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**REGI Inc.**



**REPORT ON THE SECONDARY MARKET  
FOR REGI CO<sub>2</sub> ALLOWANCES: FIRST QUARTER 2021**

**Prepared for:**

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

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May 2021

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The Regional Greenhouse Gas Initiative (RGGI) was the first mandatory market-based regulatory program in the U.S. to reduce greenhouse gas emissions. 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.

## A. INTRODUCTION AND SUMMARY

The primary market for RGGI CO<sub>2</sub> allowances consists mainly of the auctions where allowances are initially sold. Once a CO<sub>2</sub> allowance is purchased in the primary market, it can then be resold in the secondary market. The secondary market for RGGI CO<sub>2</sub> allowances comprises the trading of physical allowances and financial derivatives, such as futures and options contracts.

The secondary market is important for several reasons. First, it gives firms an ability to obtain CO<sub>2</sub> allowances at any time during the three months between the RGGI auctions. Second, it provides firms a way to protect themselves against the potential volatility of future auction clearing prices. Third, it provides price signals that assist firms in making investment decisions in markets affected by the cost of RGGI compliance.

This report provides a summary of activity in the secondary market in the first quarter of 2021 and discusses the results of our market power screens.

- Secondary Market Activity – Allowance transfers in COATS and futures trading volumes fell from the fourth quarter of 2020 but increased from the first quarter of 2020.
  - ✓ Allowance transfer volumes remained elevated as compliance for the fourth control period did not finish until March 1.
  - ✓ The volume of trading of RGGI futures was 56 million CO<sub>2</sub> allowances in the first quarter of 2021, less than half of the fourth quarter of 2020, but up 24 percent from the first quarter of 2020.
  - ✓ Open interest in RGGI futures increased from 56.6 million allowances to 69.6 million allowances by the close of the quarter.
- CO<sub>2</sub> Allowance Prices – Average allowance prices rose significantly from previous quarters.
  - ✓ After closing 2020 at around \$8/ton, prices quickly rose to a peak of around \$9 in mid-January before falling to less than \$8 at the end of January. Prices rebounded in early February and hovered around \$8.25 until Auction 51 in early March. Following Auction 51 (which cleared at \$7.60), prices fell to a band between \$7.75 and \$8 until the end of the quarter.
  - ✓ Current price levels in the secondary market are influenced by the Emission Containment Reserve (“ECR”), which was introduced with a \$6.00 trigger price in Auction 51. The trigger price will rise 7 percent each year through 2030.
  - ✓ Call option trading increased in the first quarter with strike prices ranging from \$6.00 to \$11.00, suggesting that market participants are seeking protection from the risk of upward movements in RGGI allowance prices.
- CO<sub>2</sub> Allowance Holdings – At the end of the first quarter of 2021:

- ✓ There were 118 million CO<sub>2</sub> allowances in circulation.
- ✓ Compliance-oriented entities held approximately 35 million of the allowances in circulation (30 percent).
- ✓ Approximately 39 million of the allowances in circulation (33 percent) are believed to be held for compliance purposes.

We evaluate information on the holdings of CO<sub>2</sub> allowances and allowance derivatives as well as the demand for allowances to identify firms that may have acquired a position that raises competitive concerns. In the current study period, we find no evidence of anticompetitive conduct.

## B. BACKGROUND

The secondary market for RGGI CO<sub>2</sub> allowances comprises the trading of physical allowances and financial derivatives, such as futures, forward, and option contracts. A physical allowance trade occurs when the parties to the transaction register the transfer of ownership in RGGI's CO<sub>2</sub> Allowance Tracking System ("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. Allowances transferred must be usable for compliance in the vintage year of the futures contract. One standard futures contract equals 1,000 RGGI allowances.<sup>1</sup> 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 \$5 strike price, and December 2020 expiration date. If the price of the corresponding forward contract rose to \$5.75, the firm could exercise the option to buy CO<sub>2</sub> allowances at \$5 and immediately sell them at \$5.75. Alternatively, if the price of the forward contract stayed below \$5, the firm would let the option expire without exercising it. One standard options contract can be exercised for 1,000

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<sup>1</sup> More precisely, a futures contract requires parties with an open interest to post financial assurance in an account with the exchange until the contract reaches expiration. The exchange continually withdraws and deposits funds according to changes in the prices of the contracts in which the party has interest. For example, if a firm buys a contract for 1,000 allowances at \$3.50/allowance, the purchasing firm (firm with a long position) must put \$3,500 in an account (or whatever share of the entire liability the exchange requires). If the futures price declines to \$3/allowance, the exchange transfers \$500 from the account of a firm with a long position to the account of a firm with a short position (firm that sold a contract), and the firm with a long position is only required to keep \$3,000 in the account. At the end of the delivery month, allowances are exchanged for funds according to the closing price on the last day of the month.

RGGI allowances. Currently, call option contracts listed on both ICE and Nodal Exchange are European style, meaning that they cannot be exercised before the expiration date.

- *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 any time prior to the expiration date. Currently, put option contracts listed on both ICE and Nodal Exchange are European style, meaning that they cannot be exercised before the expiration date.

Futures, forward, and option 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 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.

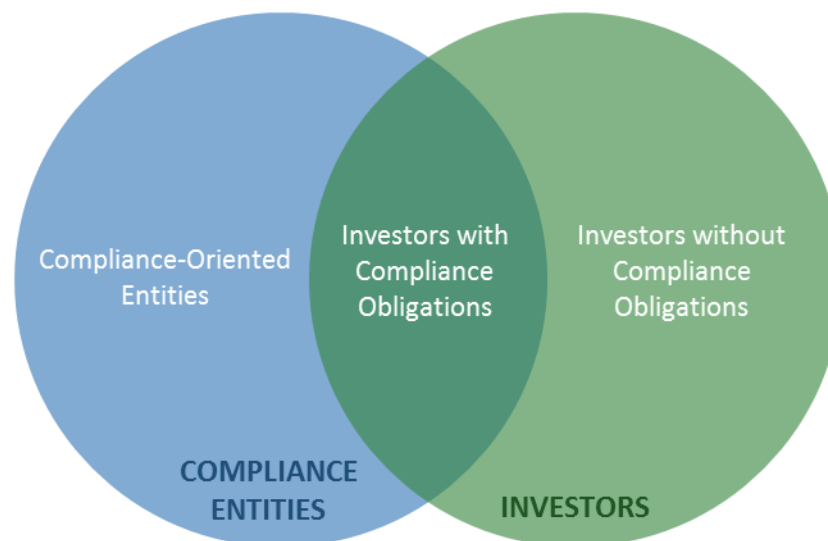
The volatility of a CO<sub>2</sub> allowance refers to the expected standard deviation of the distribution of allowance prices one year in the future. For example, if the expected value of the price one year in the future is \$1 and the option-implied volatility is 25 percent, this implies that the probability

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. Option-implied volatility refers to volatility estimates that are derived by analyzing the price and other terms of an option contract compared with the price of CO<sub>2</sub> allowances.

### *Categories of Firms Participating in the RGGI Market*

Participation in the RGGI market involves many different firms with various interests in RGGI allowances. Some participate in order to satisfy compliance obligations, others have investment interests, and still others participate for both purposes. To more effectively track the activity of different participants, we use several classifications for participant firms. Figure 1 summarizes the relationship between these classifications.

**Figure 1: Classifications of Participant Firms in the RGGI Marketplace**



- *Compliance-oriented entities* are compliance entities that appear to acquire and hold allowances primarily to satisfy their compliance obligations.
- *Investors with Compliance Obligations* are 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.
- *Investors without Compliance Obligations* are firms without any compliance obligations.

These three categories form the basis for two overlapping groups.

- *Compliance Entities* – All firms with compliance obligations, and their affiliates.<sup>2</sup> Combines the first and second of the above categories.
- *Investors* – All firms which are assessed to be purchasing primarily for investment rather than compliance purposes. Combines the second and third of the above categories.

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.

The number of allowances that are believed to be held for compliance purposes includes 100 percent of the allowances held by compliance-oriented entities and a portion of allowances held by other compliance entities (i.e., entities with compliance obligations that are not included in the compliance-oriented category).

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<sup>2</sup> Affiliates are firms that: (i) have a parent-subsidiary relationship with a compliance entity, (ii) are subsidiaries of a parent company that has a large interest in a compliance entity, (iii) have substantial control over the operation of a budget source and/or responsibility for acquiring RGGI allowances to satisfy its compliance obligations.



### C. SUMMARY OF PRICES

This section summarizes prices in the secondary market for RGGI CO<sub>2</sub> allowances in the first quarter of 2021. Figure 2 summarizes transaction prices in the secondary market for CO<sub>2</sub> allowances, including the prices of allowance transfers registered in COATS<sup>3</sup> and the prices of futures contract trades on the Intercontinental Exchange (“ICE”) and Nodal Exchange.

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

- After closing 2020 at around \$8/ton, futures prices quickly rose to a peak of around \$9 in mid-January before falling to less than \$8 at the end of January. Prices rebounded in early February and hovered around \$8.25 until Auction 51 in early March. Following Auction 51, prices fell and remained in a band between \$7.75 and \$8 until the close of the quarter.
- Prices of COATS transfers were generally consistent with futures prices throughout the quarter. However, several COATS transactions were reported with much lower prices than current market trends; these transfers likely reflect contracts with terms determined months or years prior to the transfer.
- The clearing price in Auction 51 (on March 3) was \$7.60. This was below futures prices at the time.
- An increased number of call option trades were recorded in the first quarter with strike prices ranging from \$6.00 to \$11.00, suggesting that market participants are seeking protection from the risk of upward movements in RGGI allowance prices.
- Current price levels in the secondary market are influenced by the Emission Containment Reserve (“ECR”), which was introduced with a \$6.00 trigger price in Auction 51. The trigger price will rise 7 percent each year through 2030.

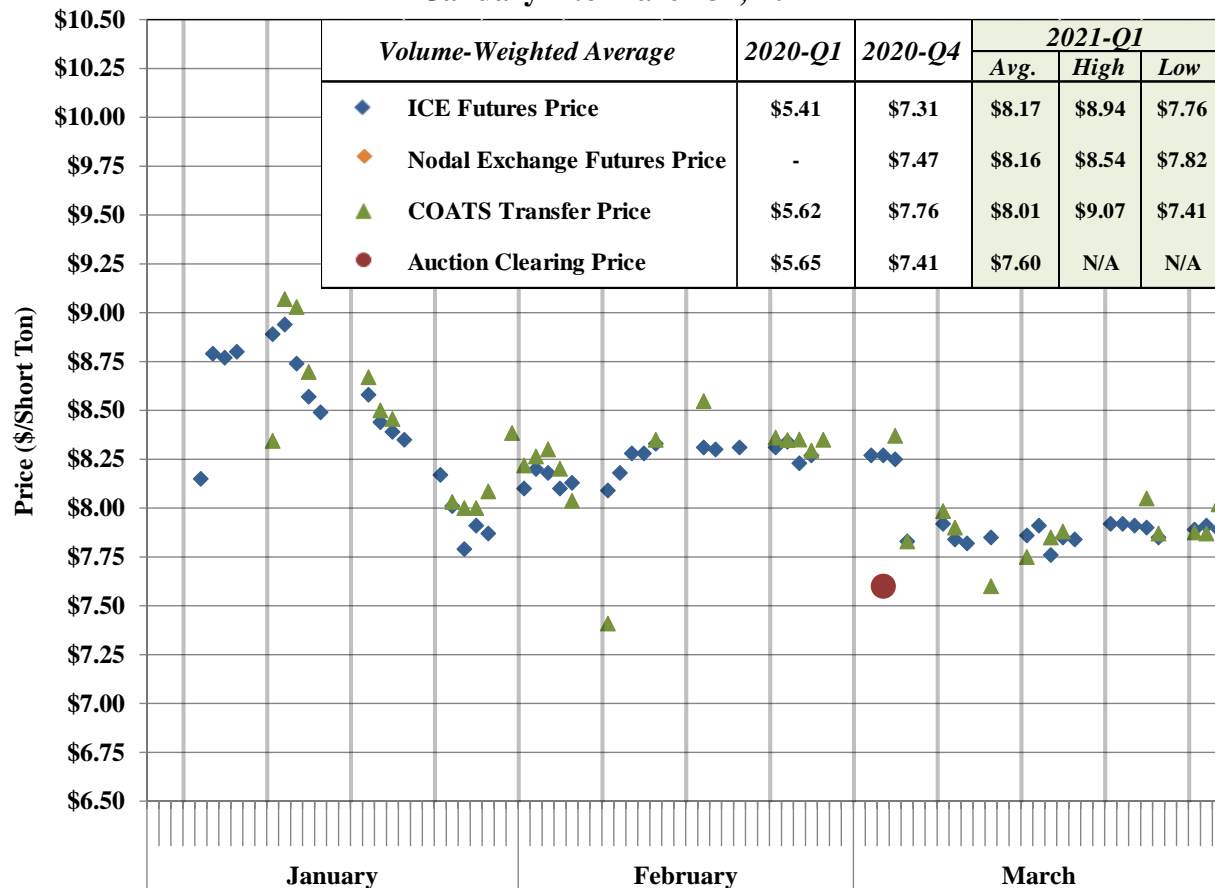
#### *Prices of CO<sub>2</sub> Allowances and Allowance Derivatives*

Figure 2 summarizes prices in the secondary market during the period. The blue diamonds show the price of futures trades on ICE and orange diamonds show futures trades on Nodal Exchange on days with trading volume. The green triangles show the volume-weighted average prices of physical deliveries registered in COATS on days with transactions when the price was recorded (“COATS transactions”). The red circle shows the clearing price of the CO<sub>2</sub> allowances that were sold in RGGI Auction 51, which was held on March 3. Figure 2 also shows volume-

<sup>3</sup> Parties are required to report the transaction price if there is an underlying financial transaction related to the transfer of allowances between accounts.

weighted average prices for each category in the first quarter of 2021 compared to the previous quarter and the first quarter of the previous year. Additionally, high and low values are presented for the daily volume-weighted average values. CO<sub>2</sub> allowances that are usable for compliance in the fourth control period are shown.

**Figure 2: Prices in the Secondary Market for RGGI CO<sub>2</sub> Allowances<sup>4</sup>  
January 1 to March 31, 2021<sup>5</sup>**



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

<sup>4</sup> Sources: Auction clearing prices are available [here](#), ICE futures prices are available [here](#), Nodal Exchange futures prices are available [here](#), and the prices of physical deliveries are based on information in COATS. Futures prices are shown for the prompt month contract settlement price even if the volume traded was for another contract. Average COATS Transfer Prices for previous quarters have been updated to reflect transactions reported after the compilation of data for previous quarterly reports.

<sup>5</sup> Collection of Nodal Exchange data did not begin until after the first quarter of 2020.

- After closing 2020 at around \$8/ton, futures prices quickly rose to a peak of around \$9 in mid-January before falling to less than \$8 at the end of January. Prices rebounded in early-February and hovered around \$8.25 until Auction 51 in early-March. Following Auction 51, prices fell and remained in a band between \$7.75 and \$8 until the close of the quarter.
- COATS transfer prices largely tracked futures prices throughout the quarter, but there were several transactions that were priced considerably lower than the general market trends at the time. These transfers likely reflect contracts with terms that were determined months or years prior to when the transfer took place.
- The clearing price in Auction 51 was \$7.60, which was substantially (~8 percent) lower than secondary market prices leading up to the auction. However, the auction clearing price was still \$0.19 higher than Auction 50 (which was held in December 2020).

### *Prices of Options for CO<sub>2</sub> Allowances*

The clearing prices of option contracts provide insight about how the market expects the price of the underlying commodity to move in the future. The price of an option depends on two factors: (i) the expected value of the underlying commodity relative to the strike price of the option, and (ii) the expected volatility of the underlying commodity over the period before the expiration date. When call option price decreases coincide with put option price increases, it signals a decrease in the expected price of the underlying commodity. Conversely, when call option prices and put option prices move in the same direction, it signals a change in the expected volatility of the underlying commodity price.

Key observations regarding the pricing of options for CO<sub>2</sub> allowances:

- Nineteen option trades were recorded on ICE in the first quarter, which was up significantly from the previous quarter.
- Seventeen call options and two put options were traded with strike prices between \$6.00 and \$11.00. All trades were for settlement in December of 2021. This activity suggests that market participants are seeking protection from the risk of upward movements in RGGI allowance prices.

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

Market-based emissions reduction programs such as RGGI are designed to give firms efficient incentives to reduce or offset emissions. In the short-term, high-emitting generators will 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, retire older inefficient generation, and 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.

Expected price volatility is affected by elements of the RGGI program that promote allowance price stability. Potential upward price movements are limited by the Cost Containment Reserve (“CCR”), which allows for the sale of a fixed number of allowances in addition to the cap if the auction clearing price reaches the CCR Trigger Price.<sup>6</sup> Potential downward price movements are limited by the Reserve Price, which currently prevents allowances from being sold in the auction at a price below \$2.32, and the Emissions Containment Reserve (“ECR”), which will withhold allowances from circulation if prices fall below established trigger prices starting in 2021.<sup>7</sup>

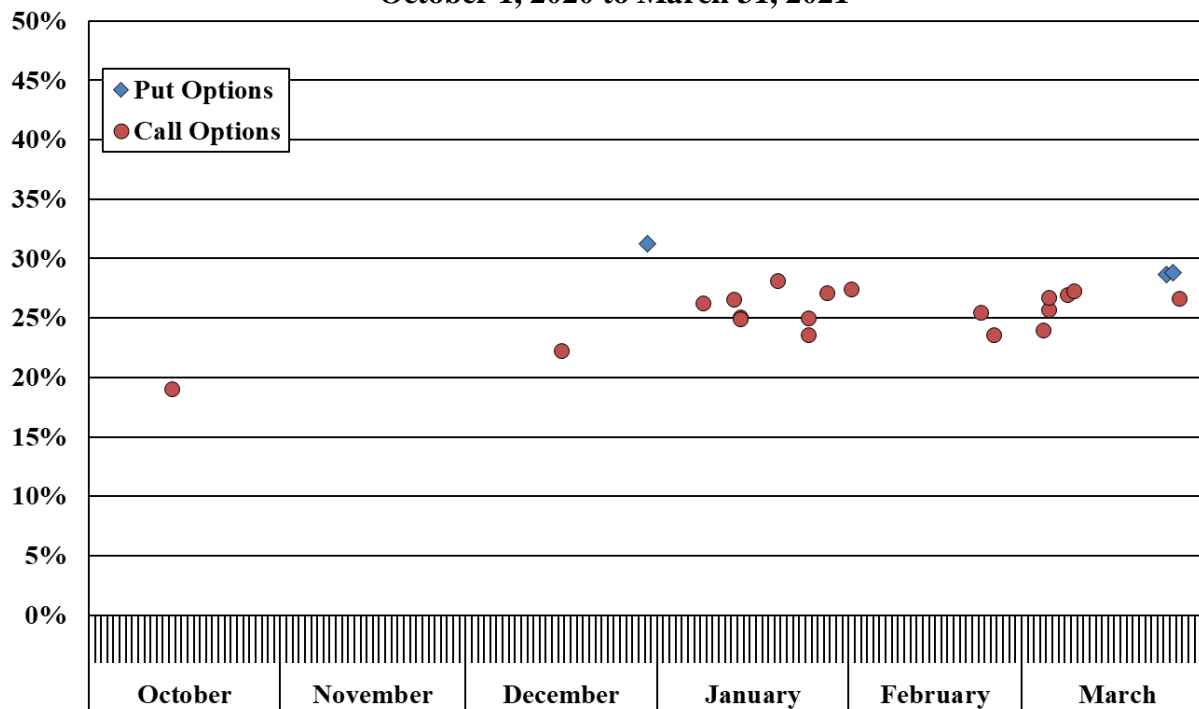
One measure of the volatility of CO<sub>2</sub> allowance prices is known as option-implied volatility, which measures the volatility that is implied by the trading of option contracts for CO<sub>2</sub> allowances. If a firm perceives that CO<sub>2</sub> allowance prices are volatile, the firm may be 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.

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<sup>6</sup> In 2021, the size of the CCR and the CCR trigger price is set in accordance with the 2017 Model Rule. The CCR trigger price is set at \$13.00 in 2021 and will rise 7 percent each year thereafter. Additional details are provided [here](#).

<sup>7</sup> Beginning in 2021, the size of the ECR will be equal to 10 percent of the budgets of states implementing the ECR. The ECR trigger price for 2021 will be \$6.00 and will rise 7 percent each year thereafter. Details are provided [here](#).

**Figure 3: Option-Implied Volatility of CO<sub>2</sub> Allowance Futures Prices  
October 1, 2020 to March 31, 2021<sup>8</sup>**



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

- In the fourth quarter of 2020, implied volatility ranged between 19 and 31 percent.
- In the first quarter of 2021, implied volatility ranged between 24 and 29 percent.
- Overall, option-implied volatility levels averaged 26 percent in the first quarter of 2021.
- Option-implied volatility in the first quarter of 2021 was slightly higher than levels in the fourth quarter of 2020.

<sup>8</sup> Positions that settle shortly after the initial execution of their trade are excluded from this figure (e.g., positions opened in November 2020 to close in December 2020 are not shown).

## D. VOLUMES AND OPEN INTEREST

This section evaluates the volume of COATS transactions (i.e., transfers of CO<sub>2</sub> allowances between unaffiliated parties as recorded in COATS) as well as the volume of trading and the level of open interest in exchange-traded futures and options. Figure 4 examines the volumes of transactions recorded in COATS and of futures trading. Figure 5 summarizes the level of open interest in exchange-traded RGGI futures and option contracts. Figure 6 evaluates the concentration of firms with open interest in exchange-traded RGGI futures and option contracts.

Key observations regarding trading volumes and open interest in the first quarter of 2021:

- Trading activity in RGGI futures contracts decreased from the previous quarter. Futures trading volume was 56 million CO<sub>2</sub> allowances in the first quarter of 2021, less than half the previous quarter, but up 24 percent from the first quarter of 2020..
- Physical allowance transfers between unaffiliated firms decreased by 76 percent from the previous quarter, but nearly doubled from the first quarter of 2020.
- Open interest in RGGI futures increased from 56.6 million allowances at the end of the fourth quarter of 2020 to 69.6 million allowances by the close of the first quarter of 2021.
- Much of the allowance transfer activity in the last quarter of 2020 and the first two months of 2021 was by firms seeking allowances before the March 1 compliance deadline for the fourth control period.
- There were 118 million CO<sub>2</sub> allowances in circulation at the end of the quarter. Compliance-oriented entities held approximately 35 million of the allowances in circulation (30 percent). Approximately 39 million of the allowances in circulation (33 percent) are believed to be held for compliance purposes.

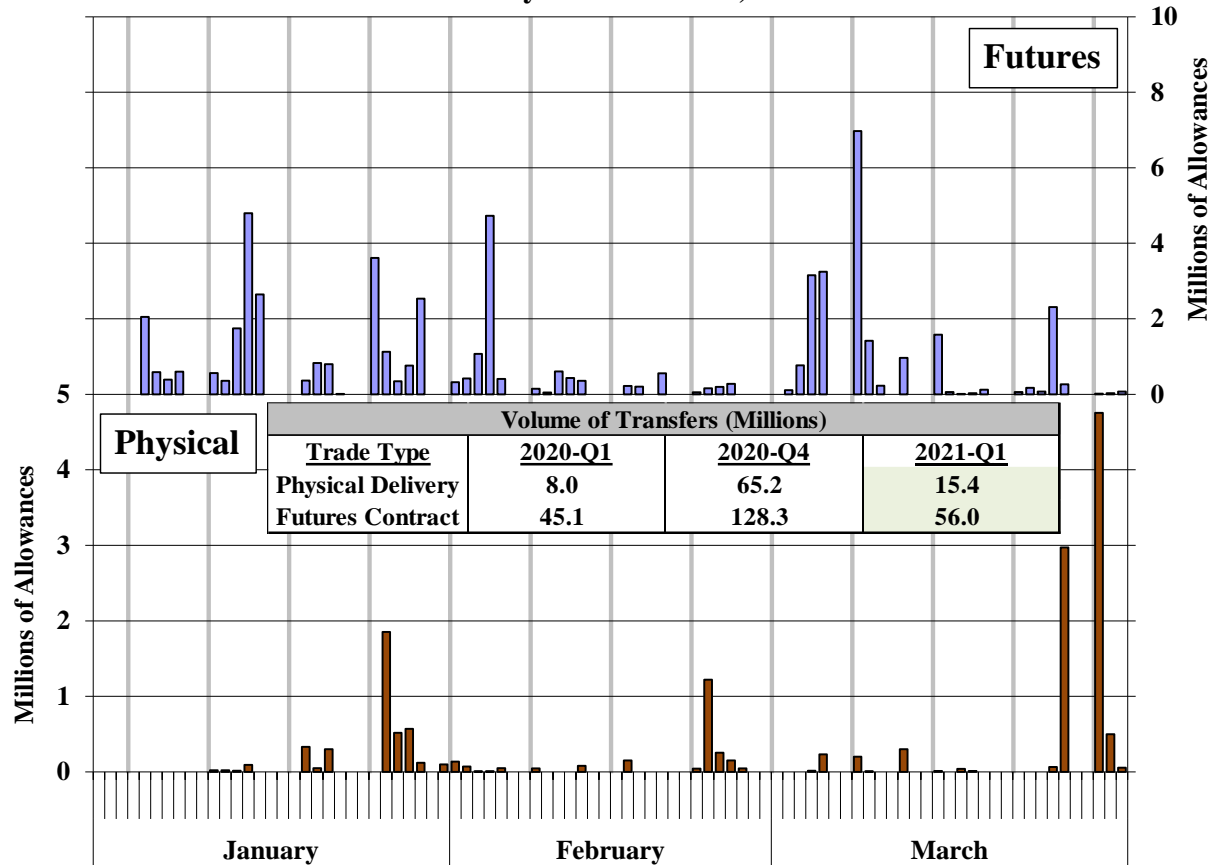
### *Volume of CO<sub>2</sub> Allowance Transfers, Futures, and Options*

Figure 4 summarizes the volume of transfers of CO<sub>2</sub> allowances between the COATS accounts of unaffiliated firms and the volume of trading of RGGI futures listed on ICE and Nodal Exchange.<sup>9</sup> The figure also shows the volume of transfers in the first quarter of 2021 compared to the previous quarter and to the first quarter of 2020. The volume of futures trading and

<sup>9</sup> Firms are categorized as affiliated based on available information. As a result, calculations provided in previous reports may be inconsistent with results in this report when new information becomes available. Furthermore, the COATS transfer totals from previous quarters have been revised from previous reports to reflect late-reported transactions.

transfers of CO<sub>2</sub> allowances for each control period are shown together because all CO<sub>2</sub> allowances are interchangeable for compliance purposes.

**Figure 4: Volume of CO<sub>2</sub> Allowance Transfers Between Unaffiliated Parties  
January 1 to March 31, 2021**



Key observations regarding physical CO<sub>2</sub> allowance transfers between unaffiliated firms:

- The total volume of CO<sub>2</sub> allowance transfers between unaffiliated firms was 15.4 million, which was just 24 percent of the volume in the fourth quarter of 2020, but nearly double the first quarter of 2020.
- Many CO<sub>2</sub> allowance transfers occur in the last few business days of the month when futures contracts are settled (especially for the month of December), reflecting that most result from settlement of futures contracts.
- The last month of the fourth control period was December 2020. So, much of the allowance transfer activity in the last quarter of 2020 and the first two months of 2021 was by firms seeking allowances before the March 1 compliance deadline.

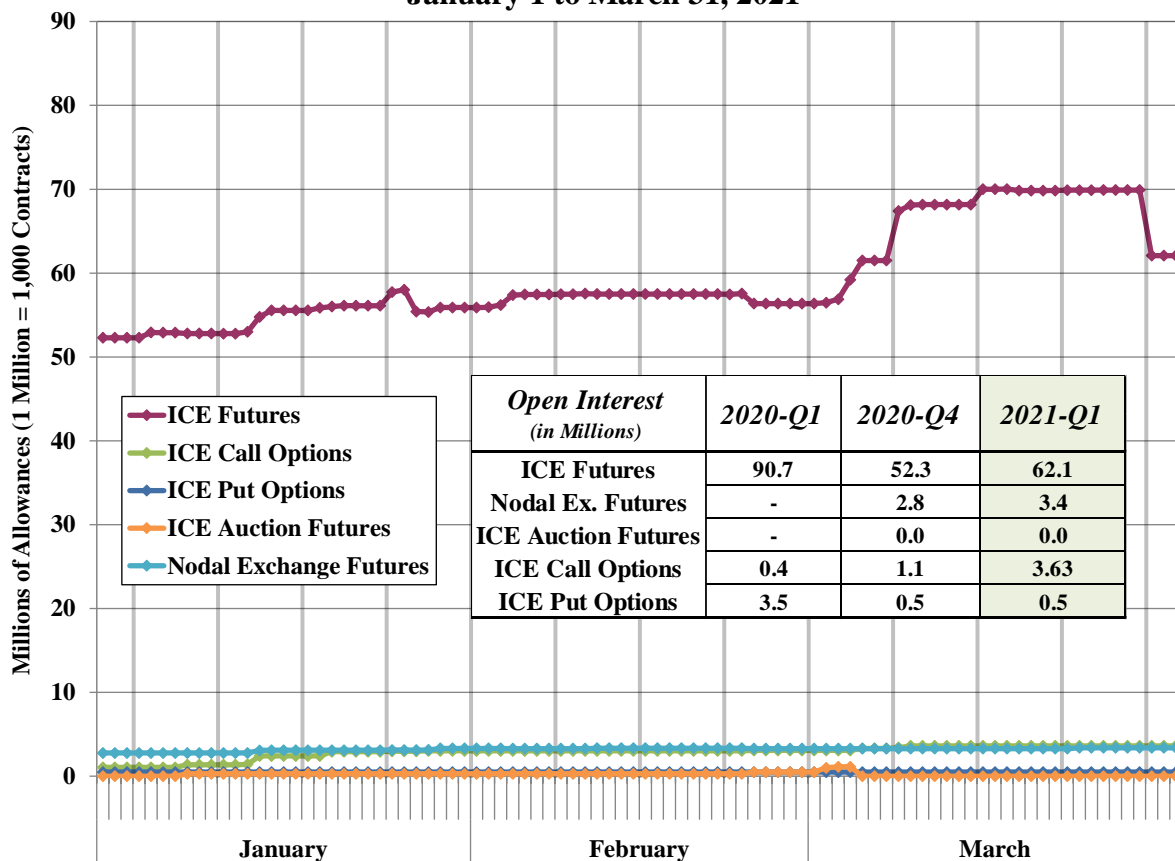
Key observations regarding the volume of trading of RGGI futures and options contracts:

- The total volume of trading of RGGI futures was 56 million CO<sub>2</sub> allowances in the first quarter of 2021, less than half the previous quarter, but 24 percent more than the first quarter of 2020.
- Of futures trading volumes during the first quarter of 2021, approximately 23 percent was for contracts that settled during the quarter, while 65 percent was for contracts that settle in December 2021.

**Open Interest in Exchange-Traded RGGI Futures and Options**

Figure 5 summarizes the level of open interest in exchange-traded futures and options listed on ICE and Nodal Exchange during the first quarter of 2021. The red line shows the level of open interest in futures contracts on ICE. The teal line shows the level of open interest in futures contracts on Nodal Exchange. The green line shows the level of open interest in call options on ICE. The blue line shows the level of open interest in put options on ICE. The orange line shows the level of open interest in auction futures on ICE.

**Figure 5: Open Interest in RGGI Futures and Options  
January 1 to March 31, 2021**





Key observations regarding the level of open interest in RGGI futures and options:

- The total open interest in RGGI futures on ICE increased from 52.3 million allowances at the end of the fourth quarter of 2020 to 62.1 million allowances by the close of the first quarter of 2021.
- Open interest in RGGI futures on Nodal Exchange increased from 2.8 million at the close of the fourth quarter to 3.4 million at the close of the first quarter.
- Open interest in RGGI put options on ICE closed the fourth quarter at 500 thousand and remained there over the first quarter, while open interest in call options on ICE increased to slightly over 3.6 million.
- RGGI Auction Futures<sup>10</sup> for Auction 51 on ICE opened and closed the first quarter with no open interest but peaked at 1.1 million prior to Auction 51.
- There was no open interest in RGGI options on Nodal Exchange in the first quarter.
- Overall, the level of open interest across RGGI options and futures products increased substantially from the close of the fourth quarter of 2020 to the close of the first quarter of 2021.

### *Concentration of Open Interest*

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>11</sup> for each week when greater than 20 firms have reportable positions in a particular product.

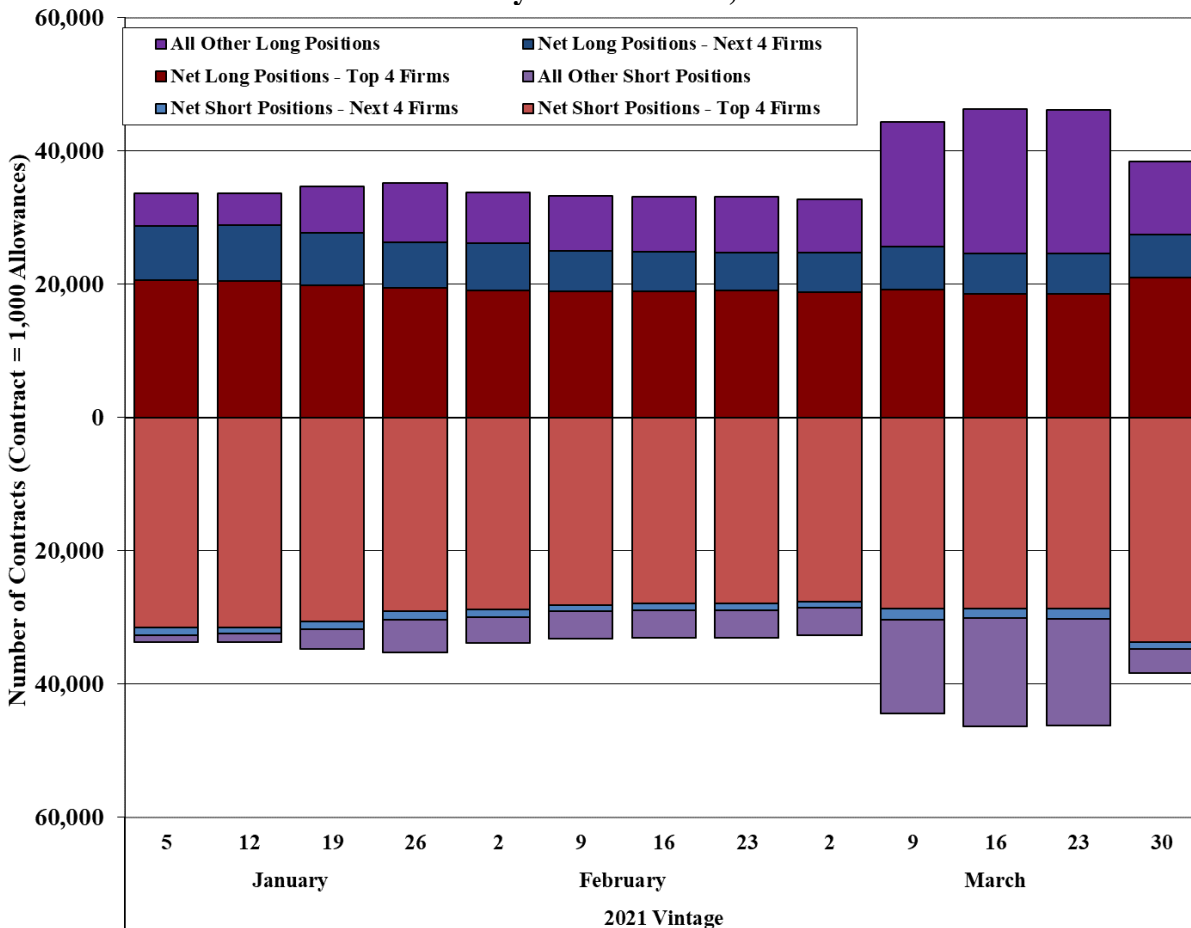
Figure 6 summarizes the concentration of open interest in 2021 vintage ICE futures and options contracts. The figure reports the net long positions in three categories: (i) the four firms with the largest long positions, (ii) the four firms with the largest long positions not including the Top 4, and (iii) all other long positions. The figure also reports the net short positions in three

<sup>10</sup> RGGI Auction Futures are a product which converts to long or short RGGI futures contracts on the day of publication of the Market Monitor Report for a specific auction. Positions opened in the RGGI futures contract will be priced at the Auction Clearing Price as specified in the Market Monitor Report. The futures contract vintage will be the month and year in which the auction is held. For more information see [here](#).

<sup>11</sup> Each day, firms with an open interest of 25 contracts or more are required to report their positions to the CFTC. The CFTC categorizes each firm as Commercial if it engages in trading primarily to supply its own need for allowances or Non-Commercial if it trades for another purpose. Hence, compliance entities are generally designated as Commercial and other entities are frequently designated as Non-Commercial. Each Tuesday, the CFTC issues the COT report, which is a summary of the long and short positions of participants in the market.

categories: (i) the four firms with the largest short positions, (ii) the four firms with the largest short positions not including the Top 4, and (iii) all other short positions.

**Figure 6: Concentration of Open Interest in ICE Futures and Options  
January 1 to March 31, 2021**



Key observations regarding the concentration of open interest:

- Although many firms have open interest in RGGI CO<sub>2</sub> allowance futures and options, a small number of firms account for large shares of the net long and short positions in 2021 Vintage contracts.
- Open interest in 2021 Vintage contracts increased during the March, although the peak occurred before the expiration of March 2021 contracts:
  - ✓ The “Top Four” Firms’ concentration for net long positions in 2021 Vintage contracts decreased from 61 percent to 55 percent during the quarter, while concentration in net short positions decreased from 94 to 88 percent.

- ✓ On a weekly basis, the “Top Four” Firms accounted for an average of 54 percent (not weighted by volume) of the total net long positions in 2021 Vintage contracts during the quarter, while 72 percent of the total net long positions were held by eight firms.
- ✓ On a weekly basis, the “Top Four” Firms accounted for an average of 81 percent (not weighted by volume) of the total net short positions in 2021 Vintage contracts during the quarter, while 84 percent of the total net short positions were held by eight firms.
- During the first quarter of 2021 there was an insufficient number of participations to trigger reporting for other vintage contracts.
- The CFTC does not publish firm-level information on open interest, although the information they publish provides an indication of the upper limits of the net long and net short positions of individual firms. Combined with firm-specific information about CO<sub>2</sub> allowance holdings from COATS, the information on open interest that is published by the CFTC is useful for evaluating the potential for a firm to hoard RGGI CO<sub>2</sub> allowances, which is discussed further in Section E.

## E. DISCUSSION OF MARKET MONITORING

As the RGGI Market Monitor, we monitor trading in the secondary CO<sub>2</sub> allowance market in order to identify anticompetitive conduct. Additionally, the Commodity Futures Trading Commission (“CFTC”) evaluates trading in the secondary CO<sub>2</sub> allowance market consistent with its role as the regulator of derivative markets in the U.S. This section discusses two types of anti-competitive conduct for which we monitor. As in previous reports on the secondary market, we find no evidence of anti-competitive conduct.

In any commodity market, one potential concern is that a firm could hoard a substantial share of the supply of a commodity to influence prices or to prevent a competitor from obtaining CO<sub>2</sub> allowances. Hence, we screen information on the holdings of CO<sub>2</sub> allowances and allowance-derivatives and the demand for allowances to identify firms that might acquire a position that raises competitive concerns. The ability of an individual firm to hoard is limited by the substantial private bank of CO<sub>2</sub> allowances that has been accumulated and also by the market rules, particularly the auction rules that limit the amount of allowances that can be purchased by a single party or group of affiliated parties in a single offering to 25 percent.

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 the price of the contracts 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. Nevertheless, the CFTC has access to confidential transaction data, which allows it to monitor for evidence of manipulative conduct.