



**REPORT ON THE SECONDARY MARKET  
FOR RGGI CO<sub>2</sub> ALLOWANCES: FIRST QUARTER 2015**

**Prepared for:**

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

**Prepared By:**



May 2015

---

This report was prepared by Potomac Economics (the contractor) in the course of performing work contracted for and sponsored by RGGI, Inc. on behalf of the RGGI Participating States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont). The opinions expressed in this report do not necessarily reflect those of RGGI, Inc. or any of the Participating States, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, RGGI, Inc., the Participating States, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. RGGI, Inc., the Participating States, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort of Northeast and Mid-Atlantic states 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 2015 and discusses the results of our market power screens. Several patterns have emerged in this period in the secondary market:

- CO<sub>2</sub> Allowance Prices – The average transfer price of CO<sub>2</sub> allowances in COATS during the first quarter of 2015 was \$5.46, approximately five percent higher than in the prior quarter and 41 percent higher than the first quarter of 2014. Prices generally increased in January, remained around \$5.50 in February, and decreased steadily in March. At the end of the quarter price levels were approximately \$5.35.
- Secondary Market Activity – Secondary market activity decreased significantly from the fourth quarter of 2014 but increased from the first quarter of 2014.
  - ✓ The total volume of CO<sub>2</sub> allowance transfers between unaffiliated firms was 34.4 million, down 20 percent from 43.1 million allowances in the previous quarter, but up 15 percent from 29.8 million allowances in the first quarter of 2014.
  - ✓ The total volume of trading of RGGI futures listed on ICE was 29.3 million CO<sub>2</sub> allowances in the first quarter of 2015, down 46 percent from 53.7 million in the prior quarter but up 40 percent from 20.9 million in the first quarter of 2014.
- CO<sub>2</sub> Allowance Holdings – The share of CO<sub>2</sub> allowances that were held by compliance entities and their affiliates at the end of the first quarter of 2015 was 62 percent (out of approximately 154 million allowances in circulation). This excludes allowances that will be surrendered for second control period compliance.

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. The vintage year refers to the compliance year of the CO<sub>2</sub> allowance that is to be transferred. One standard futures contract equals 1,000 RGGI allowances.<sup>1</sup>
- *Forwards* – These are like futures contracts, but a forward contract typically requires that all financial settlement occur at expiration.
- *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 any time prior to the expiration date. For example, suppose a firm holds a call option with \$5 strike price, and December 2015 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

---

<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.

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 any time prior to 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 forwards, they usually require less financial security, making 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.

### C. SUMMARY OF PRICES

This section summarizes prices in the secondary market for RGGI CO<sub>2</sub> allowances in the first quarter of 2015. Figure 1 summarizes transaction prices in the secondary market for CO<sub>2</sub> allowances, including the prices of allowance transfers registered in COATS<sup>2</sup> and the prices of futures contract trades on the Intercontinental Exchange (“ICE”). Figure 2 summarizes the option-implied (i.e., expected) volatility of RGGI CO<sub>2</sub> allowance prices based on an analysis of the trading of options contracts.<sup>3</sup> Key observations regarding RGGI CO<sub>2</sub> allowance prices:

- The average transfer price of CO<sub>2</sub> allowances in COATS during the first quarter of 2015 was \$5.46, approximately five percent higher than in the prior quarter and 41 percent higher than the first quarter of 2014. Prices generally increased in January, remained around \$5.50 in February, and decreased steadily in March. At the end of the quarter price levels were approximately \$5.35.
- The clearing price in Auction 27 (held on March 11) was \$5.41. The clearing price was generally consistent with secondary market prices leading up to the auction, and it was 4 percent higher than the clearing price in Auction 26.
- Option-implied volatility ranged from 13 to 22 percent during the first quarter, continuing the downward trend in option-implied volatility over the last year.

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

Figure 1 summarizes prices in the secondary market during the period. The blue diamonds show the price of ICE futures 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 27, which was held on March 11. Figure 1 also shows volume-weighted average prices for each category in the first quarter of 2015 compared to the previous quarter and the first quarter of the previous year. Volume-weighted average prices for the first, second, and third control period CO<sub>2</sub> allowances are shown together.

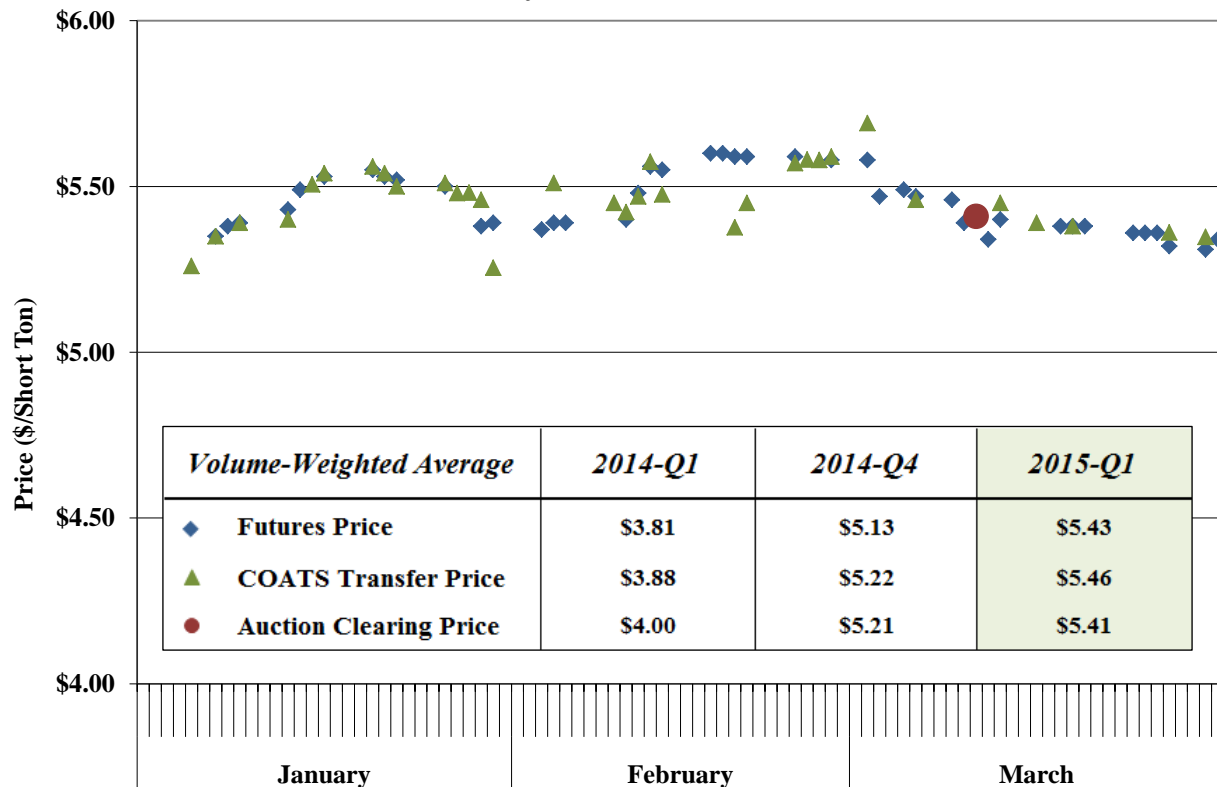
---

<sup>2</sup> Parties are required to report the transaction price if there is an underlying financial transaction related to the transfer of allowances between accounts.

<sup>3</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.



**Figure 1: Prices in the Secondary Market for RGGI CO<sub>2</sub> Allowances<sup>4</sup>  
January 1 to March 31, 2015**



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

- The average transfer price of CO<sub>2</sub> allowances in COATS during the first quarter of 2015 was \$5.46, approximately five percent higher than in the prior quarter and 41 percent higher than the first quarter of 2014. Prices generally increased in January, remained around \$5.50 in February, and decreased steadily in March. At the end of the quarter price levels were approximately \$5.35.
- The prices of ICE futures trades were consistent with COATS transfer prices throughout the first quarter. The average futures price of \$5.43 was 6 percent higher than the average price in the prior quarter and 43 percent higher than in the first quarter of 2014.
- Although prices were slightly elevated leading up to the compliance deadline for the second control period on March 2, there was no apparent price differential between transactions involving allowances usable for compliance in the second control period versus those that would not be usable until after the second control period.

<sup>4</sup> Sources: Auction clearing prices are available at [www.rggi.org/market/co2\\_auctions/results](http://www.rggi.org/market/co2_auctions/results), ICE futures prices are available at [www.theice.com](http://www.theice.com), 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.

- The clearing price in Auction 27, held on March 11, was \$5.41, which was generally consistent with secondary market prices leading up to the auction. The auction clearing price increased 4 percent from Auction 26 (which was held in December).

### *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 in the first quarter of 2015:

- Twenty-seven option trades were recorded on ICE during the first quarter of 2015, up from 19 trades in the previous quarter.
- Forty-five percent of the volume was for contracts with March 2016 expiration, while 37 percent of the volume was for contracts with December 2015 expiration.
- Sixty-eight percent of the volume was for call options and 32 percent of the volume was for put options.
- The strike prices of the 12 call options ranged from \$5.25 to \$7.25, while 15 put options were sold at strike prices of \$5.00 to \$5.50. These strike prices provide some indication of the market's expectations for the potential range of variation in 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.

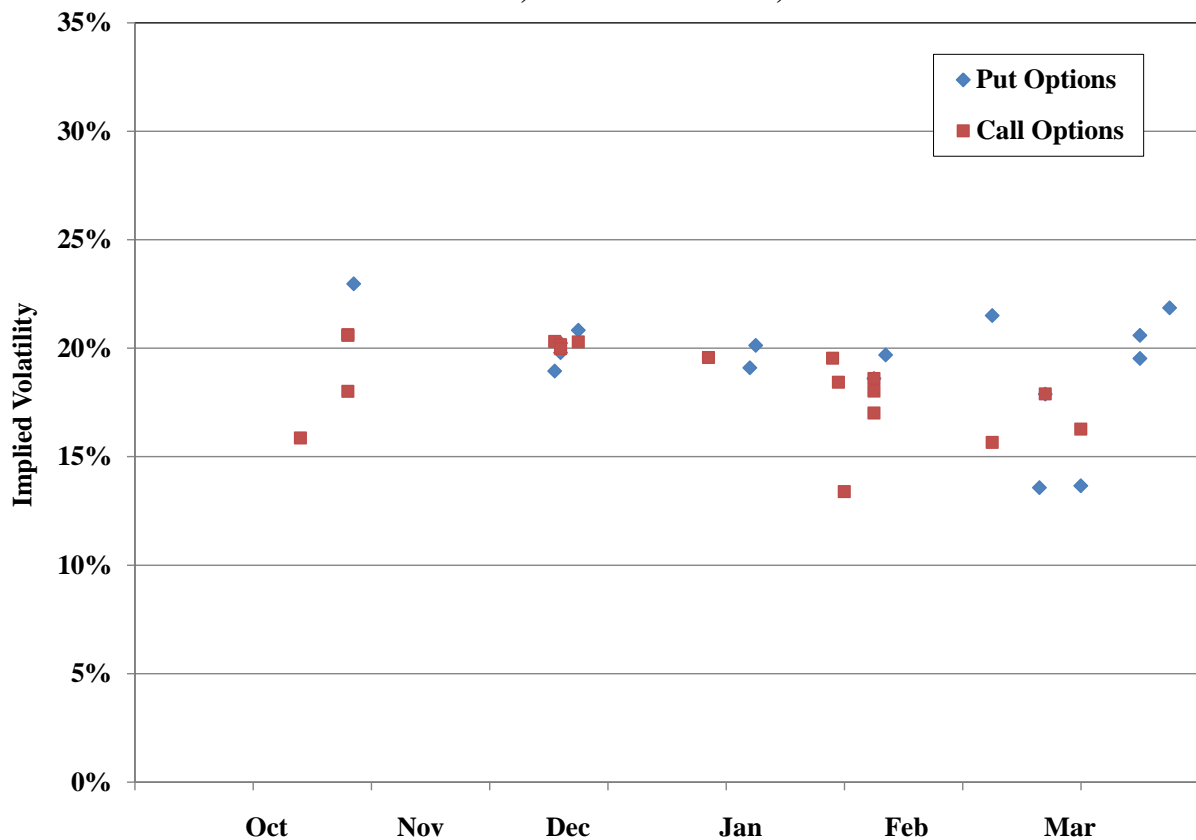
One measure of the volatility of CO<sub>2</sub> allowance prices is known as option-implied volatility, which measures the volatility that is implied by the trading of option contracts for CO<sub>2</sub> allowances. If a firm perceives that CO<sub>2</sub> allowance prices are volatile, the firm may be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

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 over the last six months.<sup>5</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 less than 90 days prior to the expiration date. Excluding these contracts reduces variations in implied volatility that are driven by short-term issues such as the timing of the trades within a particular quarter (i.e. around the time of each quarterly auction).

---

<sup>5</sup> Black's model for valuing futures options is used to estimate the option-implied volatilities of RGGI allowance futures prices.

**Figure 2: Option-Implied Volatility of CO<sub>2</sub> Allowance Futures Prices  
October 1, 2014 to March 31, 2015**



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

- In the fourth quarter of 2014, there were 13 trades where implied volatility ranged between 16 and 21 percent.
- In the first quarter of 2015, there were 23 trades where implied volatility ranged between 13 and 22 percent.
- The option-implied volatility of put options was slightly higher than that of call options.

## 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 3 examines the volumes of transactions recorded in COATS and of futures trading. Figure 4 summarizes the level of open interest in exchange-traded RGGI futures and option contracts. Figure 5 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 2015:

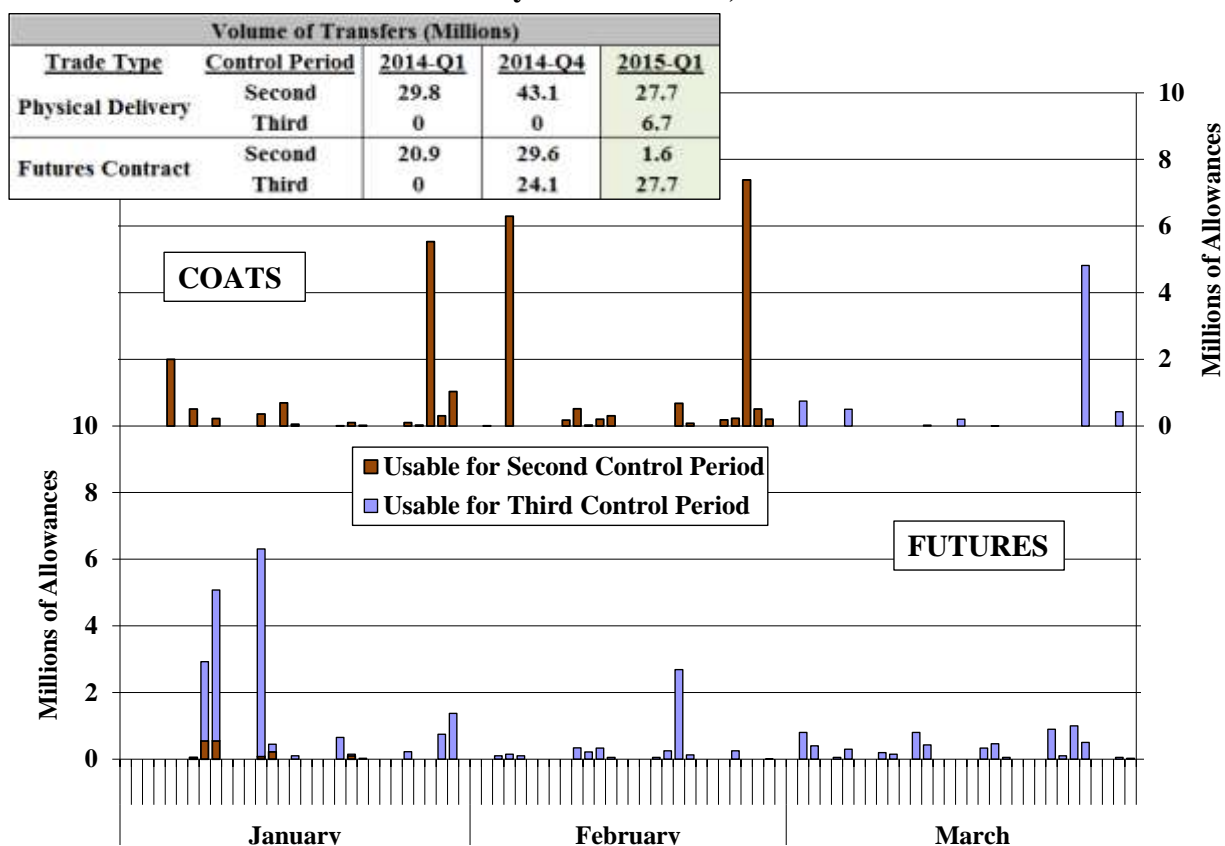
- Secondary market activity decreased significantly from the fourth quarter of 2014 but increased from the first quarter of 2014.
  - ✓ The total volume of CO<sub>2</sub> allowance transfers between unaffiliated firms was 34.4 million, down 20 percent from 43.1 million allowances in the previous quarter, but up 15 percent from 29.8 million allowances in the first quarter of 2014. Additional transfers were driven partly by March 2<sup>nd</sup> compliance deadline for the second control period.
  - ✓ The total volume of trading of RGGI futures listed on ICE was 29.3 million CO<sub>2</sub> allowances in the first quarter of 2015, down 46 percent from 53.7 million in the prior quarter but up 40 percent from 20.9 million in the first quarter of 2014.
- Only five percent of futures trading volume was for contracts involving allowances usable for compliance in the second control period (i.e., contracts expiring prior to the compliance deadline for vintages before 2015). All of these transactions occurred in January.
- The open interest in RGGI options increased 34 percent from 32.5 million at the beginning of the quarter 43.7 at the end of the quarter.
- The share of CO<sub>2</sub> allowances that were held by compliance entities and their affiliates at the end of the first quarter of 2015 was 62 percent (out of approximately 154 million allowances in circulation). This excludes allowances that will be surrendered for second control period compliance.

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

Figure 3 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. The figure also shows the volume of transfers in the first quarter of 2015 compared to the previous quarter and to

the first quarter of 2014.<sup>6</sup> The volumes of futures trading and CO<sub>2</sub> allowance transfers are shown separately according to whether the transaction involved allowances that were usable for compliance in the second control period (i.e., vintages 2014 or earlier and contracts expiring prior to the compliance deadline).

**Figure 3: Volume of CO<sub>2</sub> Allowance Transfers Between Unaffiliated Parties<sup>7</sup>  
January 1 to March 31, 2015**



Key observations regarding the volume of transfers of CO<sub>2</sub> allowances in COATS between unaffiliated firms:

- CO<sub>2</sub> allowance trading decreased significantly in the first quarter, as was expected since the fourth quarter is typically the most active trading period. Allowances acquired after the compliance deadline of March 2, 2015 are not usable for second control period compliance.

<sup>6</sup> Firms are categorized as affiliated based on available information. As a result, calculations provided in previous reports may be inconsistent with ones in this report when new information becomes available.

<sup>7</sup> Source: CO<sub>2</sub> allowance transfers are based on information in COATS.

- The total volume of CO<sub>2</sub> allowance transfers between unaffiliated firms was 34.4 million, down 20 percent from 43.1 million allowances in the previous quarter, but up 15 percent from 29.8 million allowances in the first quarter of 2014.
- Fifty-nine percent of the volume of CO<sub>2</sub> allowance transfers between unaffiliated firms occurred in the last three trading days of January, February, or March. This is typical as transfers often result from the final settlement of RGGI futures contracts. The day with the highest volume was February 25 (just before the compliance deadline), which accounted for 24 percent of the quarterly volume of CO<sub>2</sub> allowance transfers between unaffiliated firms.
- The share of CO<sub>2</sub> allowances that were held by compliance entities and their affiliates at the end of the first quarter of 2015 was 62 percent (out of approximately 154 million allowances in circulation). This excludes allowances that will be surrendered for second control period compliance.

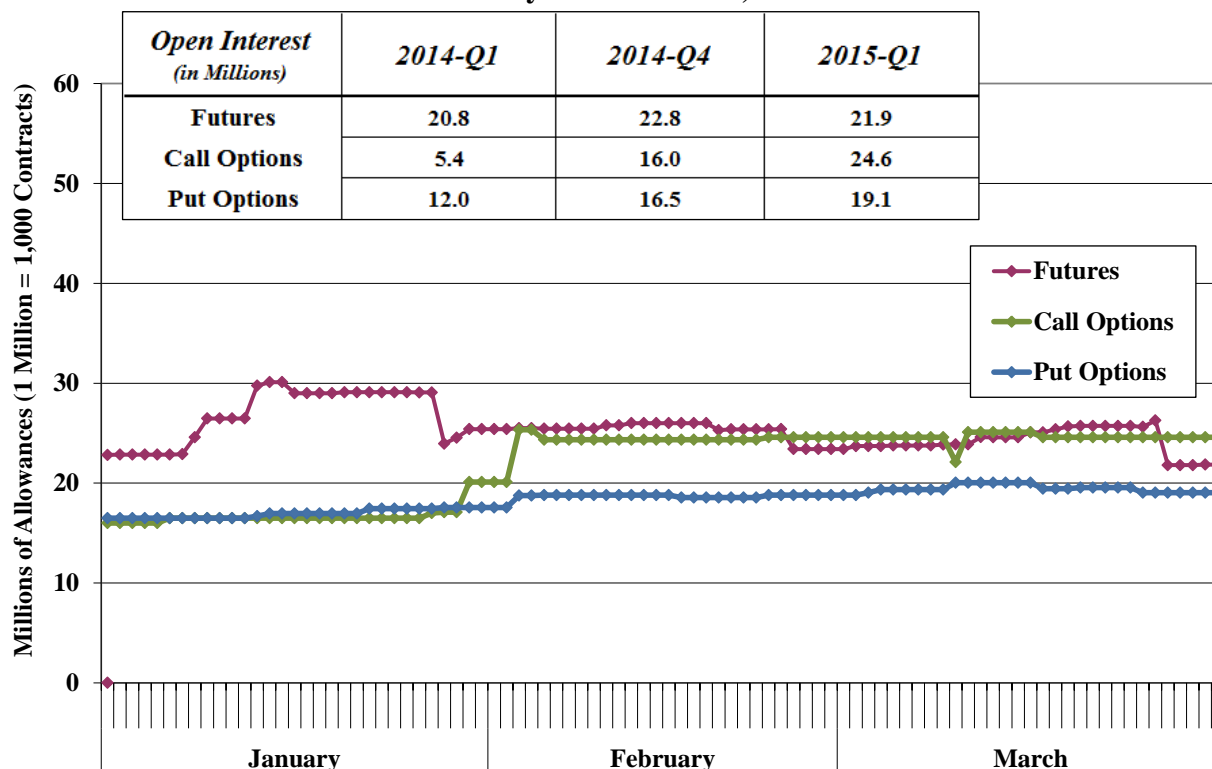
Key observations regarding the volume of trading of RGGI futures and options contracts:

- The total volume of trading of RGGI futures listed on ICE was 29.3 million CO<sub>2</sub> allowances in the first quarter of 2015, down 46 percent from 53.7 million in the prior quarter but up 40 percent from 20.9 million in the first quarter of 2014.
- Only five percent of the futures trading volume in the first quarter was for contracts involving allowances usable for compliance in the second control period (i.e., contracts expiring prior to the compliance deadline for vintages before 2015). All of those trades occurred in January.
- Approximately 59 percent of the volume of trading of futures listed on ICE during the first quarter of 2015 was for contracts that expired during the quarter. Nearly all of the remaining volume was for contracts that will expire in December 2015.
- There were 27 option trades reported on ICE in the first quarter of 2015, up from 19 trades the prior quarter.
- The total volume of options traded in the first quarter of 2015 was for 15.5 million CO<sub>2</sub> allowances, which was a decrease from 28 million in the prior quarter.

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

Figure 4 summarizes the level of open interest in exchange-traded futures and options listed on the ICE during the first quarter of 2015. The red line shows the level of open interest in futures contracts. The green line shows the level of open interest in call options. The blue line shows the level of open interest in put options.

**Figure 4: Open Interest in RGGI Futures and Options  
January 1 to March 31, 2015**



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

- The total open interest in RGGI futures reached a high of 30.1 million on January 15, remained in a tight range between 23 and 26.6 million throughout February and March, and then dropped to 21.9 million just before the end of the quarter.
- The decrease in levels of open interest in the current RGGI futures product on January 28, February 25, and March 27 were due to the settlement of contracts with expiration dates at the end of those months.
- The open interest in RGGI put options increased 15 percent from 16.5 million at the end of the fourth quarter of 2014 to 19.1 million at the end of the first quarter of 2015.
- The open interest in RGGI call options increased 54 percent from 16 million at the end of the fourth quarter of 2014 to 24.6 million at the end of the first quarter of 2015.

***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>8,9</sup> for each week when greater than 20 firms have reportable positions in a particular product.

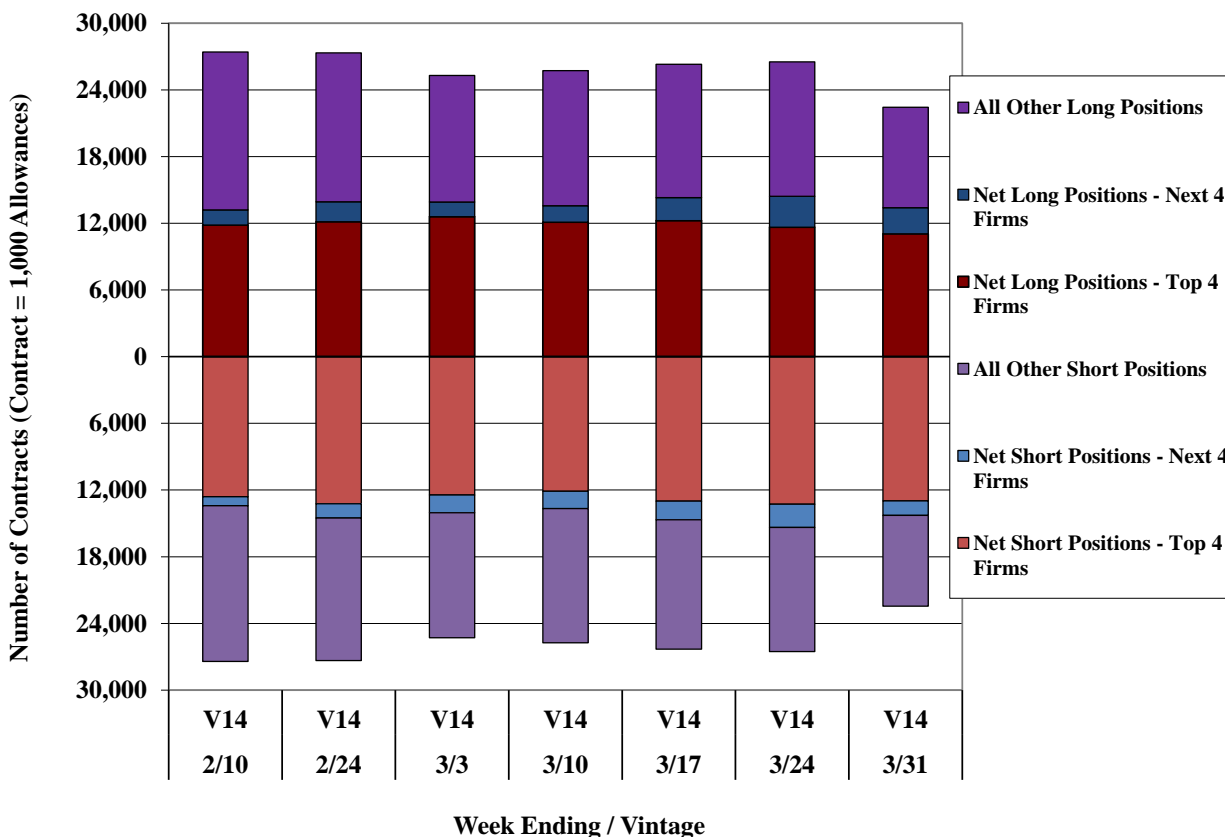
Figure 5 summarizes the concentration of open interest in 2015 vintage ICE futures and options contracts. The figure reports the net long positions in three categories: (i) the four firms with the largest long positions (see “Top 4 Firms”), (ii) the four firms with the largest long positions not including the Top 4 (see “Next 4 Firms”), and (iii) all other long positions. The figure also reports the net short positions in three categories: (i) the four firms with the largest short positions (see “Top 4 Firms”), (ii) the four firms with the largest short positions not including the Top 4 (see “Next 4 Firms”), and (iii) all other short positions.

---

<sup>8</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.

<sup>9</sup> The CFTC does not publish information from the COT reports for weeks when fewer than 20 firms have reportable positions in a given product, which is why no information is shown for any vintage contract other than 2015 (each vintage is reported separately).

Figure 5: Concentration of Open Interest in CCFE Futures and Options<sup>10</sup>  
January 1 to March 31, 2015



Observations regarding the concentration of open interest:

- 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 2015 vintage contracts.
  - ✓ The “Top Four” Firms accounted for an average of 46 percent of the total long positions for the weeks shown during the quarter, while 54 percent of the total long positions were held by eight firms.
  - ✓ The “Top Four” Firms accounted for an average of 50 percent of the total short positions for the weeks shown during the quarter, while 56 percent of the total short positions were held by eight firms.

<sup>10</sup> Source: The CFTC’s Commitment of Traders reports which are available at [www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm](http://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm).

- ✓ These results suggest that many firms have significant spreading positions (i.e., combinations of long and short positions of equal magnitude with different expiration dates).
- 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. During the first control period, hoarding was not a significant concern for the RGGI CO<sub>2</sub> allowance market because the amount of allowances that were available through the auctions was more than sufficient to satisfy the demand for allowances. During the second control period, which began in January 2012, the ability of an individual firm to hoard was 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.