> However, this was adjusted down by 14.8 million to 66.6 million as part of the Third Adjustment for Banked Allowances, which resulted from the 2016 (or Second) Program Review. The details of the annual emission caps are described further in Section II.A.

participation, the cap was set to fall from 69.8 million in 2027 until reaching 9.0 million in 2037. The Third Program Review expanded the use of “Cost Containment Reserve” allowances starting in 2027 to as much as 23.5 million per year (not including any additional CCR allowances that might be offered by Virginia) if auction clearing prices are sufficiently high. The Cost Containment Reserve Tiers are discussed further in this report.

This report evaluates activity in the market for RGGI CO<sub>2</sub> allowances in 2025, focusing on the following areas: allowance prices, trading and acquisition of allowances in the auctions and the secondary market, participation in the market by individual firms, and market monitoring. For reporting purposes, firms are often broken up into the following categories:

- *Compliance-Oriented Entities* – Compliance entities that appear to acquire and hold allowances primarily to satisfy their own compliance obligations.
- *Investors with Compliance Obligations* – Firms that have compliance obligations, but which hold a number of allowances that exceeds their estimated compliance obligations by a margin suggesting they also buy for re-sale or some other investment purpose. These firms often transfer significant quantities of allowances to unaffiliated firms.<sup>3 4</sup>
- *Investors without Compliance Obligations* – Firms without any compliance obligations.



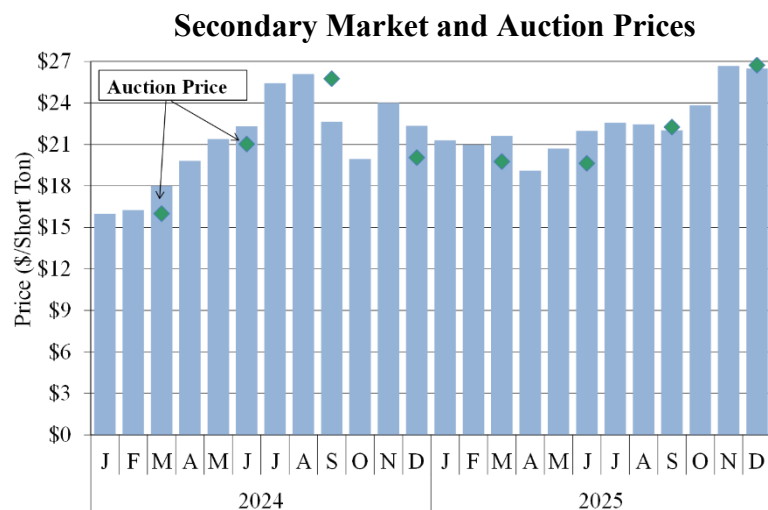
<sup>3</sup> The assessment of whether a compliance entity holds a number of allowances that exceeds its compliance obligations by a margin that suggests they are also buying for re-sale or some other investment purpose is based on: (a) the entity’s forecasted share of the total compliance obligations for the entire RGGI footprint through 2026, (b) the total number of allowances in circulation, and (c) consideration of the pattern of the entity’s allowance transfers to unaffiliated firms versus affiliated firms. Since the designation of a compliance entity as an investor is based on a review of its transactions and holdings, the designation of a particular firm may change over time as more information becomes available. Therefore, some of the quantities in this report may not match previous reports because of changes in the classification of particular firms.

<sup>4</sup> This designation may change for entities during the year, but the figures in this report may summarize allowance transactions and holdings based on the designations that were in place at the beginning of 2025 so that individual entities do not move from one category to another during the year. Consequently, some discrepancies appear in the allowance holding quantities between this report and the quarterly secondary market reports for 2025.

In this report, the “Investors with Compliance Obligations” category is sometimes combined with one of the other two categories when discussing market trends and participation. In all such cases, the text of this report clearly defines the grouping as either: “compliance entities” combining the first and second categories or “investors” combining the second and third categories. These categories are illustrated by the diagram above.

### *CO<sub>2</sub> Allowance Prices*

In 2024, secondary market prices rose steeply and peaked at \$26 in August 2024. Prices were volatile in the final months of 2024, falling to \$20 in October, rising to \$24 in November, and then falling again to \$22 in December. In 2025, average monthly prices remained near \$21 in the first quarter and ranged between \$19 and \$22 in the



second quarter. Prices remained near \$22 in the third quarter before rising between \$26 and \$27 in November and December. The average option-implied volatility of RGGI allowance futures rose moderately from 2024 to 2025 with the largest implied volatility occurring in May, June, and December of 2025.

The volume-weighted average auction clearing price increased 8 percent from \$20.17 in 2024 to \$21.81 in 2025, and secondary market prices generally followed the same trajectory as contemporaneous auction clearing prices in both years.<sup>5</sup>

The Cost Containment Reserve (“CCR”) influenced RGGI allowance price formation in 2024 and 2025. The CCR is designed to limit upward price movements by increasing auction sales if

<sup>5</sup> Allowance prices are summarized in Section III.A, and price volatility is evaluated in Section III.B.

the clearing price is above the CCR Trigger Price level. The CCR Trigger Price was \$15.92 in 2024, \$17.03 in 2025, and \$18.22 in 2026. The CCR Trigger Price was exceeded in the March 2024 auction, fully depleting the CCR for 2024. Similarly, the CCR Trigger Price was exceeded in the March 2025 auction and the March 2026 auction, depleting the CCR for 2025 and for 2026.<sup>6</sup>

In early July 2025, RGGI announced the results of the Third Program Review, which modified the rules related to the sale of CCR allowances to use a two-tier structure. “Tier 1” CCR allowances will be offered at a CCR Trigger Price that starts at \$19.50 in 2027 and rises 7 percent each year, similar to the prior RGGI design. However, RGGI will make additional “Tier 2” CCR allowances available in each year starting in 2027 at a Trigger Price that will be 50 percent higher than the Tier 1 CCR Trigger Price.

### ***Acquisition and Holdings of CO<sub>2</sub> Allowances***

Firms acquire CO<sub>2</sub> allowances in the primary market, mainly by purchasing them in the quarterly auctions. Firms can also buy and sell CO<sub>2</sub> allowances in the secondary market. Secondary market activity consists mainly of trading of futures and options contracts on the public exchange and transfers of ownership recorded in COATS (“CO<sub>2</sub> Allowance Tracking System”).

The private bank of surplus CO<sub>2</sub> allowances fell in 2025 from 62 million at the beginning of the year to 48 million at the end of the year.<sup>7</sup> The surplus was expected to decrease since 2025 was the final year in which the Third Adjustment for Banked Allowances (“TABAs”) was applied.<sup>8</sup>

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<sup>6</sup> The CCR and other program details are described further in Section II.A.

<sup>7</sup> We define the “private bank of allowances” as the number of allowances in circulation (i.e., in Compliance Accounts or in General Accounts). We define the “private bank of *surplus* allowances” as the number of allowances in circulation minus the compliance obligations for which allowances have not been surrendered.

<sup>8</sup> The Participating States adopted cap “adjustments” in the first two Program Reviews that were designed to gradually reduce the allowance surplus that accumulated in the initial years of RGGI. The First Control Period Interim Adjustment (“FCPIA”), the Second Control Period Interim Adjustment (“SCPIA”), and the Third Adjustment for Banked Allowances (“TABAs”) are described in Section II.A.

The TABA reduced the number of allowances sold by 19.1 million per year from 2021 to 2023 and by 14.7 million per year in 2024 and 2025.

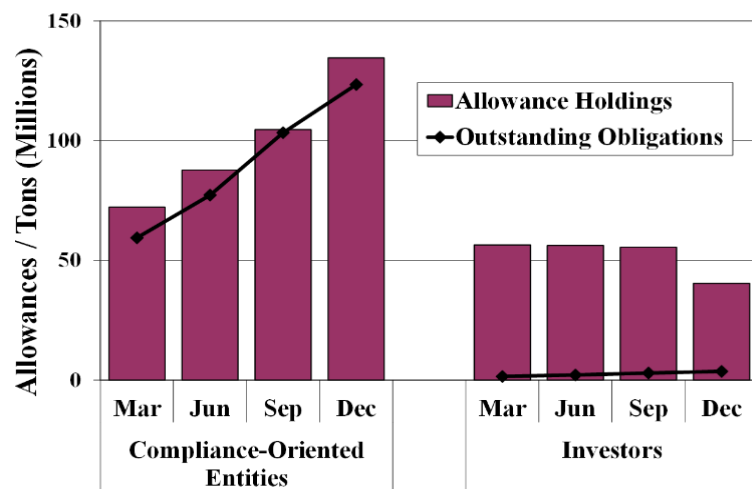
The figure to the right summarizes the holdings of CO<sub>2</sub> allowances at the end of each quarter in 2025 for two categories of firms.<sup>9</sup> It shows that, as a group, compliance-oriented entities held a sufficient

quantity to cover their compliance obligations through the end of 2025. These entities held 135 of the 175 million allowances in circulation at the end of 2025.<sup>10</sup>

Although some compliance-oriented entities used the auction as the primary means of acquiring CO<sub>2</sub> allowances, compliance-oriented entities relied more on the secondary market in 2025. Of the CO<sub>2</sub> allowances held by compliance-oriented entities at the end of 2025, 51 million were acquired from the secondary market during 2025, 37 million were acquired through auctions or state allocations during 2025, and 46 million were retained from the prior year. The largest allowance transfers between unaffiliated firms occurred in December as a result of the settlement of December futures contracts. A robust secondary market is beneficial because it provides compliance entities with more flexibility about when they can purchase CO<sub>2</sub> allowances.

Some investors increased their holdings while others reduced their holdings in 2025. Investors purchased significant quantities of allowances in the auctions. Some investors used the secondary market to increase their holdings, but overall, investors were net sellers of allowances in the secondary market. Investors play an important role in the RGGI allowance market by

**Holdings and Compliance Obligations by Entity Type**



<sup>9</sup> Monthly totals are provided with additional detail in Section IV.D.

<sup>10</sup> As indicated in footnote 4, entities may change categories during the year, but statistics in this report are based on the designations that were in place at the beginning of 2025.

ensuring that compliance entities have liquid options for purchasing allowances outside of the quarterly auctions. This allows compliance entities to purchase RGGI allowance futures throughout the year to financially hedge the compliance costs they incur from producing electricity.

### ***Participation in the Market by Individual Firms***

Participation by many firms promotes competition and helps ensure that CO<sub>2</sub> allowance prices are determined efficiently. Over time, firms that need CO<sub>2</sub> allowances for compliance should be able to acquire them through the auctions and/or the secondary market, and the holdings of individual firms should be relatively consistent with their potential uses for allowances.<sup>11</sup>

In 2025, we observed broad participation in the RGGI market. The demand for CO<sub>2</sub> allowances is dispersed relatively widely across firms as the three largest compliance-oriented entities accounted for 39 percent of the total projected demand. Allowance holdings were generally distributed across compliance-oriented entities consistent with their compliance obligations, although the surplus of allowances in circulation led many individual firms to hold substantial surpluses. The top ten compliance-oriented entities, by estimated demand for allowances, accounted for about 63 percent of total holdings.

High levels of participation were observed in the auctions and the market for RGGI futures. The number of firms with reportable positions in ICE Vintage 2025 futures and options peaked at 67 in 2025, while the number of auction participants averaged 50 in the 2025 auctions.

### ***Market Monitoring***

As the RGGI Market Monitor, we evaluate the conduct of market participants in the auctions and in the secondary market to identify potential anti-competitive conduct. We also assess whether the auctions were administered properly by Enel X.

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<sup>11</sup> Participation in the auctions and the secondary market by individual firms is evaluated in Section V.

In our reviews of the four auctions in 2025, we found no material concerns regarding the auction process, barriers to participation in the auctions, or the competitiveness of the results. Large numbers of firms participated in the offerings of CO<sub>2</sub> allowances. Further, we found that the auctions were administered in accordance with the noticed rules and bids received.

We find no evidence of anti-competitive conduct in the secondary market for CO<sub>2</sub> allowances, and we find that firms have generally purchased quantities of allowances that are consistent with their expected needs.

## II. BACKGROUND ON THE CO<sub>2</sub> ALLOWANCE MARKET

In 2009, RGGI became the first mandatory market-based regional initiative to limit CO<sub>2</sub> emissions in the United States. Market-based cap-and-trade programs work by setting an aggregate emissions limit for a particular class of emitters and requiring them to acquire a number of allowances sufficient to cover their emissions. Firms that own allowances can decide whether it is more profitable to use them to cover their emissions or to sell them to an emitter that can use them more efficiently. In this manner, the goal of market-based programs is to use market forces to reduce overall emissions in the most cost-effective ways.

In the ten states participating in RGGI in 2025, electricity generating plants with 25 MW<sup>12</sup> of capacity or greater (“CO<sub>2</sub> budget sources”) must acquire a number of CO<sub>2</sub> allowances sufficient to cover their CO<sub>2</sub> emissions by the end of each control period. Firms that own budget sources (“compliance entities”) can acquire CO<sub>2</sub> allowances through a variety of means, including by purchasing them in the quarterly RGGI auctions or in the secondary market for allowances.

The market for RGGI CO<sub>2</sub> allowances has several key elements, which are discussed in this section: the regional cap, compliance obligations, the CO<sub>2</sub> Allowance Tracking System (“COATS”), the primary market for allowances, and the secondary market for allowances.

### A. Regional CO<sub>2</sub> Emissions Cap

The RGGI CO<sub>2</sub> cap for the period from 2021 to 2030 was initially determined at the end of the 2016 Program Review for the nine states participating at the time.<sup>13</sup> The CO<sub>2</sub> cap for the nine states was scheduled to fall by 30 percent from approximately 78.2 million short tons for 2020 to 54.7 million short tons for 2030. The RGGI Model Rule allows additional states to participate in

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<sup>12</sup> As of December 2020, the New York DEC adopted revisions to Part 242 which has lowered this limit to 15 MW for units which are physically co-located with an existing budget source, and to any 15 MW unit that resides at a facility with two or more units with 15 MW or greater nameplate capacities.

<sup>13</sup> For a list of changes made to the Model Rule following the 2016 Program Review, see [www.rggi.org/sites/default/files/Uploads/Program-Review/12-19-2017/Summary\\_Model\\_Rule\\_Updates.pdf](http://www.rggi.org/sites/default/files/Uploads/Program-Review/12-19-2017/Summary_Model_Rule_Updates.pdf).

RGGI, and the annual cap is adjusted when new states begin to participate. New Jersey became the tenth Participating State in January 2020, so the cap was raised to 96.2 million short tons in 2020 and scheduled to fall gradually to 67.3 million short tons in 2030. With the participation of Virginia in January 2021, the cap was raised to 119.8 million short tons in 2021 and scheduled to fall gradually to 86.9 million short tons in 2030. However, Virginia stopped participating at the end of 2023, and RGGI returned to the ten-state cap in 2024. With the resumption of participation by Virginia beginning July 1, 2026, the cap for 2026 will be raised by 50 percent of Virginia's base budget for 2026.

In July 2025, RGGI announced the results of the Third Program Review, which modified the emission caps for the years from 2027 to 2040. Before considering the resumption of Virginia's participation, the cap was set to fall by 8.5 million tons each year from 69.8 million in 2027 until reaching 9.0 million in 2037. The Third Program Review expanded the use of the "Cost Containment Reserve" allowances to as much as 23.5 million per year (not including any additional CCR allowances that might be offered by Virginia) if auction clearing prices are sufficiently high.

### *Interim Adjustments to Account for Banked Allowances*

Three adjustments have been made to the cap to account for the surpluses of allowances that were banked from allocation years 2009 to 2013 and again from allocation years 2014 to 2020.<sup>14</sup> The first two interim adjustments were set forth in the 2012 Program Review, while the third interim adjustment was set forth in the 2016 Program Review.<sup>15</sup> These are described below.

*First Control Period Interim Adjustment for Banked Allowances ("FCPIABA")* – This was a reduction in the number of CO<sub>2</sub> allowances to be sold over the seven-year period from 2014 to 2020. The amount of the reduction was equal to the private bank of first control period CO<sub>2</sub> allowances (i.e., allocation years 2009, 2010, and 2011) that were in circulation after compliance

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<sup>14</sup> Also, the emissions cap was reduced from 188 million short tons to 165 million short tons in 2012 to account for the departure of New Jersey at the end of the first control period, which ran from 2009 to 2011.

<sup>15</sup> See [www.rggi.org/program-overview-and-design/elements](http://www.rggi.org/program-overview-and-design/elements).

was completed for the first control period. The FCPIABA was approximately 8.2 million CO<sub>2</sub> allowances per year from 2014 to 2020.

*Second Control Period Interim Adjustment for Banked Allowances (“SCPIABA”)* – This was a reduction in the number of CO<sub>2</sub> allowances to be sold over the six-year period from 2015 to 2020. The amount of the reduction was equal to the private bank of 2012 and 2013 allocation year allowances that were in excess of 2012 and 2013 emissions. The SCPIABA was approximately 13.7 million CO<sub>2</sub> allowances per year from 2015 to 2020.

Due to the two interim control period adjustments for banked allowances that resulted from the 2012 Program Review, the adjusted CO<sub>2</sub> cap fell from approximately 82.8 million in 2014 to 62.5 million in 2017 and was planned to eventually fall to 56.3 million in 2020. However, with the addition of New Jersey as a participating state in 2020, the adjusted cap for 2020 was raised to 74.3 million short tons. Including New Jersey, the number of CO<sub>2</sub> allowances that were distributed for the period from 2014 to 2020 was approximately 467 million. Including the 140 million surplus allowances that were already in circulation at the end of 2013, the total supply was 607 million allowances from 2014 to 2020 (not including allowances sold from the Cost Containment Reserve, which is discussed in the next part of this section.).

*Third Adjustment for Banked Allowances* – This is a reduction in the number of CO<sub>2</sub> allowances that is to be sold over the five-year period from 2021 to 2025. The reduction was initially scheduled to be approximately 19.1 million allowances per year. The amount of the reduction was based on the private bank of allowances (approximately 95.5 million allowances) that existed after the compliance deadline for the fourth control period, which ran from 2018 to 2020.<sup>16</sup> However, since Virginia was not a Participating State in 2024 and 2025, the size of the annual cap adjustment was proportionally reduced to 14.7 million per year in 2024 and 2025.

*Updates to the Regional Base CO<sub>2</sub> Allowance Budget* – At the completion of the Third Program review in July 2025, which was before Virginia indicated it would resume participation in RGGI,

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<sup>16</sup> See [https://www.rggi.org/sites/default/files/Uploads/Press-Releases/TABA\\_Announcement\\_2021-03-15.pdf](https://www.rggi.org/sites/default/files/Uploads/Press-Releases/TABA_Announcement_2021-03-15.pdf).

the annual emission cap for 2027 was reduced to 69.8 million allowances (while the previous Model Rule cap was 75.7 million tons in 2027). Further, between 2027 and 2033, the cap will fall an average of 8.5 million tons per year. From 2033 to 2037, the cap will fall by about 2.4 million tons per year and then held at that level going forward until further review. The caps will not be subject to further downward banking adjustments.

### *Cost Containment Reserve*

RGGI implemented a provision known as the Cost Containment Reserve (“CCR”) in 2014.<sup>17</sup> The CCR allows for the sale of a fixed number of allowances in addition to the cap when the clearing price in the quarterly auction exceeds the CCR Trigger Price. The CCR is replenished at the start of each calendar year. In 2014, the CCR had a withdrawal limit of five million allowances, and the CCR Trigger Price was \$4.00. In 2015, 2016, 2017, 2018, and 2019, the CCR had a withdrawal limit of ten million allowances, and the CCR Trigger Prices were \$6.00, \$8.00, \$10.00, \$10.25, and \$10.51, respectively. In 2020, the annual withdrawal limit was 11.8 million allowances and the CCR Trigger Price was \$10.77.

All 15 million allowances were sold from the CCR for the period from 2014 to 2015, but the CCR was not triggered in 2016, 2017, 2018, 2019, 2020. Ultimately, the sale of these allowances from the CCR increased the surplus of allowances that was included in the Third Adjustment for Banked Allowances.

From 2021 to 2026, the size of the CCR was 10 percent of the cap in each year. The CCR Trigger Price is planned to rise from \$13.00 in 2021 by 7 percent each year to \$23.89 in 2030. In 2021, one auction cleared at the CCR Trigger Price of \$13.00 and 3.9 million allowances were sold from the CCR. In 2023, one auction cleared at the CCR Trigger Price of \$14.88 and 5.6 million allowances were sold from the CCR. In 2024, when the Trigger Price of \$15.92 was exceeded, the CCR allowances available for the full year were depleted in the first auction in

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<sup>17</sup> See [https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2012-Program-Review-Update/Summary\\_of\\_Model\\_Rule\\_Changes\\_02\\_07\\_13.pdf](https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2012-Program-Review-Update/Summary_of_Model_Rule_Changes_02_07_13.pdf).

March increasing the auction sale by 8.4 million allowances over the original auction volume. In 2025, 8.1 million CCR allowances were released in the first auction in March after the Trigger Price of \$17.03 was exceeded.

Beginning in 2027, in accordance with market design changes in the updated Model Rule published in July 2025, RGGI will offer a larger volume of CCR allowances in a two-tier structure, RGGI will continue to auction “Tier 1” CCR allowances at a CCR Trigger Price that rises 7 percent each year from the level of the 2026 CCR Trigger Price. However, RGGI will also make “Tier 2” CCR allowances available at a Trigger Price that will be 50 percent higher than the Tier 1 CCR Trigger Price starting in 2027. So, in 2027, the Tier 1 Trigger Price will be \$19.50, and the Tier 2 Trigger Price will be \$29.25.

### *Emissions Containment Reserve*

RGGI implemented a provision known as the Emissions Containment Reserve (“ECR”) in the first auction of 2021. The ECR is intended to reduce the supply of allowances in the market if emissions reduction costs are lower than expected by allowing for states to withhold allowances from circulation if the auction clearing price falls below the ECR Trigger Price. Allowances withheld under this program will not enter circulation. Up to 10 percent of a participating state’s allowance budget can be withheld using the ECR. The ECR Trigger Price was set at \$6.00 in 2021, and it is scheduled to rise by 7 percent each year. Currently, Maine and New Hampshire do not plan to utilize the ECR mechanism. Since the introduction of the ECR provision, the auction clearing prices have always exceeded the ECR Trigger Price and, thus, the ECR has never been invoked. The updated Model Rule also replaces the ECR mechanism with an increased minimum reserve price beginning in 2027.

### **B. Compliance Obligations**

CO<sub>2</sub> budget sources are fossil fuel-fired electricity generating plants with at least 25 MW of capacity.<sup>18</sup> Shortly after the end of each control period, compliance entities must hold sufficient

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<sup>18</sup> Apart from New York; see footnote 12.

CO<sub>2</sub> allowances to cover their CO<sub>2</sub> emissions during the control period. The first five control periods were each three years-long, running through the ends of 2011, 2014, 2017, 2020, and 2023. The sixth control period extends from January 1, 2024 to December 31, 2026.

RGGI has interim compliance requirements whereby compliance entities are required to surrender CO<sub>2</sub> allowances for 50 percent of their annual compliance obligations after the first and second years of each three-year control period. In 2024, the first year of the sixth control period, covered CO<sub>2</sub> emissions totaled approximately 82 million short tons, and accordingly, compliance entities were obliged to surrender 41 million allowances before the March 2025 deadline for 2024 interim compliance. For 2025, the second year of the sixth control period, compliance entities are obliged to surrender about 43 million allowances before the March 2026 deadline for 2025 interim compliance.<sup>19</sup>

### **C. CO<sub>2</sub> Allowance Tracking System (“COATS”)**

COATS is the registry for RGGI CO<sub>2</sub> allowances. Each CO<sub>2</sub> allowance has a unique serial number and can be used to satisfy one short ton of compliance obligation. When firms trade CO<sub>2</sub> allowances in the secondary market, the seller must record the transfer of ownership in COATS before the buyer is recognized as the owner.<sup>20</sup>

### **D. Primary Market for RGGI CO<sub>2</sub> Allowances**

The participating states have taken the approach of using auctions rather than free allocations as the primary means for distributing RGGI CO<sub>2</sub> allowances to the market. Accordingly, the primary market for CO<sub>2</sub> allowances consists mainly of the quarterly auctions.

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<sup>19</sup> The compliance obligations and emissions discussed in this report do not exclude Maryland Limited Industrial Exemption Set-aside Account (LIESA) source(s). Therefore, the estimated number of allowances that must be surrendered to meet the interim compliance deadline, as reported here, will be higher than the actual interim obligation. In 2022, LIESA sources reduced the overall annual compliance obligation by about 1 million short tons.

<sup>20</sup> Public information related to the COATS registry may be found at <https://rggi-coats.org/eats/rggi/>.

*Auctions* – Through the end of 2025, 94 percent of the CO<sub>2</sub> allowances that have been put into circulation initially entered the market through one of the 70 auctions that had taken place on a quarterly basis since September 2008.

*Offset Projects* – Approved CO<sub>2</sub> emissions offset projects (project-based greenhouse gas emissions reductions or carbon sequestration that occurs outside the capped electricity generation sector), were eligible for awards of additional CO<sub>2</sub> allowances, although only one project was ever awarded allowances and the total amount awarded was fewer than 0.1 million. As the result of the Third Program Review completed in July 2025, new offset projects will no longer be eligible beginning in 2027.

*Early Reduction Allowances* – In 2009, there was a one-time award by certain participating states of 2.4 million early reduction allowances (ERAs), which were awarded for qualifying CO<sub>2</sub> emissions reductions achieved at CO<sub>2</sub> budget sources during 2006 through 2008, prior to the start of the first control period.

*Allocations & Sales by States* – Approximately 29.7 million CO<sub>2</sub> allowances for the first control period were allocated by individual states through either fixed-price sales or free allocations. Approximately 16.0 million CO<sub>2</sub> allowances for the second control period were allocated by individual states. Approximately 11.7 million CO<sub>2</sub> allowances were allocated for the third control period, 13.5 million were allocated for the fourth control period, and 14.0 million were allocated for the fifth control period. Thus far, 2.5 million CO<sub>2</sub> allowances have been allocated in the sixth control period.

Regardless of how CO<sub>2</sub> allowances initially enter the market, they can be traded to other firms in the secondary market.

#### **E. Secondary Market for RGGI CO<sub>2</sub> Allowances**

The secondary market is important for several reasons. First, it gives a firm the ability to obtain CO<sub>2</sub> allowances at any time during the three months between the RGGI auctions. Second, it provides a way for a firm to protect itself against the potential volatility of future auction clearing

prices. Third, it provides price signals that can assist a firm in making investment decisions in markets affected by the cost of RGGI compliance.

The secondary market for RGGI CO<sub>2</sub> allowances comprises the trading of physical allowances and financial derivatives, such as futures, forwards, and option contracts. A physical CO<sub>2</sub> allowance trade occurs when the parties to the transaction register the transfer of ownership in COATS. Financial derivatives include any contracts whereby parties agree to exchange funds and/or allowances at some future date, depending in many cases on factors such as the price of allowances at some future date. Many financial derivatives eventually result in the transfer of physical CO<sub>2</sub> allowances (i.e., the transfer is registered in COATS), but this may occur months or years after the parties enter into a financial transaction. These include the following types of transactions:

- *Futures* – Under these contracts, two parties agree to exchange a fixed number of CO<sub>2</sub> allowances of a certain vintage year at a particular price at a specific point in the future (called the “delivery month”). At the end of the delivery month, the contracted number of CO<sub>2</sub> allowances must be physically transferred to the buyer’s account in the COATS registry and funds must be transferred to the seller. The vintage year refers to the allocation year of the CO<sub>2</sub> allowance that is to be transferred. One standard futures contract equals 1,000 RGGI CO<sub>2</sub> allowances. These contracts are listed by an exchange with simple standardized terms to promote liquidity.
- *Forwards* – These are like futures contracts, but a forward contract typically requires that all financial settlement occur at expiration. These contracts can be made off an exchange between two parties, allowing the parties to agree to less standardized terms.
- *Call Options* – Call options give the purchaser the option to buy a fixed number of CO<sub>2</sub> allowances of a certain vintage year at a particular strike price at the expiration date. For example, suppose a firm holds a call option with a \$4 strike price and a December 2020 expiration date. If the price of the corresponding forward contract rose to \$5 at expiration, the firm would exercise the option to buy CO<sub>2</sub> allowances at \$4 and immediately sell them at \$5. Alternatively, if the price of the forward contract was below \$4, the firm would let the option expire without exercising it. One standard options contract can be exercised for 1,000 RGGI allowances.
- *Put Options* – Put options are similar to call options but they give the purchaser the option to *sell* a certain number of CO<sub>2</sub> allowances of a particular vintage year at a specified strike price at the expiration date.

Futures, forwards, and options contracts allow firms to manage risks associated with unforeseen swings in commodity prices. Futures and forwards allow firms to lock-in the prices of future

purchases or sales. Options allow firms to limit their exposure to price volatility. Call options protect the purchaser if the price of the commodity increases, while put options protect the purchaser if the price of the commodity decreases. Although options provide less certainty than futures and forward contracts, they generally require less financial security since they do not obligate the holder to exercise the contract if its value declines, which could make them more attractive to some firms.

The terms of futures, forward, and option contracts vary in the degree to which they are standardized. “Exchange-traded” contracts typically have the most standardized provisions, while the term “over-the-counter” (“OTC”) is applied to contracts with less standardized provisions. However, OTC contracts, once entered into, are often settled through a clearinghouse in order to protect the parties from the risk that the counterparty defaults.

The amount of *open interest* is the net amount of futures, forwards, or options contracts that have been traded for a contract with a particular set of specifications (i.e., vintage year, delivery month, etc.), but have not reached the time of delivery, expired, or been exercised. For example, if Firm A sells 100 contracts of a particular type to Firm B, Firm A will have a short position of 100 contracts, Firm B will have a long position of 100 contracts, and the total open interest for the particular type of contract will be 100 contracts. Hence, the total open interest can be determined by summing across all of the long positions of market participants or by summing across all of the short positions.

### III. CO<sub>2</sub> ALLOWANCE PRICES

The market for RGGI CO<sub>2</sub> allowances consists primarily of purchases in the quarterly auctions and trading of allowances and allowance futures and options contracts in the secondary market. The clearing prices from quarterly auctions provide public information about the market value of CO<sub>2</sub> allowances four times per year, while the prices of futures and forwards trades on public exchanges and transaction prices recorded in COATS provide price information more frequently. This section of the report evaluates prices in the markets for RGGI CO<sub>2</sub> allowances in 2025.

Key observations regarding RGGI CO<sub>2</sub> allowance prices:

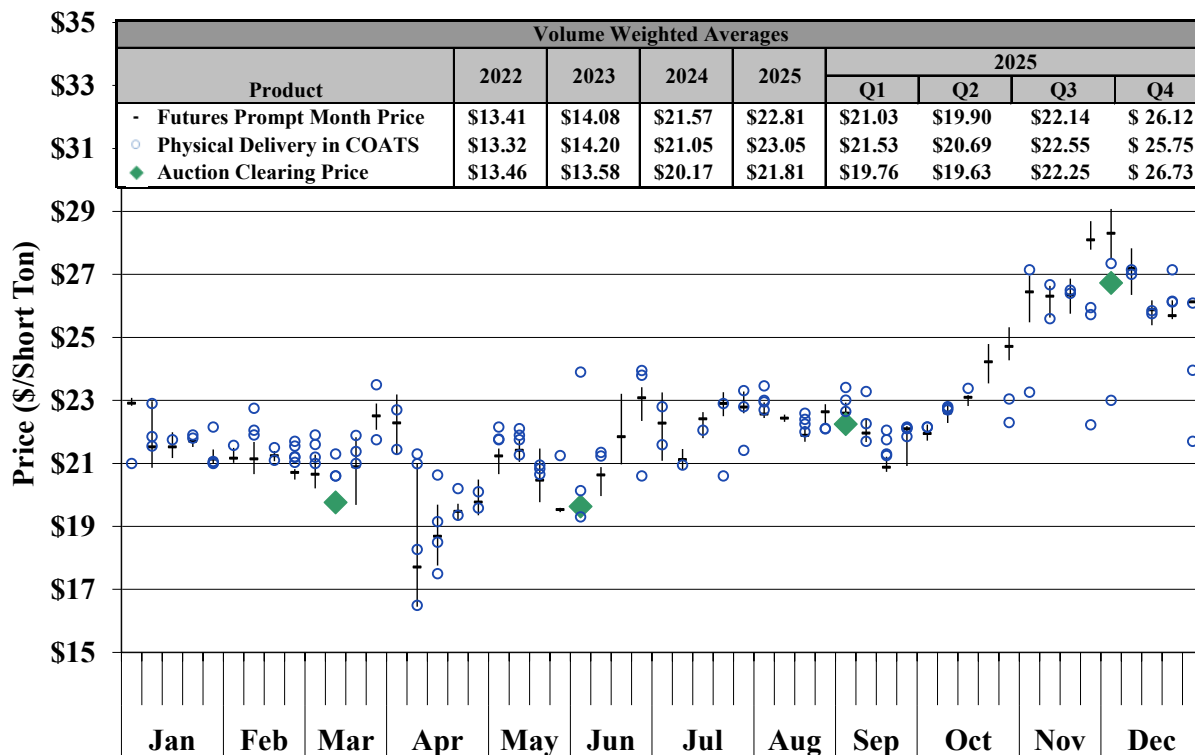
- *Price Trends* – In the first quarter of 2025, prices ranged between \$21 and \$23. In the second week of April, prices fell briefly to \$16.50 following the issuance of a presidential executive order (on April 8<sup>th</sup>) related to state laws limiting emissions. In the following days, prices rebounded and reached nearly \$22 in mid-May and declined again ahead of the June auction. Prices remained mostly between \$22 and \$23 through September. Prices rose steadily through October and most of November before peaking above \$28 and settling at an average of around \$26.50 in December.
- *Physical Deliveries in COATS* – Although the majority of physical transactions were priced similar to futures contracts, a few of these transactions differed significantly from prevailing market trends. For these transactions, the terms were likely agreed upon at an earlier date, were a part of a larger agreement, or were valued based upon a weighted average covering multiple buy and sell transactions.
- *Auction Clearing Prices* – The volume-weighted average auction clearing price increased 8 percent from \$20.17 in 2024 to \$21.81 in 2025. The auction clearing prices were generally consistent with prices in the secondary market at the time of the auction.
- *Secondary Market Price Volatility* – Option-implied volatility of RGGI allowance prices was at about 53 percent during the first quarter of 2025. In the second quarter, option-implied volatility increased to 62 percent following the depletion of the CCR and the issuance of the April 8<sup>th</sup> presidential executive order. In the third quarter and fourth quarter, after the announcement of changes to the Cost Containment Reserves from the Third Program Review, option-implied volatility was lower, averaging 46 and 49 percent in the third and fourth quarters, respectively.

#### A. Prices in the Auctions and the Secondary Market

Figure 1 summarizes prices in the auctions and the secondary market on a weekly basis in 2025. Intercontinental Exchange (“ICE”) and Nodal Exchange (“NEX”) futures contract prompt-month

prices are summarized for each week by a black vertical line from the minimum transaction price to the maximum transaction price in the week and by a black horizontal tick mark at the volume-weighted average price for each week. The volume-weighted average price of physical deliveries of CO<sub>2</sub> allowances recorded in COATS are shown by blue circles for each day when a transaction took place at a price that was recorded by the transacting parties.<sup>21</sup> The figure also shows the auction clearing prices of CO<sub>2</sub> allowances in the four quarterly auctions held during 2025, which are represented by the green diamonds.

**Figure 1: CO<sub>2</sub> Allowance Prices in the Auctions and Secondary Market 2025**



Observations regarding prices in auctions and the secondary market:

- *General Price Levels* – At the start of 2025, secondary market prices were between \$21 and \$23. In the second week of April, prices fell steeply from \$23 to \$16.50 corresponding with the issuance of a presidential executive order on April 8<sup>th</sup> directing the US Attorney General to identify State Laws related to carbon emissions, penalties,

<sup>21</sup> Parties must report the transaction price if there is an underlying financial transaction related to the transfer.

and taxes. In the following days, prices rebounded, reaching nearly \$22 in mid-May and declined again ahead of the June auction. Prices remained mostly in a range between \$22 and \$23 through September. Prices rose steadily thereafter with some trades exceeding \$28 in November. Prices remained mostly between \$26 and \$27 through the end of December.

- *Physical Deliveries in COATS* – The volume-weighted average transaction price of CO<sub>2</sub> allowances increased 10 percent from \$21.05 in 2024 to \$23.05 in 2025. The pricing of transactions was generally consistent with futures trades and auction clearing prices occurring at the same time. However, a minority of transactions were reported at other levels. These may be transactions whose price terms were determined at an earlier date.
- *Auction Clearing Prices* – The volume-weighted average auction clearing price increased 8 percent from \$20.17 in 2024 to \$21.81 in 2025. The auction prices were generally consistent with secondary market prices for transactions around the time of the auctions.

## B. Volatility of CO<sub>2</sub> Allowance Prices

Cap-and-trade markets are designed to give firms efficient incentives to reduce or offset emissions. In the short-term, high-emitting generators operate less frequently in favor of low-emitting generators. In the long-term, the market will affect the decisions of firms to develop offset projects, to retire old inefficient generation, to retain existing zero-emissions generation, and to perform maintenance that increases fuel efficiency and lowers carbon-intensity. Predictable CO<sub>2</sub> allowance prices decrease the risks associated with making long-term investments in reducing CO<sub>2</sub> emissions. Since CO<sub>2</sub> allowance prices can be volatile, the availability of futures and options contracts allows firms to protect themselves from the risks of such investments. This subsection evaluates two measures of price volatility in the market for RGGI CO<sub>2</sub> allowances.

One measure of volatility is known as *historic volatility*,<sup>22</sup> which is a measure of volatility based on day-to-day price variations over a recent period (e.g., several months or one year). This is a

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<sup>22</sup> Historic volatility is a measure of the standard deviation of the day-over-day percentage change in price. Volatility is normally expressed as an estimated standard deviation for a one-year period, even if it is calculated from a shorter period of time. In this report, volatility is calculated based on quarters and annualized for each quarter. Annual volatility discussed here is the average of the annualized quarterly-based volatility.

useful measure when factors influencing the volatility of prices in the recent period are likely to be the same as the factors influencing the volatility of prices in the future.

Observations regarding historic volatility of CO<sub>2</sub> allowance prices:

- *Historic Volatility in 2024 & 2025* – In the first quarter of 2024, the price volatility rose to 25 percent and then 27 percent in the second quarter. It declined to 22 percent in the third quarter before steeply rising to 38 percent in the fourth quarter. In the first quarter of 2025, the price volatility fell to 27 percent but then rose steeply to 47 percent in the second quarter. It declined to 27 percent in the third quarter and 23 percent in the fourth quarter. The annual 2025 average price volatility was 31 percent compared to 29 percent in 2024 with the overall increase driven by second quarter volatility.

Another measure of the volatility of CO<sub>2</sub> allowance prices is known as *option-implied volatility*,<sup>23</sup> which measures the volatility that is implied by the trading of option contracts for CO<sub>2</sub> allowances. If a firm perceives that CO<sub>2</sub> allowance prices are volatile, the firm may be willing to pay a high price for an option contract that protects it from unforeseen allowance price fluctuations. Likewise, if a firm perceives that CO<sub>2</sub> allowance prices are relatively stable, the firm will be willing to pay relatively little for the same option contract.<sup>24</sup>

The following scatter plot reports the option-implied (i.e., expected) volatility of RGGI CO<sub>2</sub> allowance futures contracts, which can be inferred from the trading of options contracts in 2024 and 2025.<sup>25</sup> The vertical axis shows the option-implied (expected) volatility of CO<sub>2</sub> allowance futures prices, and the horizontal axis shows the trade date. The figure excludes contracts if the trade date is fewer than 90 days from the contract expiration date. This is to focus on contracts

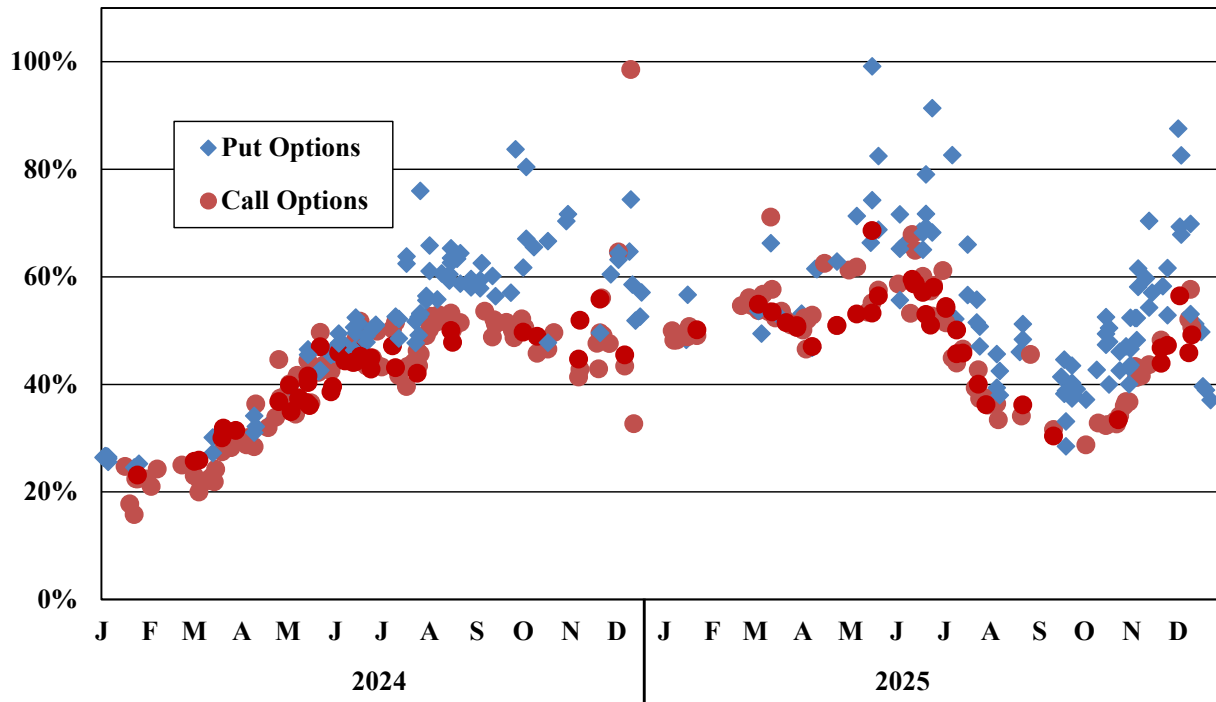
<sup>23</sup> The option-implied volatility of a CO<sub>2</sub> allowance refers to the expected standard deviation of the distribution of allowance prices one year in the future. For example, if the expected value of the price one year in the future is \$1 and the option-implied volatility is 25 percent, this implies that the probability that the price will be within 25 percent of \$1 (i.e., between \$0.75 and \$1.25) is 68.2 percent assuming that the price is distributed log-normally.

<sup>24</sup> The price of an option contract depends primarily on two factors: (i) the expected value of a CO<sub>2</sub> allowance relative to the strike price of the option, and (ii) the expected volatility of an allowance over the period until the expiration date. When call option prices and put option prices move in opposite directions, it signals a change in the expected price of allowances. Conversely, when call option prices and put option prices move in the same direction, it signals a change in the expected volatility of allowance prices.

<sup>25</sup> Black's model for valuing futures options is used to estimate the option-implied volatilities of RGGI allowance futures prices.

that provide insight about the expected volatility of allowance prices over the long term rather than price variations around the quarterly auctions.

**Figure 2: Option-Implied Volatility of CO<sub>2</sub> Allowance Futures Prices  
2024 & 2025**



Observations regarding the option-implied volatility of CO<sub>2</sub> allowance prices:

- General Patterns of Volatility* – In 2024, option implied volatility rose steadily from around 20 percent in the beginning of the year until August. From August until the end of the year, call options’ volatility remained mostly between 50 percent, and put options’ volatility on average was about 60 percent. Put options continued to exhibit higher implied volatility than call options in 2025. Overall, option implied volatility was higher in the first half of 2025 (53 and 62 percent in the first two quarters) than the second half of the year, which averaged 46 and 49 percent in the last two quarters.
- Cost Containment Reserve and Emissions Containment Reserve* – Since 2013, the CCR has been a significant factor in reducing the volatility of allowance prices. The CCR reduces volatility directly by making additional supply available if allowance prices rise to the prescribed levels. The ECR, first implemented in 2021, reduces volatility directly by reducing supply if allowance prices fall to the prescribed levels. Both the CCR and the ECR also have significant indirect effects on expectations, reducing the likelihood of future price variations far outside the ECR and CCR values (adjusted for expectations of inflation and the time-value of money). Therefore, even though the two-tiered CCR will not be used in the auctions until 2027 at initial trigger prices of \$19.50 and \$29.25,

market expectations are already influenced by the understanding of how they will affect future market outcomes.

#### IV. TRADING AND ACQUISITION OF CO<sub>2</sub> ALLOWANCES

This section evaluates the trading and acquisition of CO<sub>2</sub> allowances in the primary and secondary allowance markets. Firms initially acquire CO<sub>2</sub> allowances in the primary market, mainly by purchasing them in the quarterly auctions. Firms then buy and sell CO<sub>2</sub> allowances in the secondary market. Secondary market activity can be observed from information about the trading of futures and options contracts on public exchanges and in the OTC market as well as from the transfers of ownership recorded in COATS. This section analyzes the movement of CO<sub>2</sub> allowances from their initial introduction to the market and in the secondary market.

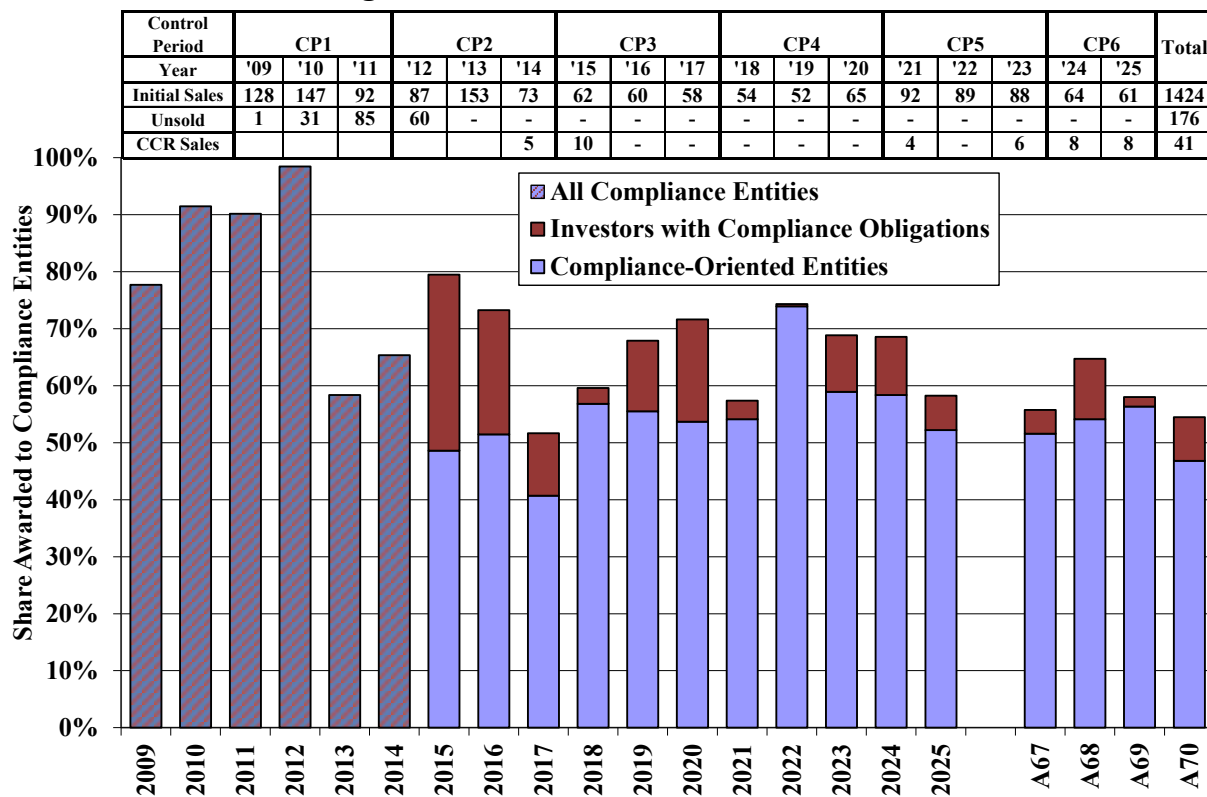
Key observations regarding trading and acquisition of CO<sub>2</sub> allowances:

- *CO<sub>2</sub> Allowances in Circulation* – The number of allowances in circulation increased from 145 million at the end of 2024 to 175 million at the end of 2025 as participants increased their holdings commensurate with their emissions obligations less the quantity surrendered for the sixth control period interim compliance. In 2025, 41 million allowances were surrendered for the sixth control period. The private bank of surplus allowances fell from 62 million at the end of 2024 to 48 million at the end of 2025, which would have been lower but for the release of 8 million CCR allowances.
- *Participation by Compliance-Oriented Entities* – Of the allowances circulating at the end of 2025, 135 million (77 percent) were held by compliance-oriented entities, 11 million more than their outstanding compliance obligations (123 million) at the time and about 92 million more than their interim compliance obligation due in March 2026.
- *Participation by Investors* – Forty million CO<sub>2</sub> allowances (23 percent) were held by investors at the end of 2025. Large allowance holdings by investors are expected given the large current surplus of allowances though the amount held has fallen by 25 million allowances compared to the end of 2024. As the CO<sub>2</sub> emissions cap tightens in the coming years, the proportion of allowances held by investors is likely to fall.
- *Trading Activity in the Secondary Market* – The volume of futures trading decreased 23 percent from 727 million CO<sub>2</sub> allowances in 2024 to 558 million in 2025. The volume of allowance transfers between unaffiliated firms in COATS decreased 12 percent from approximately 155 million CO<sub>2</sub> allowances in 2024 to 136 million in 2025. Overall, the secondary market was relatively liquid and competitive in 2025.
- *Reliance on the Auctions versus the Secondary Market* – Of the CO<sub>2</sub> allowances held by compliance-oriented entities at the end of 2025, 37 million were held by firms that directly acquired them through auctions or state allocations during 2025, while 51 million were held by firms that purchased them in the secondary market during 2025.

**A. Distribution of Auction Awards**

Figure 3 reports the quantity of CO<sub>2</sub> allowances offered and sold in each 2025 auction (i.e., Auctions 67 through 70) and in each year from 2009 to 2025. The height of each bar represents the percentage of CO<sub>2</sub> allowances (as a share of allowances sold) purchased by compliance entities, while the remaining share was purchased by investors without compliance obligations.

**Figure 3: Distribution of Auction Awards**



Before 2015, all compliance entities are shown together in Figure 3. Beginning in 2015, compliance entities are divided into two categories: blue bars showing the percentage of allowances purchased by compliance-oriented entities, and red bars showing the percentage of allowances purchased by investors with compliance obligations. The table shows the numbers of allowances sold in the initial offering and from the CCR and unsold allowances in each year.

Observations regarding the distribution of auction awards in Figure 3:

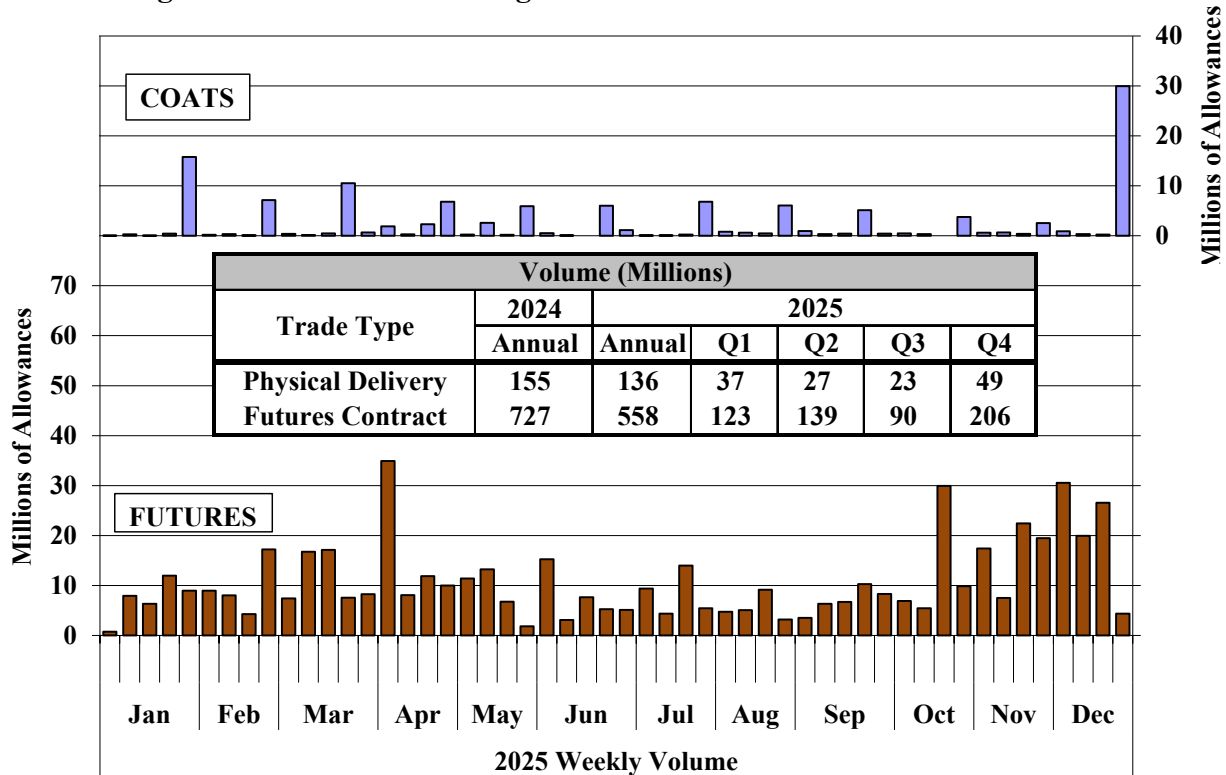
- *Compliance Entities* – The share of CO<sub>2</sub> allowances purchased in the auctions by compliance entities (excluding investors with compliance obligations) decreased from 56 percent in 2024 to 52 percent in 2025.

- *Investors* – The share of allowances purchased in the auctions by investors with compliance obligations fell to 6 percent in 2025 from 8 percent in 2024. The share of allowances purchased by investors without compliance obligations averaged 42 percent compared to 33 percent in 2024.

**B. CO<sub>2</sub> Allowance Trading Volumes**

The following figure summarizes the volume of trading of futures and forward contracts on the Intercontinental Exchange (“ICE”) and Nodal Exchange (“NEX”) and CO<sub>2</sub> allowances transfers between unaffiliated parties that were recorded in COATS in 2025. The bottom portion of the figure is plotted against the left vertical axis and shows the weekly volume of futures trading of CO<sub>2</sub> allowance contracts. The top portion of the figure is plotted against the right vertical axis and shows the weekly volume of CO<sub>2</sub> allowance transfers between unaffiliated firms that are reported in COATS. The table shows quarterly volumes in 2025 as well as a year-over-year comparison of the total volume of futures trading and CO<sub>2</sub> allowance transfers in COATS.

**Figure 4: Volume of Trading of CO<sub>2</sub> Allowances and Allowance Futures**



Observations regarding CO<sub>2</sub> allowance trading volumes:

- *Volume of Futures Trading* – The volume of futures trading totaled approximately 558 million CO<sub>2</sub> allowances in 2025, down 23 percent from 2024. About 37 percent of the 2025 volume occurred in the fourth quarter, when 206 million was traded.
- *CO<sub>2</sub> Allowance Transfers* – The volume of allowance transfers between unaffiliated firms was 136 million in 2025, down from 155 million in 2024. Allowance transfers were the highest in December as a result of the settlement of the benchmark futures contract. Thirty-six percent of 2025 allowance transfer volume occurred in the fourth quarter.

**C. Acquisition of CO<sub>2</sub> Allowances in the Secondary Market**

This section evaluates how the ownership of CO<sub>2</sub> allowances is affected by trading in the secondary market. Net changes in the ownership of CO<sub>2</sub> allowances are quantified in Figure 5 for 2025 using two measures: the open interest in ICE RGGI futures contracts and the net purchases and sales of CO<sub>2</sub> allowances by individual firms.

**Figure 5: Net Changes in Futures Open Interest and Net Transfers of CO<sub>2</sub> Allowances From December 31, 2024 to December 31, 2025**



Futures open interest is based on futures positions at the end of the last business day of each month, while net purchases and sales are based on registered holdings in COATS at the end of

the last business day of each month. The figure reports net changes that occurred since January 1, 2025.<sup>26</sup> Observations regarding the acquisition of CO<sub>2</sub> allowances in the secondary market:

- *Open Interest in Futures* – The net change in open interest of futures contracts from the beginning of 2025 peaked at about 122 million allowances on November 30 before falling to 96 million after the settlement of the benchmark contract.
- *Net Transfers Reported by Compliance-Oriented Entities* – Overall, compliance-oriented firms used the secondary market to increase their holdings in 2025, purchasing a net of 52 million allowances in 2025.
- *Net Transfers Reported by Investors with Compliance Obligations* – Investors with compliance obligations are reported separately from compliance-oriented entities because they have exhibited different transaction patterns in the past. Investors with compliance obligations on net purchased allowances increasing their net holdings at the end of 2025.
- *Net Transfers Reported by Investors without Compliance Obligations* – Investment-focused entities without compliance obligations continued to be active in the secondary market in 2025. They used the secondary market primarily to decrease their allowance holdings during 2025. Collectively, these entities sold a net of 66 million allowances over the year, primarily to compliance-oriented entities.
- *Total Net Acquisition Reported in COATS* – The total net purchase of CO<sub>2</sub> allowances by firms that used the secondary market to increase their holdings in 2025 (about 68 million as shown in Figure 6) is much lower than the gross volume of transactions between unaffiliated firms (136 million as shown in Figure 4). This is because some firms have both purchased and sold CO<sub>2</sub> allowances in the secondary market such that the net change in their position is smaller than the total volume of their transactions.

#### D. Patterns of CO<sub>2</sub> Allowance Holdings

Figure 6 below combines information on the acquisition of CO<sub>2</sub> allowances from the auctions and state allocations with information on the purchase and sale of allowances in the secondary market and the initial holdings of allowances on January 1, 2025. Together, this information provides a summary of the holdings of CO<sub>2</sub> allowances in COATS accounts according to whether the allowances was acquired: (i) prior to 2025, (ii) through the primary market in 2025, or (iii) through the secondary market in 2025. The figure shows holdings and emissions

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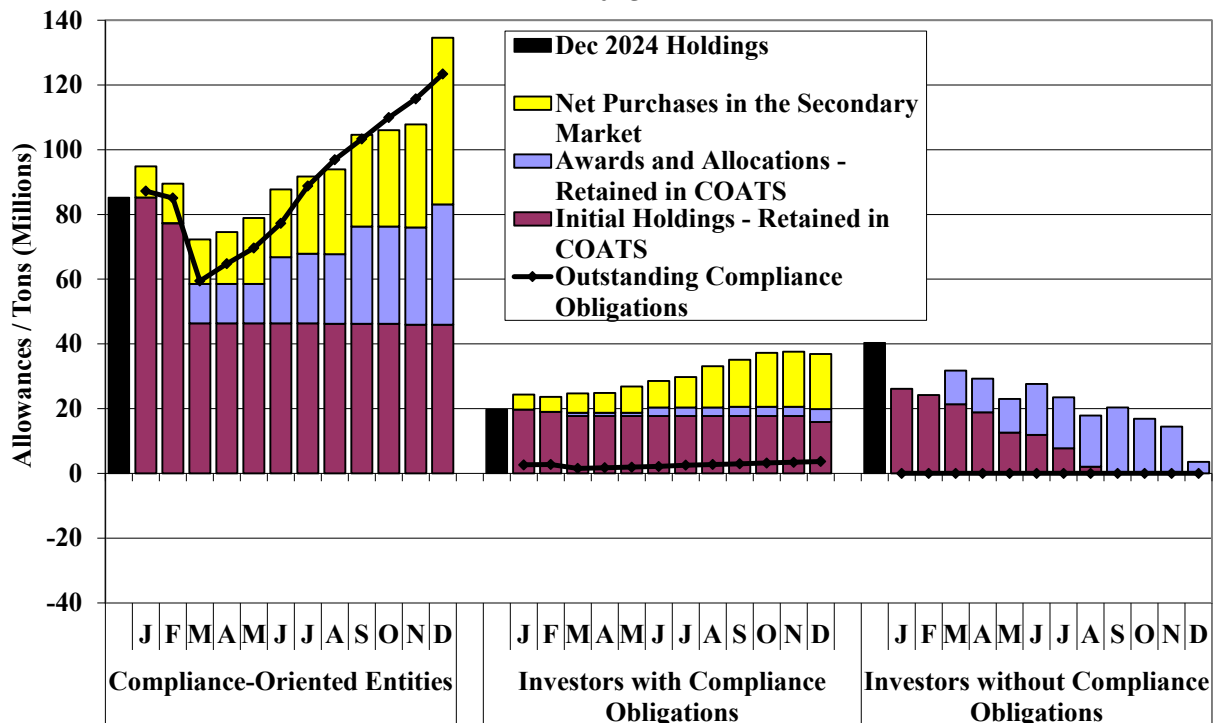
<sup>26</sup> Open interest is defined in Section II.E. Net purchases/sales of CO<sub>2</sub> allowances by a particular firm include the net change in the amount of CO<sub>2</sub> allowances in a firm's COATS account that has resulted from trading (rather than the auctions or allocations). For example, if a firm purchases 100,000 CO<sub>2</sub> allowances from another firm, and then sells 30,000 allowances, the firm's net purchase of allowances would be 70,000.

information for three categories of firm: compliance-oriented entities, investors with compliance obligations, and investors without compliance obligations.

Figure 6 reports several categories of CO<sub>2</sub> allowances that are described below:

- *Net Purchases in the Secondary Market* includes CO<sub>2</sub> allowances that were held by the category of firm that purchased them in the secondary market after January 1, 2025.
- *Initial Holdings – Retained in COATS* includes CO<sub>2</sub> allowances that were held within a particular category of firm from the beginning of 2025. If a category of firm was a net seller of CO<sub>2</sub> allowances at any point in 2025, then the CO<sub>2</sub> allowances were first deducted from this holding category.
- *Awards and Allocations – Retained in COATS* includes CO<sub>2</sub> allowances that were still held by the category of firm that purchased them in an auction or acquired them through an allocation in 2025. If a particular category of firm was a net seller of CO<sub>2</sub> allowances in 2025, those allowances were deducted from this category after any initial holdings were exhausted.

**Figure 6: Sources of CO<sub>2</sub> Allowances Held in COATS Accounts  
2025**



For each category of firm, holdings of CO<sub>2</sub> allowances in COATS are equal to the sum of three categories: *Initial Holdings – Retained in COATS Account*, *Awards and Allocations – Retained in COATS Account*, and its *Net Purchases in Secondary Market*. Figure 6 shows the three

categories of CO<sub>2</sub> allowances at the end of each month in 2025. The figure also shows the cumulative compliance obligations for compliance entities at the end of each month in 2025.

Observations regarding registered CO<sub>2</sub> allowance holdings in Figure 6:

- *Holdings by Compliance-Oriented Entities* – At the beginning of January, 145 million CO<sub>2</sub> allowances were in circulation. Of these, 85 million were held by compliance-oriented entities. These firms remained active in purchasing allowances throughout the year, but they surrendered 39 million for sixth control period compliance in March 2025. At the end of 2025, these entities held 135 million allowances.
- *Holdings by Investors with Compliance Obligations* – Approximately 20 million of the CO<sub>2</sub> allowances in circulation at the beginning of 2025 were held by investors with compliance obligations. These firms surrendered a relatively small number of allowances to satisfy their sixth control period compliance obligations. At the end of 2025, these firms held 37 million.
- *Outstanding Compliance Obligations from the Fifth Control Period* – As of the end of December 2025, just one facility (with a deficit of 304 thousand allowances) has not surrendered a sufficient number of allowances to cover its obligations during the fifth control period.
- *Holdings by Investors without Compliance Obligations* – The share of allowances held by these entities decreased from 28 percent at the beginning of 2025 to 2 percent at the end of the year. At the end of 2025, entities without compliance obligations held 4 million of the allowances in circulation. Investors without compliance obligations acquired most allowances through the auctions (29 million) in 2025.
- *Surrenders of Allowances for Compliance* – By March 2025, 41 million allowances had been transferred to surrender accounts for interim sixth control period compliance.

## V. PARTICIPATION IN THE CO<sub>2</sub> ALLOWANCE MARKET

This section evaluates participation by individual firms in the CO<sub>2</sub> allowance market.

Participation by many firms promotes competition and helps ensure that CO<sub>2</sub> allowance prices are determined efficiently. Over time, firms that need CO<sub>2</sub> allowances for compliance should be able to acquire them through the auctions and/or the secondary market, and the holdings of individual firms should be relatively consistent with their potential uses for allowances.

This section evaluates the level of participation by individual firms in four ways: (i) the demand for allowances by individual firms, (ii) the breadth of participation in the quarterly auctions, (iii) the holdings of individual firms relative to their demand for allowances, and (iv) the breadth of participation in the trading of allowance futures contracts.

Key observations regarding participation in the CO<sub>2</sub> allowance market:

- *Demand for CO<sub>2</sub> Allowances* – The demand for CO<sub>2</sub> allowances is dispersed widely across firms, leading large numbers of firms to participate in the auctions. The three firms with the largest compliance obligations accounted for 39 percent of the total projected demand and the top ten accounted for 73 percent.
- *Participation in the Auctions* – In 2025, the average number of compliance-oriented entities submitting bids was 34, while the average number of investors bidding was 17.
- *Participation in the Derivatives Market* – The number of firms with reportable positions in RGGI futures and options for Vintage 2025 peaked in 2025 at 67 traders.
- *Distribution of CO<sub>2</sub> Allowances Awarded* – Auction awards were widely distributed across different types of firms as the top ten (by awards) compliance-oriented entities accounted for 48 percent of the total awarded, while the top ten (by awards) investors accounted for 40 percent.
- *Distribution of CO<sub>2</sub> Allowance Holdings* – The ten compliance-oriented entities with the largest outstanding obligations accounted for 63 percent of total holdings at the end of 2025, while other compliance-oriented entities accounted for 13 percent. The share of allowances held by the top ten investors was 23 percent at the end of 2025 with nearly all of these allowances held by a single entity. While at least eight investors bought substantial quantities (i.e., >1 million) of allowances in the quarterly auctions, all but one of these investors sold these in the secondary market during 2025. When a large share of the allowance surplus is held by a single firm, we investigate the firm's other positions to consider whether it has a legitimate business purpose for the large holding and whether it is likely to prevent compliance-oriented entities from obtaining allowances. Nonetheless,

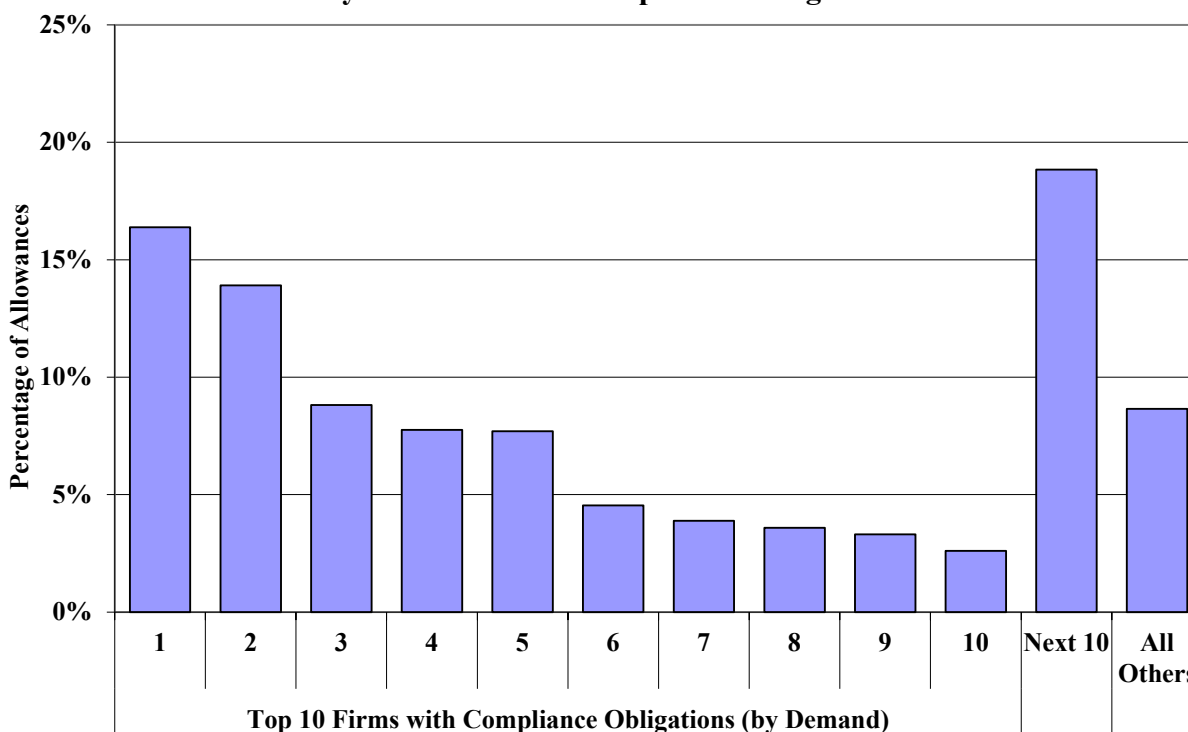
a large surplus makes it more difficult for one firm or a small number of firms to hoard allowances.

- *Concentration of Futures and Options Holdings* – Many firms have open interest in RGGI CO<sub>2</sub> allowance futures and options, but a relatively small number of firms account for large shares of the net long and short positions futures contracts. During 2025, four firms accounted for an average of 46 percent of the total net long positions in ICE Vintage 2025 contracts, while four firms accounted for an average of 55 percent of the total net short positions in ICE Vintage 2025 contracts.

**A. Demand for CO<sub>2</sub> Allowances**

The following figure summarizes the projected demand for CO<sub>2</sub> allowances of individual compliance entities at the end of 2025. We project the demand of each compliance entity for CO<sub>2</sub> allowances based on historical CO<sub>2</sub> emissions patterns and expected changes in future market conditions. The projected demand is shown for each of the top ten compliance entities (i.e. the ten firms with the highest projected demand), the second ten compliance entities as a group, and all other compliance entities as a group. The projected demand is reported in Figure 7 as a percentage of the total projected market demand.

**Figure 7: Estimated Demand for CO<sub>2</sub> Allowances  
By All Firms with Compliance Obligations**



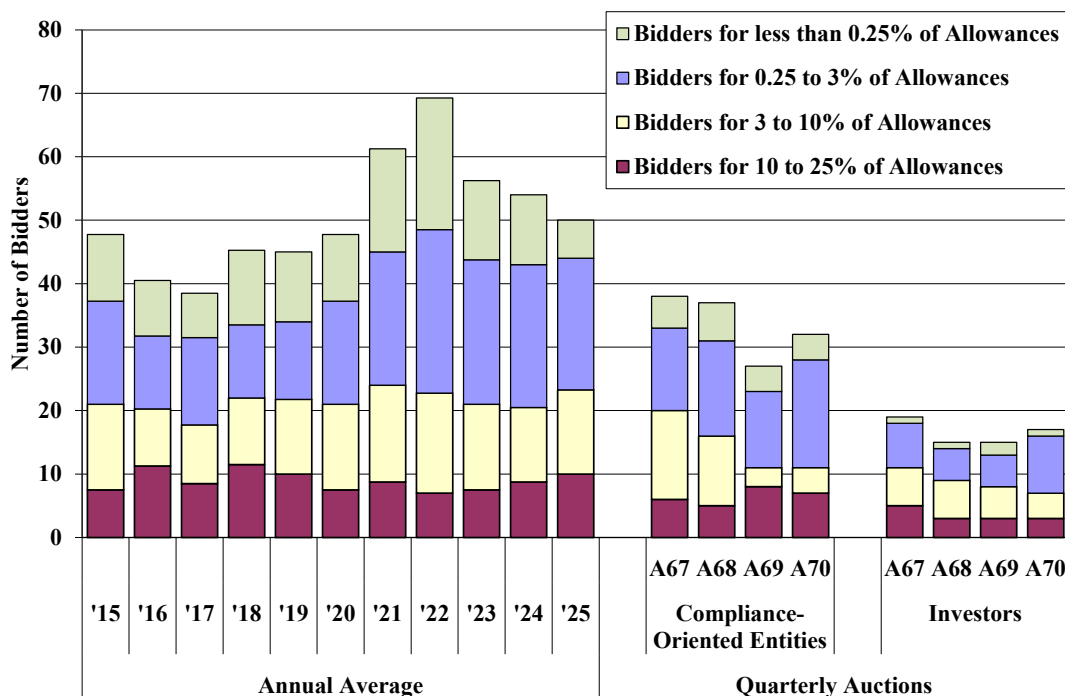
Observations regarding demand for CO<sub>2</sub> allowances:

- *Concentration of Demand for CO<sub>2</sub> Allowances* – The demand for CO<sub>2</sub> allowances is dispersed relatively widely across firms. The three compliance entities with the largest compliance obligations account for 39 percent of the total projected demand. The top ten compliance entities account for 73 percent of the total projected market demand, while the next ten compliance entities account for about 19 percent, and compliance entities that are not among the top 20 account for 9 percent.

### B. Participation in RGGI Auctions

The following figure summarizes the breadth of participation in the four auctions during 2025. The figure reports the number of firms that submitted bids in each auction. For 2025, the number of bidders is shown separately based on whether the bidder is a compliance-oriented entity or an investor in the RGGI marketplace. The figure shows these quantities averaged across the auctions in each year from 2015 to 2025.<sup>27</sup>

**Figure 8: Number of Bidders According to the Quantity of Bids Submitted Auctions for Current Control Period Allowances**



<sup>27</sup> For example, if 13.5 million CO<sub>2</sub> allowances were offered in an auction, a firm that submitted bids for 200,000 allowances would be counted in the “0.25 to 3 percent” category, since  $200,000 \div 13.5 \text{ million} = 1.5 \text{ percent}$ .

Observations regarding participation in the RGGI auctions:

- *Participation* – In the 2025 auctions, the number of bidders ranged from 42 to 57 and averaged 50. The number of compliance-oriented entities submitting bids decreased from an average of 38 in 2024 to 34 in 2025, while the number of participating investors increased slightly from 16 in 2024 to 17 in 2025.
- *Large and Small Bidders* – The number of large bidders (i.e., firms submitting bids for more than three percent of the allowances in a current control period offering) averaged 23 in 2025. The average number of small bidders (i.e., firms submitting bids for up to three percent of allowances offered for sale) was 27.
- *Competition* – Participation by a large number of firms promotes competition and helps ensure that the auction clearing price reflects the market value of CO<sub>2</sub> allowances. The levels of participation in 2025 were overall slightly lower than those in 2024. We found no material evidence of anti-competitive conduct or significant barriers to participation in our reviews of the bids and the qualification process of each auction.

### C. Acquisition of CO<sub>2</sub> Allowances by Individual Firms

In a well-functioning market, we expect a compliance-oriented firm to purchase a number of CO<sub>2</sub> allowances that is generally consistent with its demand. An investor is more likely to hold a number of CO<sub>2</sub> allowances exceeding its demand for extended periods. Individual firms may purchase a larger or smaller share according to how the current price of CO<sub>2</sub> allowances compares to their expectations of allowance prices in the future. Firms that believe CO<sub>2</sub> allowances are currently undervalued can be expected to purchase a larger share, while firms that believe allowances are overvalued can be expected to purchase a smaller share. Thus, competition by many firms helps ensure that the current price of CO<sub>2</sub> allowances in the auctions and in the secondary market reflects reasonable expectations.

The following two figures examine the distribution of CO<sub>2</sub> allowances across individual firms in 2025. Figure 9 illustrates how broadly CO<sub>2</sub> allowances were distributed in the auctions, while Figure 10 illustrates how the holdings of allowances in COATS accounts were distributed after the close of 2024. The figures show that CO<sub>2</sub> allowances have generally been acquired by firms in quantities that are consistent with their demand, which is a positive indicator regarding the competitiveness of the market.

Figure 9 reports the average quantities of CO<sub>2</sub> allowances that were awarded to firms in the auctions in 2024 and 2025. The awards are shown for each of the top ten compliance-oriented entities (i.e. the ten firms with the highest projected demand) and for each of the top ten investors (i.e., the ten firms with the largest total awards). Compliance-oriented entities are ranked in descending order based on total awards rather than demand. The table also shows the level of awards given to remaining (not included in the top 10) firms in each category as a group.

**Figure 9: Distribution of Auction Awards  
2024 – 2025**

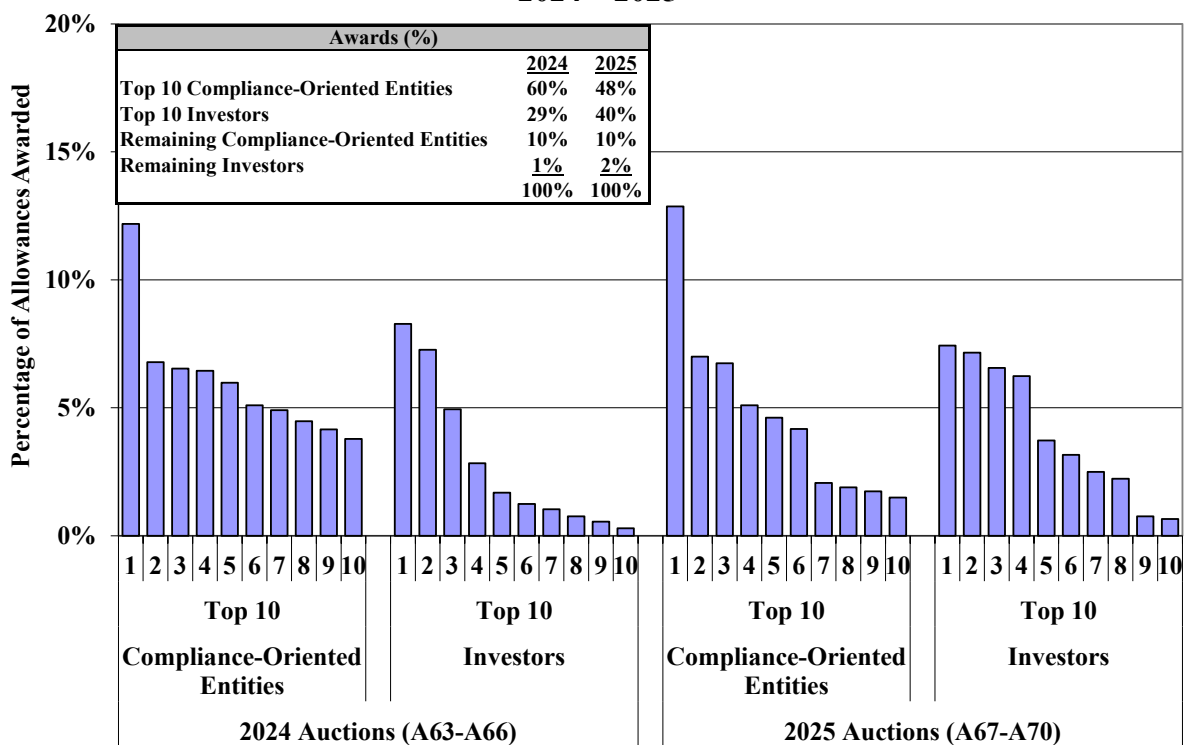
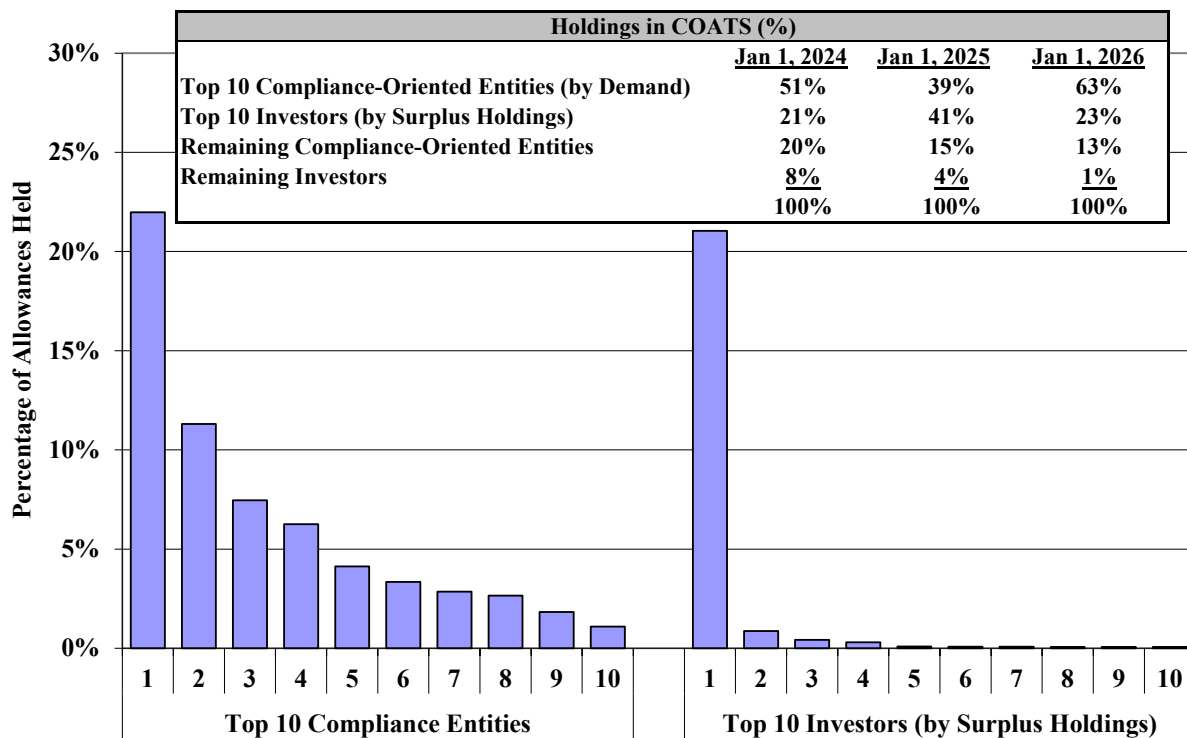


Figure 10 reports the quantities of CO<sub>2</sub> allowances that were held in the COATS accounts of individual firms at the beginning of January 2026, following the delivery of contracts dated for December 2025 delivery. The holdings are shown for each of the top compliance-oriented entities (i.e. the ten firms with the highest projected demand) and for the top ten investors. The top ten investors are ranked in descending order based on total holdings rather than demand. The table also shows the level of holdings of the remaining (not included in the top ten) compliance-oriented entities as a group and investors as a group.

Figure 10: Distribution of CO<sub>2</sub> Allowance Holdings



Observations regarding the distribution of CO<sub>2</sub> allowances:

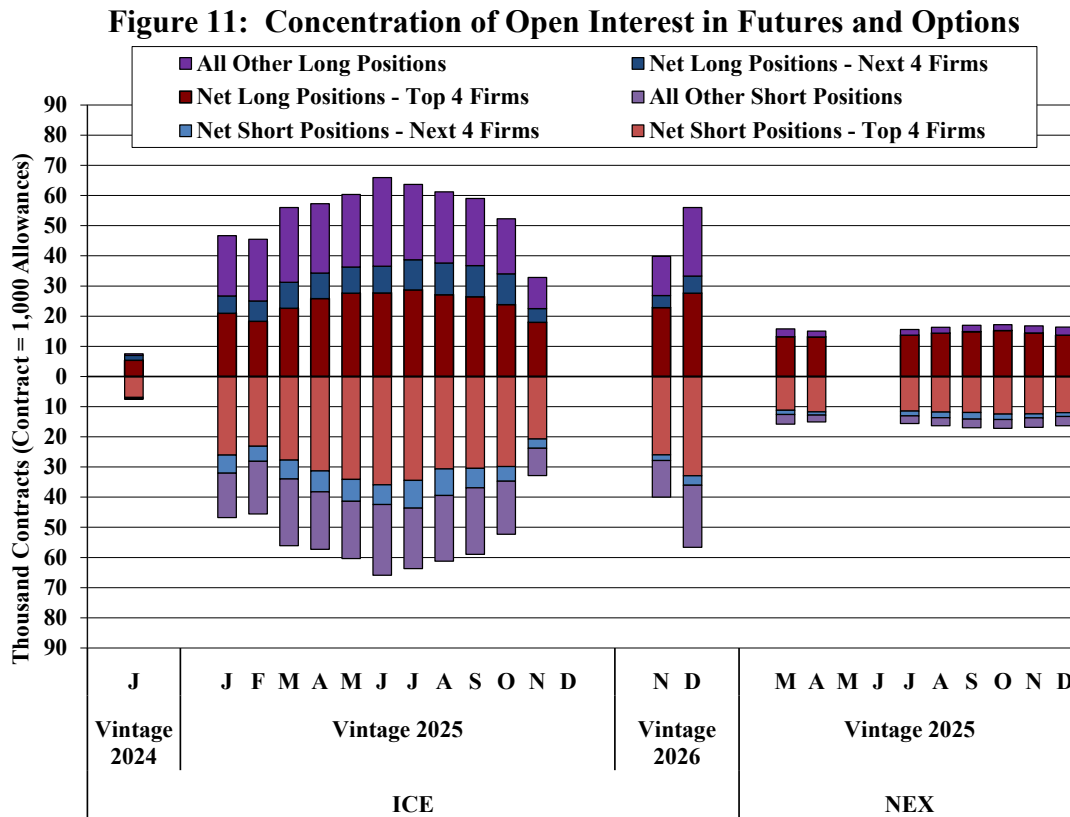
- Distribution of CO<sub>2</sub> Allowances Awarded* – The share of awards allocated to the top ten compliance-oriented entities decreased from 60 percent in 2024 to 48 percent in 2025, while the share of awards allocated to the top ten investors increased from 29 percent in 2024 to 40 percent in 2025.
- Distribution of CO<sub>2</sub> Allowance Holdings Among Compliance-Oriented Firms* – The holdings of CO<sub>2</sub> allowances were distributed across compliance-oriented entities at the close of 2025 at levels that were generally consistent with their demand, and a small number of these entities owned a moderate surplus. The share of holdings of the top ten compliance-oriented entities was 63 percent at the end of 2025, while the share of holdings of smaller compliance-oriented entities was 13 percent.
- Distribution of CO<sub>2</sub> Allowance Holdings Among Investors* – The share of allowances held by the top ten investors was 23 percent at the end of 2025 with nearly all of these allowances held by a single entity. Taken together, Figures 9 and 10 indicate that while at least eight investors bought substantial quantities (i.e., >1 million) of allowances in the quarterly auctions, all but one of these investors sold these in the secondary market during 2025. When a large share of the allowance surplus is held by a single firm, we investigate the firms other positions to consider whether it has a legitimate business purpose for the large holding and whether it is likely to prevent compliance-oriented

entities from obtaining allowances. Nonetheless, the large surplus makes it more difficult for one firm or a small number of firms to hoard allowances.

**D. Participation in the CO<sub>2</sub> Allowance Futures Market**

Additional information about the trading of futures, forwards, and options is available in the weekly Commitments of Traders (“COT”) reports, which are published by the Commodity Futures Trading Commission (“CFTC”) <sup>28</sup> for each week when greater than 20 firms have reportable positions in a particular product.

Figure 11 summarizes the concentration of open interest in Vintage 2024, 2025, and 2026 ICE futures and options contracts during months when information was available from the CFTC.



<sup>28</sup> Each day, firms with an open interest of 25 contracts or more are required to report their positions to the CFTC. Each Tuesday, the CFTC publishes the COT report, which summarizes the positions of market participants.

The figure reports the average monthly net long positions in three categories: (i) the four firms with the largest long positions, (ii) the four firms with the largest long positions not including the Top 4 (see “Next 4 Firms”), and (iii) all other long positions. The figure also reports the average monthly net short positions for three categories.

Figures 12 and 13 summarize the concentration of open interest in Vintage 2024, 2025, and 2026 ICE futures and options and the number of firms participating in the market for those contracts, respectively. The figures show similar aggregations by category of trader including producers/merchants, swap dealers, money managers, spread, and unspecified or other as defined by the CFTC:

- *Producers/Merchants* – Firms that hold the “physical commodity and use the futures markets to manage or hedge risks associated with those activities,”
- *Swap Dealers* – Firms that “deal primarily in swaps for a commodity and use the futures markets to manage or hedge the risk associated with those swaps transactions. The swap dealer’s counterparties may be speculative traders, like hedge funds, or traditional commercial clients that are managing risk arising from their dealings in the physical commodity,”
- *Managed Money* – “Investors that are generally seeking exposure to a broad index of commodity prices as an asset class in an unleveraged and passively-managed manner,”
- *Spread (Figure 12)* - Traders with offsetting short and long positions, and
- *Unspecified (Figure 13) or Other (Figure 12)* – Firms with reportable positions not included in the other categories.

Figure 12: Concentration of Open Interest in Futures and Options by Trader Type

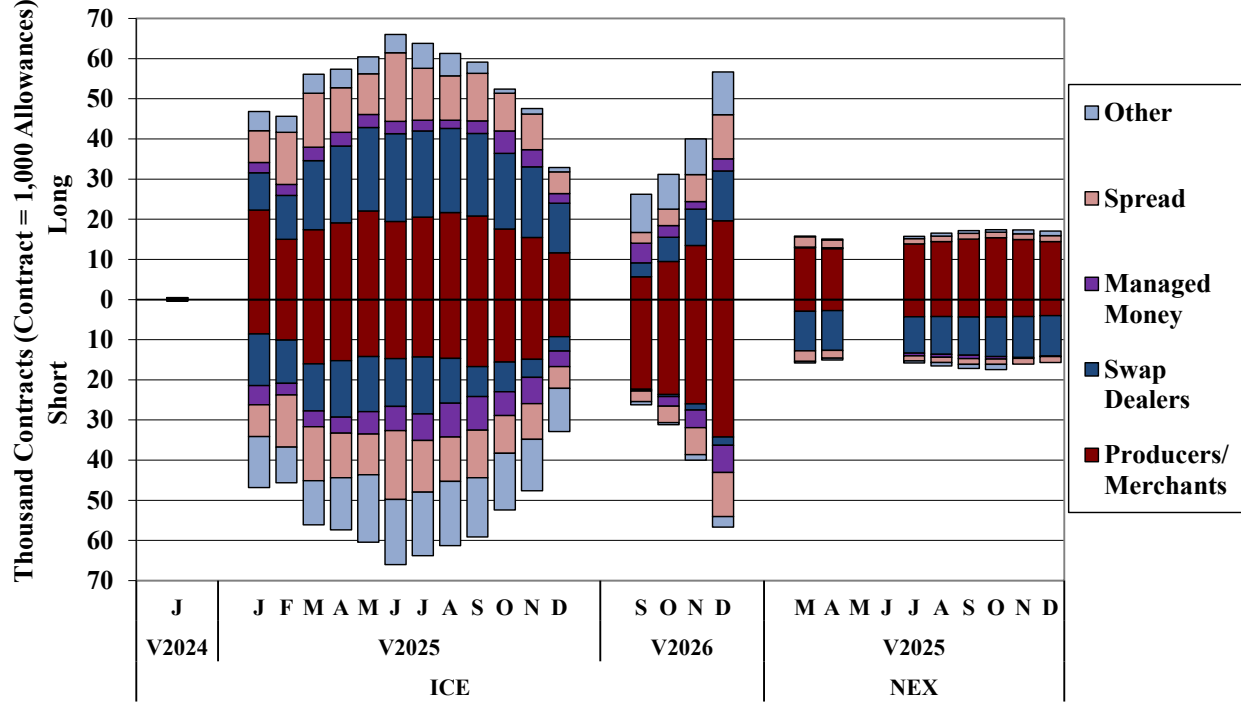
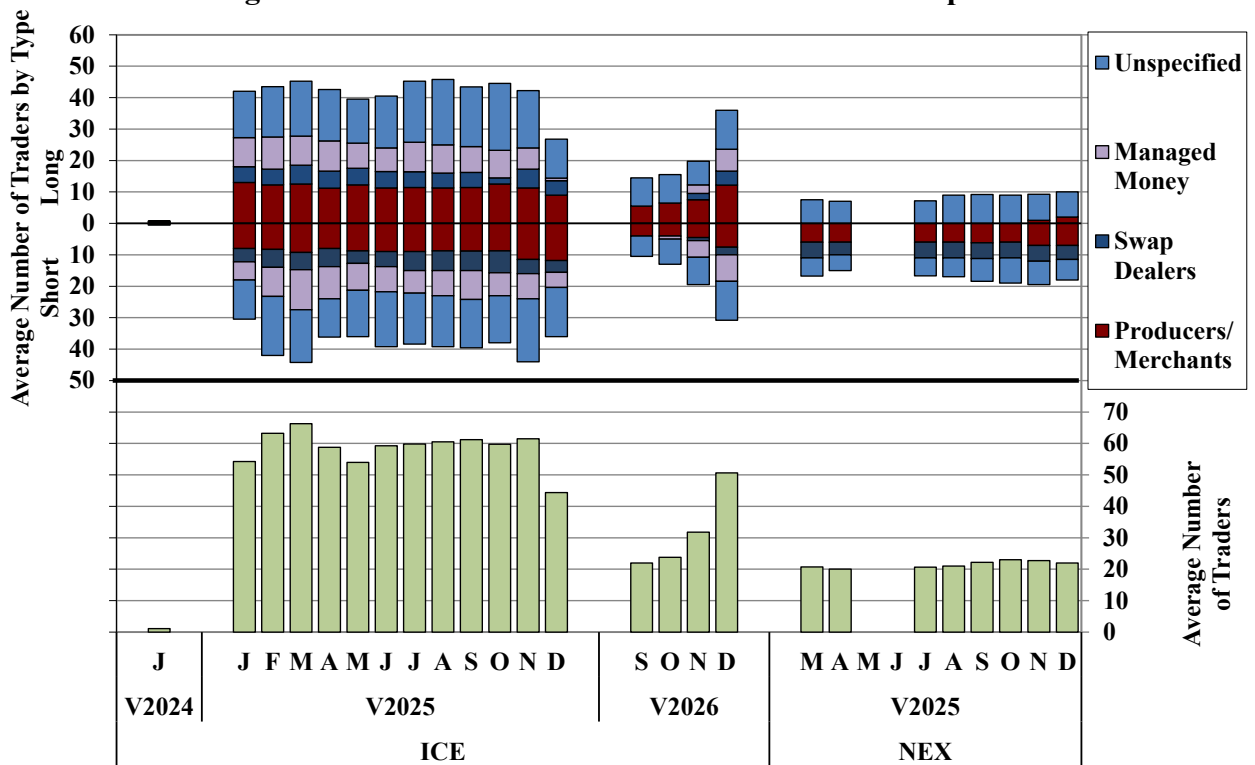


Figure 13: Number of Traders in ICE Futures and Options



Observations regarding the concentration of open interest in futures and options contracts and participation in the market by individual firms:

- *Number of Participants* – The number of participants in the market for ICE Vintage 2025 derivatives with reportable positions rose gradually during the year but fell off at the end of the year as contracts expired and activity increased for Vintage 2026 contracts. After declining slightly between February and April, the number of traders for Vintage 2025 remained fairly constant until December when the benchmark contract reaches settlement and many traders shifted to Vintage 2026 futures contracts with settlement in 2026 or 2027.
- *Concentration of Ownership* – Many firms have open interest in RGGI CO<sub>2</sub> allowance futures and options, although a small number of firms account for large shares of the net long and short positions in ICE Vintage 2025 contracts. The net long positions of the top four firms accounted for an average of 45 percent of the total long positions in ICE Vintage 2025 contracts, while the net short positions of the top four firms accounted for an average of 54 percent of the total short positions.
- *Contract Vintage* – Open interest in ICE Vintage 2025 contracts peaked in June before falling as traders switched into Vintage 2026 contracts starting in September.

## VI. DISCUSSION OF MARKET MONITORING

As the RGGI Market Monitor, we evaluate the conduct of market participants in the auctions and in the secondary market to identify potential anti-competitive conduct. We also assess whether the auctions were administered properly by the auction administrator.

Participation in the auctions by a large number of firms promotes competition and helps ensure that the auction clearing price reflects the market value of allowances. Hence, the participation by a substantial number of firms as observed in Figure 8 is a positive indicator regarding the competitiveness of the auctions. We have found no material evidence of anti-competitive conduct or significant barriers to participation in our reviews of the bids and the qualification process for each product in each auction. We also found that the auctions were conducted in accordance with the noticed rules and bids received.

In our monitoring of the secondary market, we evaluate whether firms could potentially hoard a substantial share of the supply of allowances to influence prices or to prevent a competitor from obtaining allowances. The holdings of individual firms are generally consistent with their expected need for allowances over the current control period. Figure 6 shows that compliance-oriented entities as a group hold a quantity of allowances consistent with their current compliance obligations. Figure 10 shows that a single investor held a large share of the allowance surplus at the end of 2025. In general, we investigate when a firm holds a particularly large number of allowances and consider whether it has a legitimate business purpose for the large holding and whether it is likely to prevent compliance-oriented entities from obtaining allowances. Based on our review of the holdings of individual firms, we find no evidence that hoarding was a significant concern.

Another potential concern is that a firm expecting to purchase CO<sub>2</sub> allowances in the auction might sell a large number of futures contracts in an effort to push prices in the secondary market below the competitive level. Such a firm might profit from buying a large number of CO<sub>2</sub> allowances in the auction at a discount if the bidding in the auction were influenced by the depressed futures price. For this to be a profitable strategy, the firm would need to be able to

substantially depress the futures price with a relatively small amount of sales—an amount smaller than the amount of CO<sub>2</sub> allowances it planned to buy in the auction. The best protection against this strategy is a market where other firms respond by making additional purchases. Firms that are looking for an opportunity to reduce their short positions or to purchase CO<sub>2</sub> allowances for their future compliance needs help limit the effectiveness of a strategy to depress prices below the competitive level. Such firms have a strong incentive to make additional purchases if a firm deliberately attempts to depress the futures price.

We have found no material evidence of anti-competitive conduct or significant barriers to participation in the auctions and in the secondary market, and we have found that price variations are generally driven by reasonable expectations related to the long-term supply and demand for allowances.