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**RGGI Inc.**



**REPORT ON THE SECONDARY MARKET  
FOR RGGI CO<sub>2</sub> ALLOWANCES:  
FIRST QUARTER 2010**

**Prepared for:**

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

**Prepared By:**

**POTOMAC  
ECONOMICS**

September 2010

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The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by participating states to reduce emissions of carbon dioxide (CO<sub>2</sub>), a greenhouse gas that causes global warming.

RGGI, Inc. is a non-profit corporation created to provide technical and administrative services to the CO<sub>2</sub> Budget Trading Programs of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

## **A. INTRODUCTION**

The primary market for RGGI CO<sub>2</sub> allowances consists mainly of the auctions where allowances are initially sold. Once an 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 2010 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 remained stable in the first quarter as the price of 2009 vintage futures contracts averaged \$2.15. The quarter began with 2009 vintage futures contracts trading at a small (up to 3 percent) premium over 2010 vintage futures contracts, but the premium fell to 0 percent by late February.
- The volume of futures trading decreased 83 percent from 127 million allowances in the fourth quarter of 2009 to 22 million allowances in the first quarter of 2010. Although most of the trading volume was for 2009 vintage contracts, the share associated with 2010 vintage contracts increased to 31 percent in the first quarter.
- 27.6 million allowances were exchanged between unaffiliated firms in the first quarter of 2010. 82 percent of the allowances were exchanged in the first week of January, likely as a result of the final settlement of futures and forward contracts with December 2009 delivery.
- The number of participants in the market for RGGI CO<sub>2</sub> allowance derivatives was relatively constant as approximately 20 firms maintained significant positions in contracts related to 2009 vintage allowances during the first quarter of 2010. Participation in the market for 2010 vintage allowance derivatives increased following the March auction as up to 20 firms held significant positions.

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. We find no evidence of anticompetitive conduct; however, we will continue to evaluate the competitiveness of the market.

## B. BACKGROUND

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. 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"). Futures, options, and other financial derivatives are called "exchange-traded" when they are traded on a public exchange, and are called "over-the-counter" ("OTC") when they are not traded on one of the public exchanges. Many financial derivatives eventually result in the transfer of physical allowances (i.e., the transfer is registered in COATS), but this may occur months or years after the parties enter into a transaction.

Standard futures and options contracts for RGGI CO<sub>2</sub> allowances are traded on the Chicago Climate Futures Exchange ("CCFE"). Three categories of standard contracts are traded:

- **Futures** – Under these contracts, two parties agree to exchange a fixed number of 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 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 allowance that is to be transferred. One standard futures contract equals 1,000 RGGI allowances.<sup>1</sup>
- **Call Options** – Call options give the purchaser the option to buy a fixed number of 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 a 2009 vintage year, \$5 strike price, and June 2009 expiration date. If the price of the corresponding futures contract rose to \$5.75, the firm could exercise the option to buy allowances at \$5 and immediately sell them at \$5.75. Alternatively, if the price of the futures contract

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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.

stayed below \$5, 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 allowances of a particular vintage year at a specified strike price any time prior to the expiration date.

Futures and options contracts are important because they allow firms to manage risks associated with unforeseen swings in commodity prices. Futures 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 contracts, they usually require less financial security, making them more attractive to some firms.

Public exchanges are attractive to firms that need a simple way to trade standard products. Moreover, public exchanges effectively eliminate the risk of default by counter-parties, since the exchange constantly monitors the account holdings of each participant to ensure that they have posted sufficient financial security to meet their obligations.

OTC trading is attractive to firms that prefer contracts with non-standard provisions. Firms with on-going business relationships may have other ways to manage the risk of default by the other party.<sup>2</sup> Compliance entities may prefer to buy RGGI CO<sub>2</sub> allowances bundled with other goods and services from their fuel suppliers or operations service providers. The OTC market allows parties to create contracts specifically tailored to their needs. In general, much more information is available about trading on public exchanges than trading in the OTC market.

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<sup>2</sup> For instance, firms may enter into forward contracts rather than futures contracts. The primary difference between a futures contract and a forward contract is that a futures contract typically requires parties with an open interest to post financial assurance which the exchange draws upon or adds to until the contract reaches expiration, while a forward contract requires that all financial settlement occur at expiration.

### C. SUMMARY OF PRICES

This section of the report summarizes prices in the secondary market for RGGI CO<sub>2</sub> allowances during the first quarter of 2010. Figure 1 shows the transaction prices of actual CO<sub>2</sub> allowances and futures contracts for allowances on trading days. This section also summarizes the prices of options contracts for allowances. For context, Figure 1 shows prices through the first full week of the second quarter of 2010 when settlement was completed for futures contracts for March 2010 delivery.

In the first quarter of 2010, CO<sub>2</sub> allowance prices remained stable as the price of 2009 vintage futures contracts averaged \$2.15. The quarter began with 2009 vintage futures contracts trading at a small (up to 3 percent) premium over 2010 vintage futures contracts, but the premium fell to 0 percent by late February. The prices of futures contracts were consistent with the clearing price in the auction and with the transaction prices recorded in COATS.

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

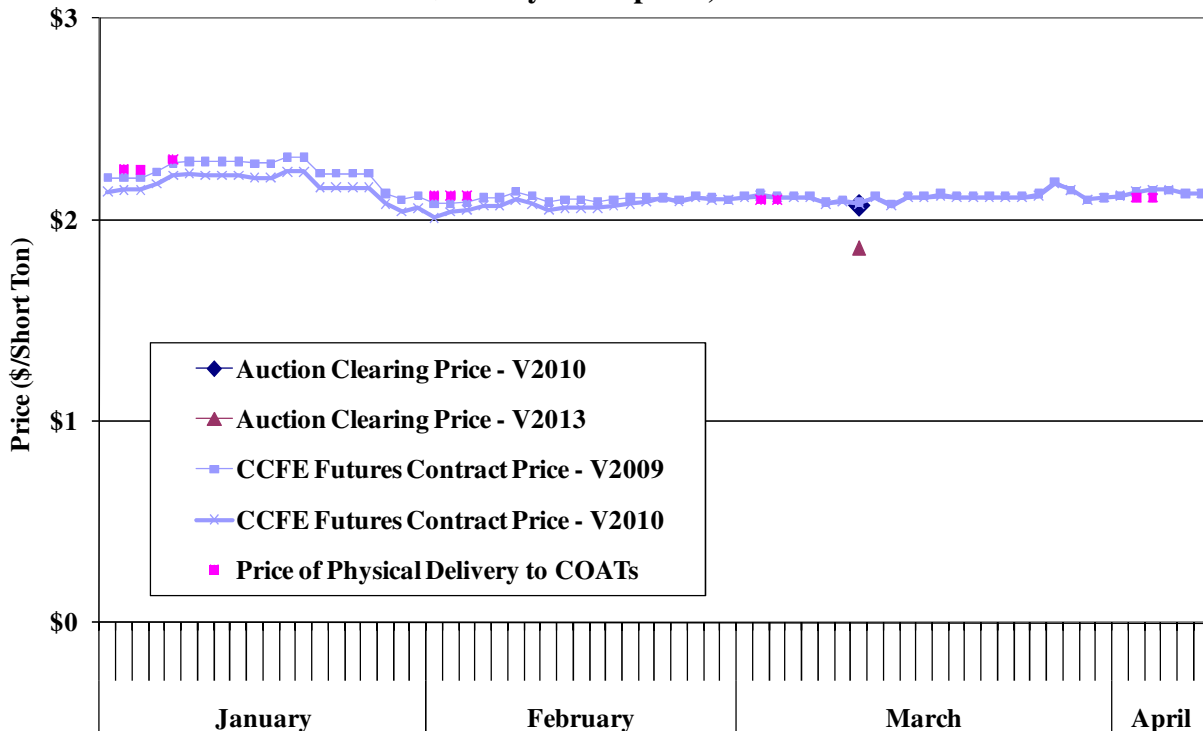
Figure 1 summarizes prices in the secondary market during the period. One light blue line shows the closing price on each trading day of the 2009 vintage CCFE futures contract with delivery at the end of the month.<sup>3</sup> A second light blue line shows the closing price of the 2010 vintage futures contract with delivery at the end of the month. The squares show the volume-weighted average price of physical deliveries in COATS on each day when a transaction took place and where the parties recorded the transaction price.<sup>4</sup> For comparison, Figure 1 also shows the clearing prices of 2010 vintage and 2013 vintage allowances in the RGGI auction held on March 10.

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<sup>3</sup> For instance, in January, the price of the futures contract for January 2010 delivery is shown.

<sup>4</sup> Parties are required to report the transaction price if there is an underlying financial transaction related to the transfer of allowances between accounts.

**Figure 1: Prices in the Secondary Market for RGGI CO<sub>2</sub> Allowances  
January 4 to April 9, 2010**



Sources: Auction clearing prices are available at "[www.rggi.org/co2-auctions/results](http://www.rggi.org/co2-auctions/results)", CCFE futures contract prices are available at "[www.ccf.com/mktdata\\_ccfe/futuresSummary.jsf?symbol=rggi](http://www.ccf.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi)", and the prices of physical deliveries in COATs are based on information in COATs available at "<https://rggi-coats.org/eats/rggi/>".

Information about the value of RGGI CO<sub>2</sub> allowances comes from the trading of standard futures contracts on the CCFE. For 2009 vintage CCFE futures contracts, the daily closing price was very stable during the first quarter, ranging between \$2.08 and \$2.31 and averaging \$2.15. For 2010 vintage contracts, prices were very similar, although the 2009 vintage contracts traded at a small premium (of up to 3 percent) over the 2010 vintage contracts in January and early February. The premium fell to 0 percent by the end of February and remained at that level through the rest of the quarter.

Normally, firms would be expected to place the same value on the 2009 vintage and 2010 vintage allowances, since they are interchangeable for compliance purposes in the RGGI program. Hence, the premium on 2009 vintage allowances that was observed in the first half of the quarter may have reflected that some firms expected 2009 vintage allowances to be more

valuable than 2010 vintage allowances if a federal program was created to limit greenhouse gas emissions.

The volatility of CCFE futures prices remained relatively low in the first quarter of 2010. The historic volatility of 2009 vintage futures prices fell from 35 percent in the first quarter of 2009 to 19 percent in the fourth quarter of 2009 and 18 percent in the first quarter of 2010.<sup>5</sup>

The clearing price in the March 10 auction offering for 2010 vintage allowances was very consistent with CCFE futures prices around the time of the auction. The auction clearing price was \$2.07, while the futures price was \$2.08 for 2010 vintage allowances at the close of the trading day on March 10.

Figure 1 also shows the clearing price for the 2013 vintage allowances that were sold in the March 10 auction. The 2013 vintage allowances cleared at \$1.86, equal to the reserve price in the auction.<sup>6</sup> The 2013 vintage allowances cleared at a 10 percent discount to the 2010 vintage allowances in the auction.

The prices of physical deliveries reported in COATS have been generally consistent with the prices reported by the CCFE. Many of the transaction prices reported in COATS are associated with physical deliveries that result from the expiration of the previous month's futures contract. Several business days after futures contracts reach expiration, allowances are exchanged for funds according to the closing price on the last day of the expiration month.<sup>7, 8</sup>

<sup>5</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.

<sup>6</sup> Bids submitted in the auction must be priced at or above the auction reserve price, which was \$1.86 in each of the first seven auctions.

<sup>7</sup> Physical deliveries in COATS generally occur on the third business day following the expiration day of the futures contract. For instance, contracts for December 2009 delivery resulted in transfers in COATS on January 6, 2010.

<sup>8</sup> 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

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

The clearing prices of options contracts are important because they can provide insight about how the market expects the price of the underlying commodity to behave. 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.

The trading of options contracts for RGGI CO<sub>2</sub> allowances continued to decline in the first quarter of 2010. There were just seven trades of options contracts during the first quarter of 2010, down from 16 in the fourth quarter of 2009 and 77 in the first quarter of 2009. Of the options traded during the first quarter of 2010, four were call options with strike prices ranging from \$2.25 to \$3.00, and the remaining three were put options with strike prices of \$2.00. All of the options were for 2010 vintage products.

The low volume of options trading may reflect that firms perceive little risk from variations in future allowance prices. Since the auction reserve price of \$1.86 is indexed to inflation, compliance entities are unlikely to be able to obtain allowances at a lower price in the future. Prices in the futures market have remained above the auction reserve price, suggesting that firms perceive little risk that allowances will fall below this level.

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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.

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#### D. VOLUMES AND OPEN INTEREST

This section evaluates the volume of trading and the open interest in exchange-traded futures and options as well as transfers of allowances between unaffiliated parties that are recorded in COATS.<sup>9</sup> Figure 2 summarizes the volumes of futures and options contracts traded on the CCFE, while Figure 3 shows the open interest. Figure 4 examines the volume of allowance transfers recorded in COATS as well as the total change in ownership of allowances recorded in COATS.

In the first quarter of 2010, futures trading declined substantially as the volume of trading decreased 83 percent from 127 million allowances in the fourth quarter of 2009 to 22 million allowances in the first quarter of 2010. Although most of the trading volume was for 2009 vintage contracts, the share associated with 2010 vintage contracts increased to 31 percent in the first quarter of 2010.

We find that firms have acquired a substantial number of CO<sub>2</sub> allowances through the secondary market based on our review of COATS holdings. 27.6 million CO<sub>2</sub> allowances were exchanged between unaffiliated firms in the first quarter of 2010. 83 percent of these allowances were exchanged in the first week of January, likely as a result of the final settlement of futures and forward contracts with a delivery month of December 2009.

##### *Volume and Open Interest in CCFE Futures and Options Contracts*

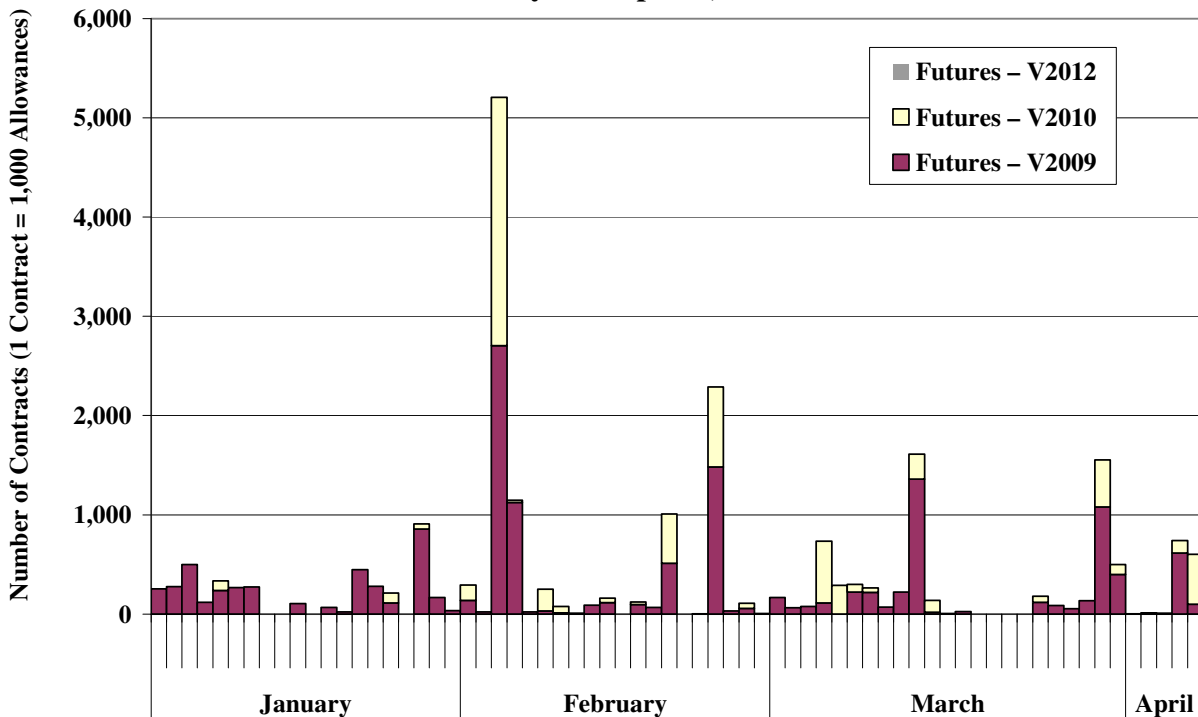
Figure 2 shows the volume of trading on the CCFE each day for futures contracts. Futures volumes are divided into three categories: (i) contracts for 2009 vintage allowances, (ii) contracts for 2010 vintage allowances, and (iii) contracts for 2012 vintage allowances. The volume of

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<sup>9</sup> Open interest is the net amount of futures or options contracts that have been traded, but have not reached the time of delivery, expired, or been exercised. For example, if Firm A sells 100 contracts 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 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.

options trading is not shown in the figure, although seven trades occurred during the quarter with a total volume of 8.4 million allowances.

**Figure 2: Volume of Trading of CCFE Futures Contracts  
January 4 to April 9, 2010**



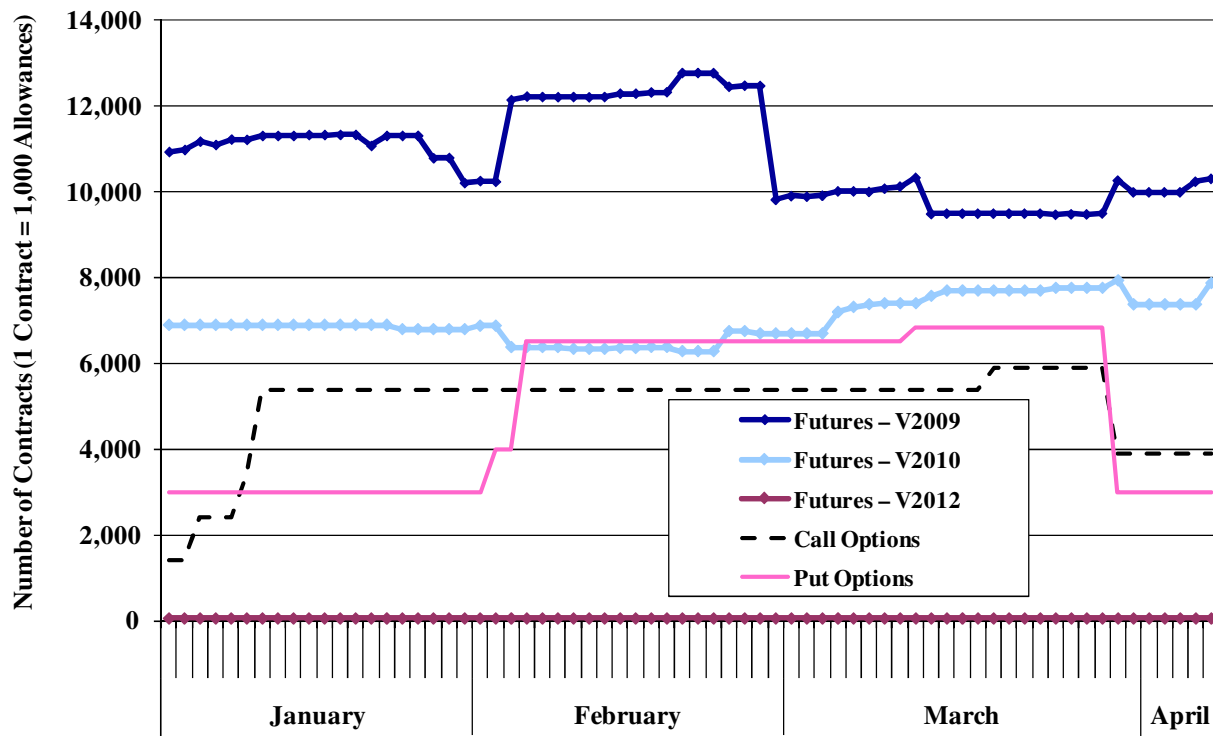
Sources: Options volumes are available at “[www.ccfec.com/mktdata\\_ccfe/optionsSummary.jsf?symbol=rggi](http://www.ccfec.com/mktdata_ccfe/optionsSummary.jsf?symbol=rggi)” and futures volumes are available at “[www.ccfec.com/mktdata\\_ccfe/futuresSummary.jsf?symbol=rggi](http://www.ccfec.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi)”.

The volume of trading in futures contracts dropped substantially in the first quarter of 2010. The total volume of futures trading decreased from 127 million allowances in the fourth quarter of 2009 to 22 million allowances in the first quarter of 2010.

The majority (69 percent) of futures trading volume in the first quarter of 2010 was of contracts for 2009 vintage allowances, although trading of 2010 futures contracts became more common. Trading of 2010 vintage allowances increased from 6 percent of the futures trading volume in the fourth quarter of 2009 to 31 percent in the first quarter of 2010. There was no trading of 2011 vintage or 2012 vintage allowances in the first quarter of 2010.

Figure 3 shows the open interest on each day for the futures contracts shown in the previous figure as well as for options contracts.

**Figure 3: Open Interest in CCFE Futures and Options  
January 4, 2010 to April 9, 2010**



Sources: Open interest in options is available at "[www.ccf.com/mktdata\\_ccfe/optionsSummary.jsf?symbol=rggi](http://www.ccf.com/mktdata_ccfe/optionsSummary.jsf?symbol=rggi)", and open interest in futures is available at "[www.ccf.com/mktdata\\_ccfe/futuresSummary.jsf?symbol=rggi](http://www.ccf.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi)".

The open interest in RGGI futures contracts remained relatively steady during the first quarter of 2010 as the reductions in open interest following the delivery of futures contracts kept pace with new open interest resulting from trading. For 2009 vintage contracts, open interest fell 9 percent from 10.9 million on the first day of the quarter to 10.0 million on the first day following the quarter. For 2010 vintage contracts, open interest rose 7 percent from 6.9 million on the first day of the quarter to 7.4 million on the first day following the quarter. The majority of open interest is in 2009 vintage contracts, although the share related to 2010 vintage contracts rose from 39 percent on the first day of the quarter to 42 percent on the first day following the quarter.

The open interest in options contracts opened the first quarter of 2010 at 3 million allowances for put options and 1.4 million allowances for call options. Open interest rose during the quarter and peaked at 6.9 million allowances for put options and 5.9 million allowances for call options following the March auction. However, most of the options contracts expired at the end of March, so the open interest in options contracts closed the first quarter at 3.0 million allowances for put options and 3.9 million allowances for call options.

### *CO<sub>2</sub> Allowance Transfers Registered in COATS*

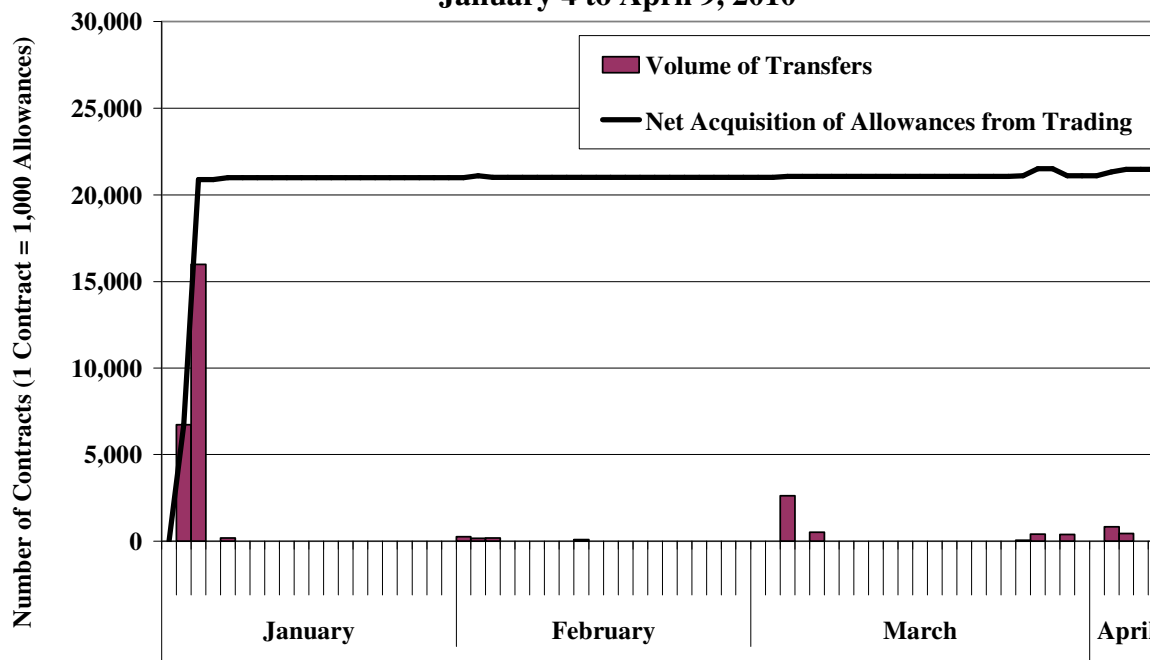
Figure 4 summarizes transfers of CO<sub>2</sub> allowances between the COATS accounts of unaffiliated firms. The figure shows the volume of COATS transfers between unaffiliated firms. The figure also shows the net amount of allowances acquired as a result of transactions between unaffiliated firms during the first quarter of 2010.<sup>10</sup> The figure shows data through the first full week of April in order to include transfers that result from the delivery of futures and forward contracts with a March 2010 delivery month.

The net acquisition of allowances is smaller than the gross volume of transactions between unaffiliated firms because the net acquisition offsets sales against purchases for each firm. For example, if Firm A purchases 100,000 allowances but then sells 20,000 allowances, the figure would show a net acquisition by Firm A of 80,000 allowances even though the volume of transfers would be 120,000 allowances. This is an important distinction because the net acquisition of allowances from trading since RGGI CO<sub>2</sub> allowances have been in circulation was 28.7 million as of April 9, 2010, while the gross volume of transfers between unaffiliated firms was nearly 51 million allowances.

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<sup>10</sup> This excludes the majority of allowances, which are held by firms that purchased them directly in an auction, received them through allocations by one of the Participating States, or acquired them as a result of a transaction prior to the first quarter of 2010.

**Figure 4: Net Acquisition of Allowances from Trading  
January 4 to April 9, 2010**



Source: Allowance transfers are based on information in COATS.

The figure shows that 27.6 million CO<sub>2</sub> allowances were exchanged between unaffiliated firms in the first quarter of 2010. The vast majority (22.7 million) of allowance transfers between unaffiliated firms occurred on January 5 and 6 following the delivery of futures and forward contracts with a December 2009 delivery month. The net acquisition of allowances as a result of transactions between unaffiliated firms during the first quarter increased from zero on January 4 to 20.9 million on January 6 and to 21.5 million by April 9. Firms have been able to acquire a substantial number of CO<sub>2</sub> allowances through the secondary market, which is important because some firms prefer to obtain allowances through the secondary market rather than in the quarterly auctions.

The sum of (i) the open interest in futures contracts, and (ii) the net acquisition of allowances (as registered in COATS) provides a sense of the total financial interest in RGGI CO<sub>2</sub> allowances that firms have acquired through the secondary market.<sup>11</sup> The sum of these two quantities rose to

<sup>11</sup> For example, if a firm acquires 5 million allowances in its COATS account as a result of trading in the secondary market and it purchases futures contracts for 3 million allowances, the firm has a total financial

47 million allowances by April 9 following the delivery of March 2010 contracts.<sup>12</sup> This sum is substantial, but still modest compared with the 215 million allowances that have been acquired from RGGI auctions through March 2010. Hence, the auctions are still the principal means by which firms have acquired control of RGGI allowances.

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interest in 8 million allowances.

<sup>12</sup> This is based on the open interest in CCFE futures contracts (including all vintages as reported in Figure 3) of 18.3 million allowances plus the net acquisition of allowances from trading as registered in COATS since RGGI allowances have been in circulation of 28.7 million allowances. However, this sum does not consider: (i) open interest in OTC contracts, and (ii) that some firms may also have short positions that effectively reduce their total net financial interest in allowances.

## E. OPEN INTEREST OF FIRMS IN FUTURES AND OPTIONS CONTRACTS

This section provides additional information about the firms trading CCFE futures and options from the weekly Commitments of Traders (“COT”) reports, which are published by the Commodity Futures Trading Commission (“CFTC”).<sup>13</sup> Figure 5 indicates the level of participation by individual firms by summarizing the numbers of firms that hold long or short positions of at least 25 contracts (25,000 allowances). Figure 6 illustrates the concentration of ownership by showing how widely distributed long and short positions are across firms.

The number of participants in the market for RGGI CO<sub>2</sub> allowance derivatives was relatively constant during the first quarter of 2010 as approximately 20 firms had significant positions in 2009 vintage allowances. Participation in the market for 2010 vintage allowance derivatives increased following the auction on March 10 as up to 20 firms held significant positions. For 2009 vintage and 2010 vintage allowance derivatives, the majority of long positions were held by four firms as were the majority of short positions, indicating that the holdings of futures and options contracts were relatively concentrated.

### *Summary of Open Interest*

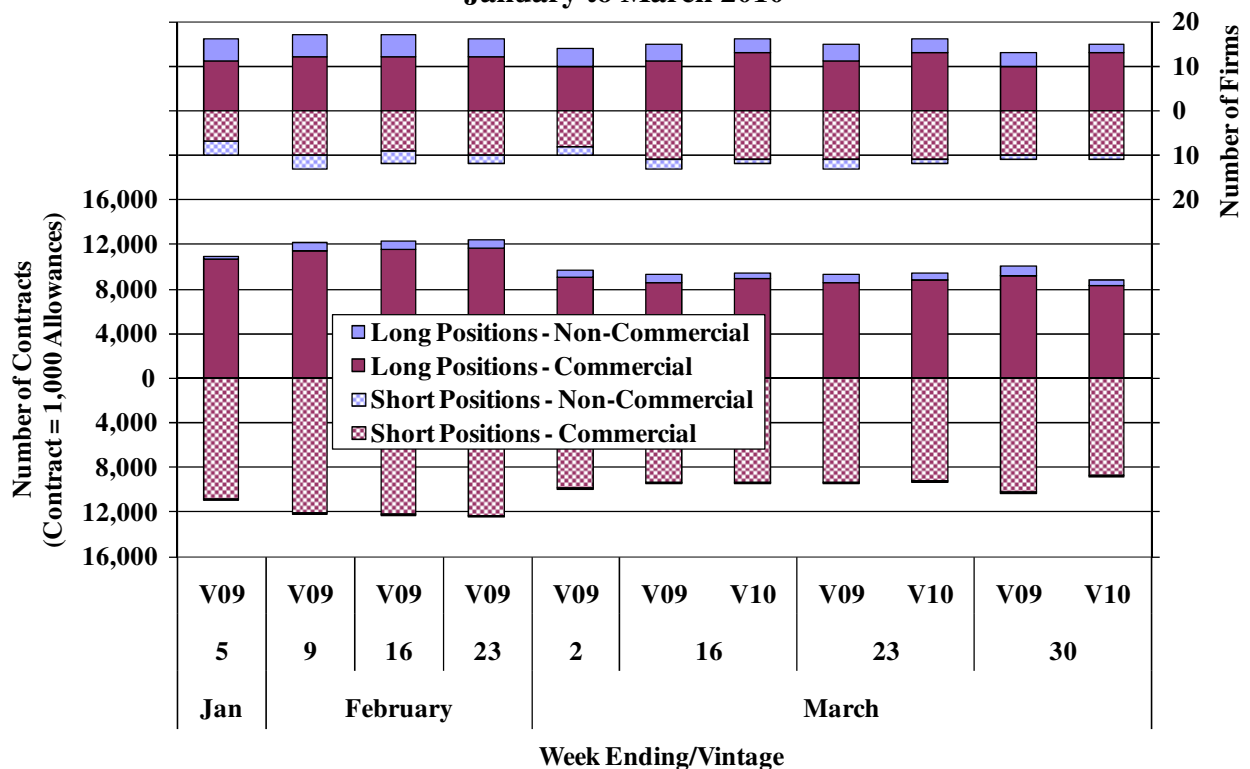
Figure 5 summarizes the long and short positions in 2009 vintage and 2010 vintage contracts of Commercial and Non-Commercial firms on a weekly basis. However, the CFTC does not publish information from the COT reports for weeks when fewer than 20 firms have reportable positions, so no information is shown for some weeks during the quarter. The figure shows the number of firms with long positions and the number of firms with short positions. It also shows the aggregate size of all long positions and the aggregate size of all short positions. Since each contract has a buyer and a seller, the total open interest in the market is equal to the total of all

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<sup>13</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 non-compliance entities are frequently designated as Non-Commercial. Each Tuesday, the CFTC publishes the COT report, which is a summary of the long and

long positions and it is equal to the total of all short positions. The total open interest implied by the amount of long and short positions in 2009 vintage and 2010 vintage contracts in Figure 5 is smaller than the sum of open interest in 2009 vintage and 2010 vintage futures and options in Figure 3, because some firms buy or sell options contracts that offset or have a discounted impact on their long or short positions.

**Figure 5: Open Interest in CCFE Futures and Options  
January to March 2010**



Source: The CFTC's Commitment of Traders reports which are available at [www.cftc.gov/marketreports/commitmentsoftraders/index.htm](http://www.cftc.gov/marketreports/commitmentsoftraders/index.htm)

The number of firms taking short and long positions in 2009 vintage allowance derivatives remained relatively constant throughout the quarter, although there were five weeks when information was not available because fewer than 20 firms held reportable positions.

Participation in the market for 2010 vintage allowance derivatives increased during the first quarter of 2010. The CFTC first published information related to 2010 vintage contracts on

short positions of participants in the market.

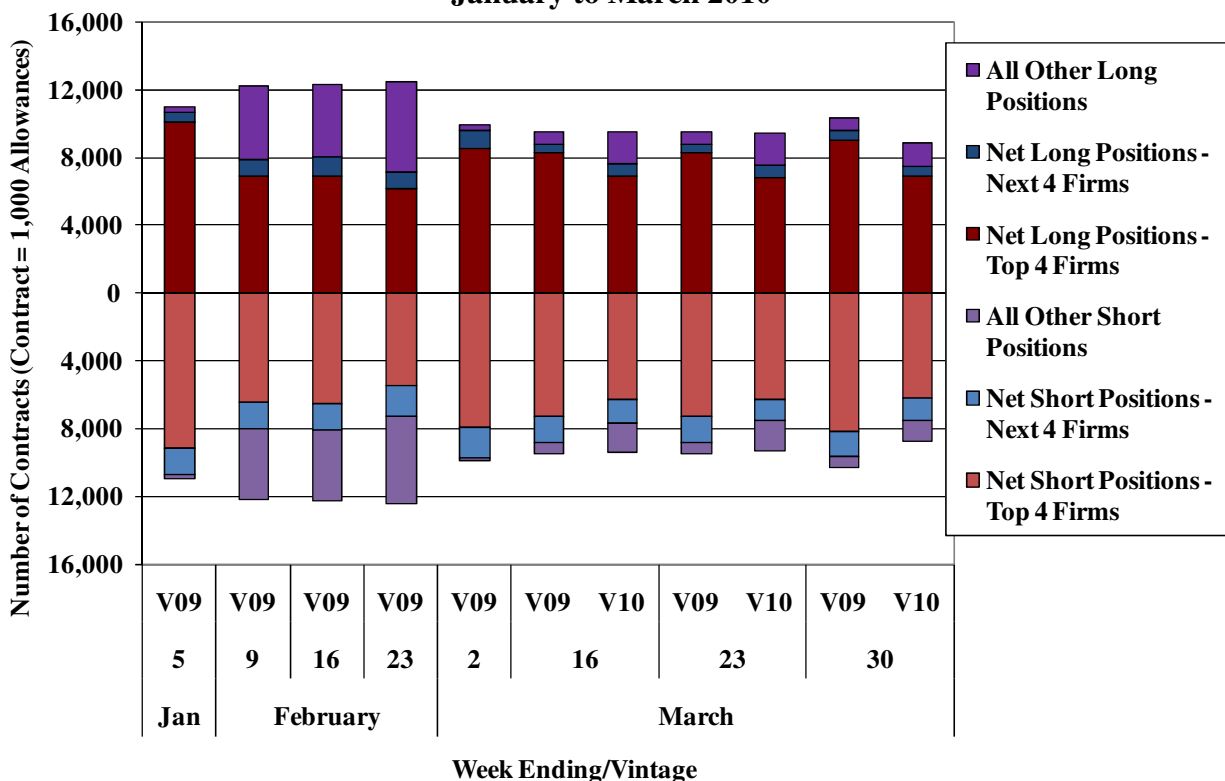
March 16, reflecting increased activity in the market for 2010 vintage allowance derivatives around the time of the March 10 auction, which was the first auction where 2010 vintage allowances were sold.

Commercial firms continue to account for a large majority of long and short positions. The shares held by Commercial firms remained relatively constant during the first quarter of 2010, ranging from 92 to 98 percent of long positions and 98 to 100 percent of short positions (in weeks when information was published). It is likely that many firms with short positions on the CCFE also hold physical allowances in the COATS registry that were purchased in one of the auctions.

### *Concentration of Open Interest*

Figure 6 summarizes the concentration of open interest in CCFE 2009 vintage and 2010 vintage 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 net long position is defined as a firm’s long position minus its short position (assuming its long position is larger than its short position). For example, if a firm has purchased 5,000 contracts for December 2009 delivery and sold 1,000 contracts for December 2010 delivery, it has a net long position of 4,000 contracts. 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.

**Figure 6: Concentration of Open Interest in CCFE Futures and Options  
January to March 2010**



Source: The CFTC's Commitment of Traders reports which are available at ["www.cftc.gov/marketreports/commitmentsoftraders/index.htm"](http://www.cftc.gov/marketreports/commitmentsoftraders/index.htm)

Many firms have open interest in RGGI CO<sub>2</sub> allowance futures and options, although a small number of firms account for a substantial share of the net long and short positions in 2009 vintage and 2010 vintage contracts. The net long positions of the top four firms accounted for 49 to 92 percent of the total long positions for the weeks shown during the quarter, and the net short positions of the top four firms accounted for 44 to 84 percent of the total short positions.

The share of long positions that comprised the net long positions of the top four firms fell during the month of February and then rose at the beginning of March. This was because at least one of the top four firms acquired a short position that offset a portion of its long position in the calculation of its net long position. It is likely that the short positions were related to futures contracts for February 2010 delivery because the share of long positions comprising the net long positions of the top four firms rose to 86 percent on March 2. For similar reasons, the share of

short positions that comprised the net short positions of the top four firms also fell during the month of February and then rose to 80 percent on March 2.

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 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 F.

## F. 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 futures and option markets in the U.S. This section discusses two types of anti-competitive conduct for which we monitor, although we find no evidence of such 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 the commodity. Hence, we screen information on the holdings of allowances and allowance-derivatives and the demand for allowances to identify firms that might acquire a position that raises competitive concerns. At this stage, hoarding is not a significant concern for the RGGI allowance market because the amount of allowances in circulation and the open interest in allowance derivatives is small relative to the total supply of allowances. The total supply of allowances that will ultimately be available in the first compliance period (from 2009 to 2011) is more than 560 million. Given that only 232 million allowances are circulating in the secondary market,<sup>14</sup> that the auction rules limit the amount of allowances that can be purchased by a single party or group of affiliated parties to 25 percent, and that the net transfers of CO<sub>2</sub> allowances between parties in the secondary market have been modest thus far, it is not yet possible for the holdings of any participant to raise potential hoarding concerns.

Another potential concern is that a firm expecting to purchase allowances in the auction might sell a large number of futures contracts in an effort to push the futures price below the competitive level. Such a firm might profit from buying a large number of allowances in the auction at a discount if the bidding in the auction were influenced by the depressed futures price.

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<sup>14</sup> 215 million allowances have been dispersed in the first six auctions, and 17 million allowances have been allocated by the States.

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 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 allowances for their future compliance needs help limit the effectiveness of a strategy to depress prices below the competitive level. Hence, it is encouraging that there are a large number of firms with compliance obligations that far exceed the largest possible long position in the futures market. Nevertheless, the CFTC has access to confidential transaction data, which allows it to monitor for evidence of manipulative conduct.