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**REGI Inc.**



**REPORT ON THE SECONDARY MARKET  
FOR REGI CO<sub>2</sub> ALLOWANCES:  
FOURTH QUARTER 2009**

**Prepared for:**

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

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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 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 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 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 fourth quarter of 2009 and discusses the results of our market power screens. Several patterns have emerged in this period in the secondary market:

- RGGI 2009 vintage futures prices declined 8 percent from \$2.45 at the end of the third quarter to \$2.25 at the end of the fourth quarter.
- The volume of futures trading decreased 60 percent from 319 million allowances in the third quarter to 127 million allowances in the fourth quarter, and a significant share of the volume shifted from 2009 vintage contracts to 2010 vintage contracts.
- The net transfer of allowance ownership between unaffiliated firms as a result of trading since RGGI allowances have been in circulation increased to 28 million at the end of 2009, demonstrating that firms have acquired a substantial number of allowances through the secondary market.
- The number of participants in the market for RGGI allowance derivatives was relatively constant as 32 to 34 firms had significant positions throughout the fourth quarter of 2009, although the number of firms dropped to 20 in the first week of January 2010 after delivery of the December 2009 contracts. Participation by a large number of firms is a positive sign regarding the competitiveness and efficiency of the secondary market.

We screen information on the holdings of 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 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 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 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 allowances during the fourth quarter of 2009. The first figure shows the transaction prices of actual allowances and futures contracts for allowances, while the second figure shows the prices of options contracts for allowances. For context, the figures in this section also show prices in September 2009 and in the first full week of January 2010 when settlement was completed for futures contracts for December 2009 delivery.

In the fourth quarter, allowance prices fell modestly in the secondary market as the price of 2009 vintage futures contracts declined 8 percent from \$2.45 at the end of the third quarter to \$2.25 at the end of the fourth quarter. The prices of futures contracts were consistent with the clearing price in the auction and with the transaction prices recorded in COATS.

#### *Prices of Allowances and Allowance Derivatives*

Figure 1 summarizes prices in the secondary market during the period. The 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> The squares show the volume-weighted average price of physical deliveries to COATS of 2009 vintage allowances 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 2009 vintage and 2012 vintage allowances in the RGGI auctions held on September 9 and December 2.

Information about the value of RGGI allowances comes from the trading of standard futures contracts on the CCFE. For the period shown in Figure 1, the daily closing price for 2009 vintage CCFE futures contracts averaged \$2.31. The daily closing price fell 21 percent over the

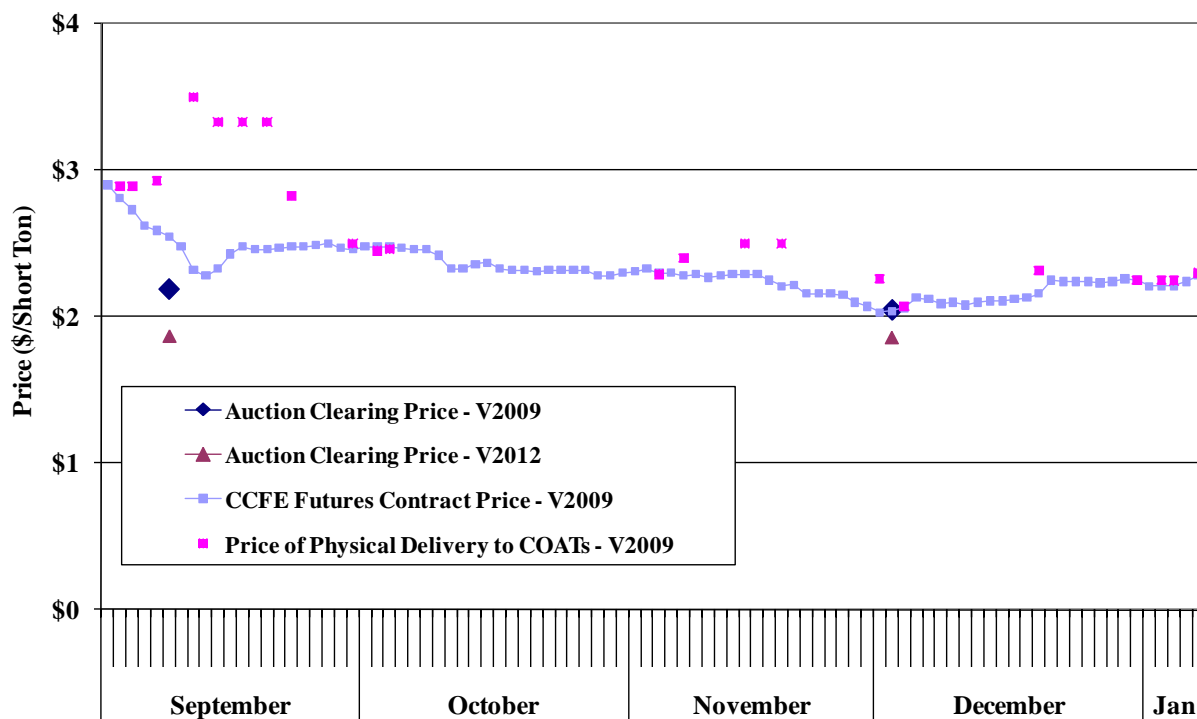
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<sup>3</sup> For instance, in October, the price of the futures contract for October 2009 delivery is shown.

<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.

period from a maximum of \$2.90 on September 1 to \$2.28 on January 8, and it reached a minimum of \$2.03 during the week of the December 2 auction. CCFE futures prices were relatively constant during most of the period, although there were significant swings in price in the first two weeks of September.

**Figure 1: Prices in the Secondary Market for RGGI Allowances  
September 1, 2009 to January 8, 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.ccfе.com/mktdata\\_ccfe/futuresSummary.jsf?symbol=rggi](http://www.ccfе.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi)", and the prices of physical deliveries to COATs are based on information in COATs available at "<https://rggi-coats.org/eats/rggi/>".

The historic volatility of CCFE futures prices has continued to fall since its inception in August 2008. The average daily change (up or down) in the closing price has fallen from \$0.09/day in the fourth quarter of 2008 to \$0.06/day in the first quarter of 2009, \$0.04/day in the second quarter, to \$0.03/day in the third quarter, and \$0.02/day in the fourth quarter.

Trading of 2010 vintage allowances and futures contracts became increasingly common during the fourth quarter of 2009. On days when the CCFE recorded futures trading of 2010 vintage



contracts (which are not shown in Figure 1), they generally traded at a 3 to 5 percent discount relative to the 2009 vintage contract of the same delivery month.

The clearing price in the September 9 auction for the 2009 vintage allowances was \$0.36 lower than the CCFE futures price at the close of the trading day, while the clearing price in the December 2 auction was \$0.01 higher than the CCFE futures price. CCFE futures prices fell from \$2.90 one week before the September auction to \$2.28 three days after the auction before leveling-off between \$2.45 and \$2.50. The pattern of CCFE prices was similar around the December auction, although the magnitude of the variations was more moderate. CCFE futures prices fell from \$2.16 one week before the December auction to \$2.03 the day before the auction before returning to a level slightly higher than the auction clearing price of \$2.05.

Figure 1 also shows the clearing prices for the 2012 vintage allowances that were sold in the September 9 and December 2 auctions. The 2012 vintage allowances cleared at \$1.87 in the September auction, just above the auction reserve price of \$1.86, and they cleared at the auction reserve price in the December auction.<sup>5</sup> The 2012 vintage allowances cleared at a 15 percent discount to the 2009 vintage allowances in the September auction and a 9 percent discount in the December auction.

The prices of physical deliveries reported in COATS have been generally consistent with the prices reported by the CCFE. This is particularly true for the physical deliveries in COATS 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>6,7</sup> However, in some cases, the prices of physical

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<sup>5</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 six auctions.

<sup>6</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>7</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)

deliveries in COATS have been substantially higher than prices on the CCFE. Such cases can occur when the delivery results from: settlement of a forward contract signed at an earlier date when the futures price was higher or lower,<sup>8</sup> the exercise of an option with a strike price substantially higher or lower than the futures price, or settlement of a contract bundling the sale of allowances with additional services. Hence, the usefulness of the transaction prices reported in COATS is limited by the fact that transferring parties do not necessarily report all of the important details related to the transaction.

### *Prices of Options for Allowances*

Figure 2 examines the clearing prices of options contracts that were traded during the study period. The clearing prices of options contracts are important because they 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.

Figure 2 shows the clearing prices of six options contracts on days when the contracts traded from September 1 to January 8, although a total of 13 different options contracts were traded during the period. Figure 2 illustrates how option prices vary by the strike price and the expiration date and how they respond to news affecting the outlook for RGGI allowances. The top half of the figure shows the prices of three call options, two with a strike price of \$2.50 and

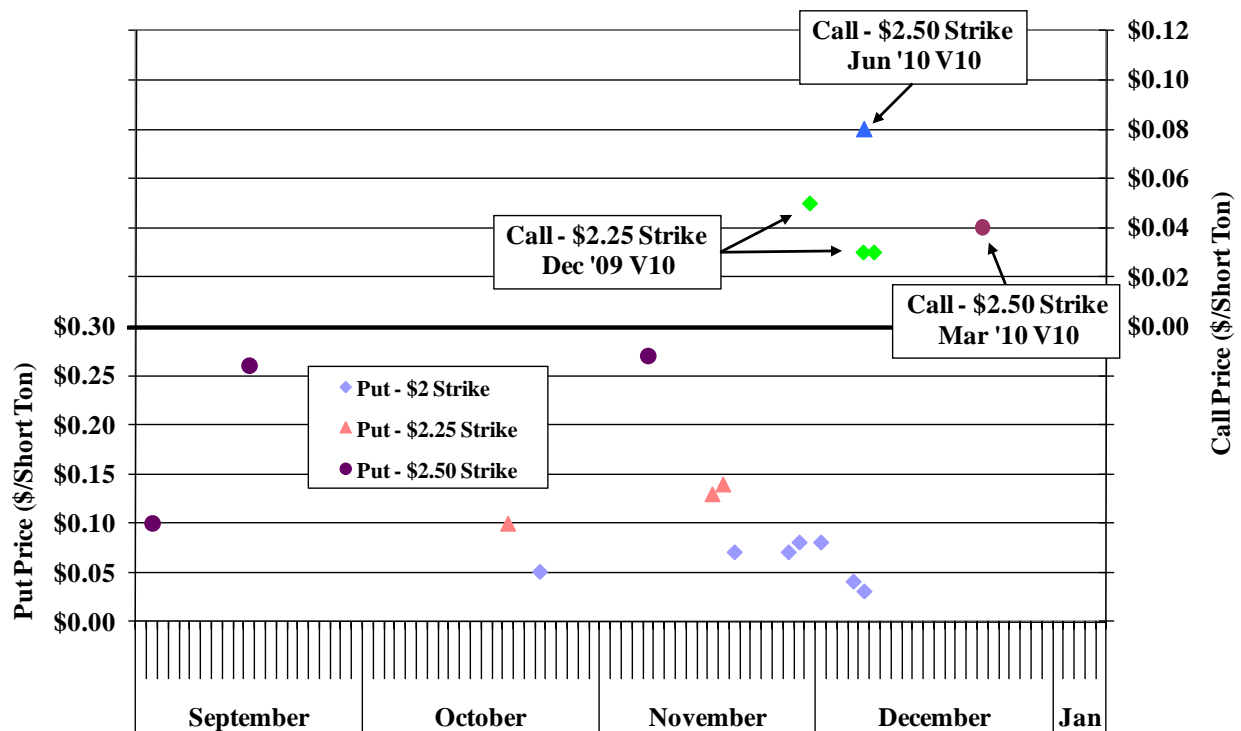
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must put \$3,500 in an account (or whatever share of the entire liability the exchange requires). If the futures price declines to \$3/allowance, the exchange transfers \$500 from the account of a firm with a long position to the account of a firm 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.

<sup>8</sup> 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.

one with a strike price of \$2.25. The bottom half of the figure shows the prices of three put options, one with a strike price of \$2.00, one with a strike price of \$2.25, and one with a strike price of \$2.50. One of the call options with a \$2.50 strike price has a March 2010 expiration and 2010 vintage, and the other has a June 2010 expiration and 2010 vintage. The other four options contracts have December 2009 expiration and 2009 vintage. The trades shown in Figure 2 account for 55 percent of the volume of call options and 82 percent of the volume of put options traded during the period.

**Figure 2: Prices of Put and Call Options for RGGI Allowances  
September 1, 2009 to January 8, 2010**



Source: Options prices are available at "[www.ccf.com/mktdata\\_ccfe/optionsSummary.jsf?symbol=rggi](http://www.ccf.com/mktdata_ccfe/optionsSummary.jsf?symbol=rggi)".

Figure 2 shows the importance of the strike price to the value of an option. For an option with a particular expiration date, a lower strike price makes a call option more valuable and a put option less valuable. For example, in November, a put option contract with a strike price of \$2.50 traded at \$0.27, which is well over put option contracts with strike prices of \$2.25 and \$2.00, which traded in November at average prices of \$0.14 and \$0.07, respectively.

The expiration date of an option also greatly affects its value. The options with the earlier expiration date (e.g., March 2010) are substantially less valuable than the comparable options with a later expiration date (e.g., June 2010). For example, on December 7 a call option contract with a strike price of \$2.50 and June 2010 delivery cleared at \$0.08, while on December 22, a call option with the same strike price and March 2010 expiration cleared at \$0.04. A significant reason for the difference in clearing prices of the two contracts was their expiration dates.

Overall, the options prices in Figure 2 reflect that futures prices decreased in the first two weeks in September. On September 2, a put option with a \$2.50 strike price traded at \$0.10, while on October 20, a put option with a \$2.25 strike price sold at the same price, reflecting the decline in futures prices in the first two weeks of September.

After a decline in trading volume early in the quarter, options trading increased in late November and early December. Vintage 2010 contracts were traded for the first time on December 7 when a call option was traded with a strike price of \$2.50 and June 2010 delivery and on December 22 a call option was traded with a strike price of \$2.50 and March 2010 delivery. During the study period, no put contracts were traded for delivery after December 2009.

## 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 3 summarizes the volumes of futures and options contracts traded on the CCFE, while Figure 4 shows the open interest. Figure 5 examines the volume of allowance transfers recorded in COATS as well as the total change in ownership of allowances recorded in COATS.

In the fourth quarter, futures trading declined substantially as the volume of trading decreased 60 percent from 319 million allowances in the third quarter to 127 million allowances in the fourth quarter. In the final month of the fourth quarter, a significant share of the volume shifted from 2009 vintage contracts to 2010 vintage contracts.

We find that firms have acquired a substantial number of allowances through the secondary market based on our review of COATS holdings. From the beginning of the RGGI allowance market through the end of 2009, 28 million allowances have been acquired as a result of trading between unaffiliated firms.

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

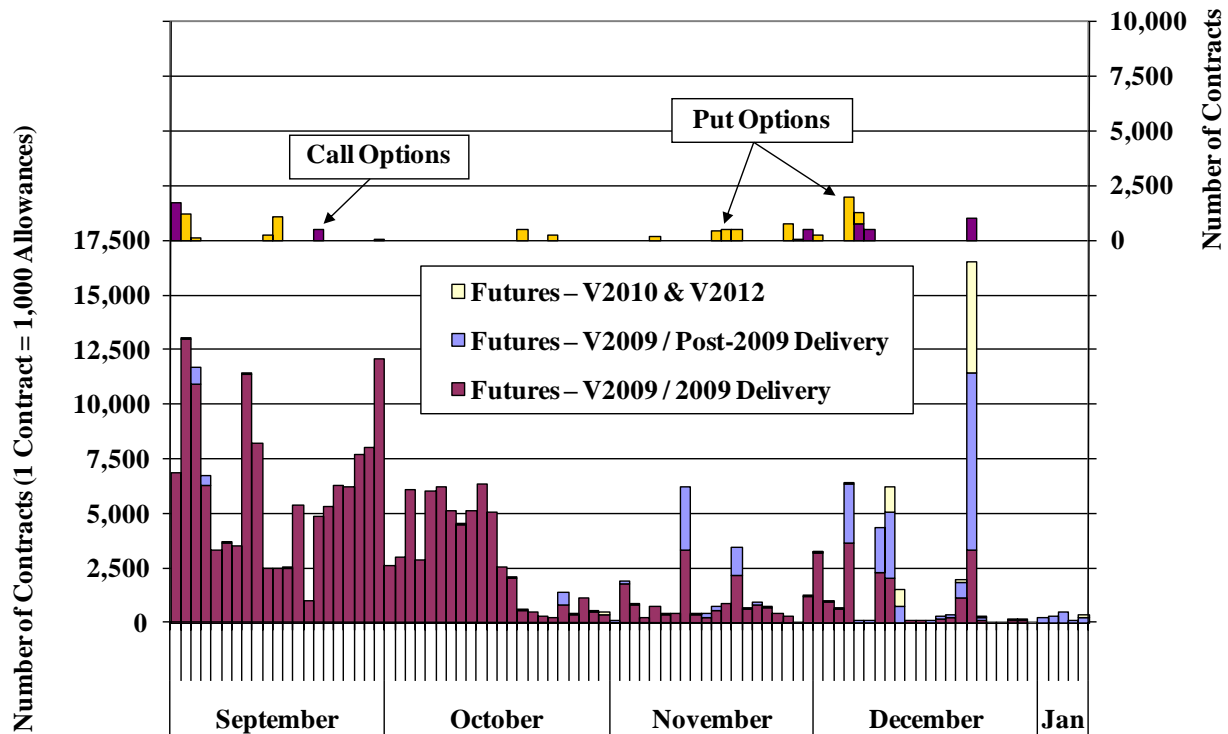
Figure 3 shows the volume of trading on the CCFE each day for futures and options. Futures volumes are divided into three categories: (i) contracts for 2009 vintage allowances and delivery in December 2009 or earlier, (ii) contracts for 2009 vintage allowances and delivery after December 2009, and (iii) contracts for 2010 vintage and 2012 vintage allowances. Options volumes are shown separately for call options and put options. Futures volumes are shown in the

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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.

lower portion of the figure against the left axis, while options volumes are shown in the upper portion of the figure against the right axis.

**Figure 3: Volume of Trading of CCFE Futures and Options  
September 1, 2009 to January 8, 2010**



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

The volume of trading in futures contracts dropped substantially during the period. The average daily volume decreased from 6.3 million allowances in September to 2.0 million allowances in December. The total volume of futures trading decreased from 319 million allowances in the third quarter to 127 million allowances in the fourth quarter, although the volume traded in the fourth quarter remained much larger than the number of allowances auctioned (30 million) in the same period.

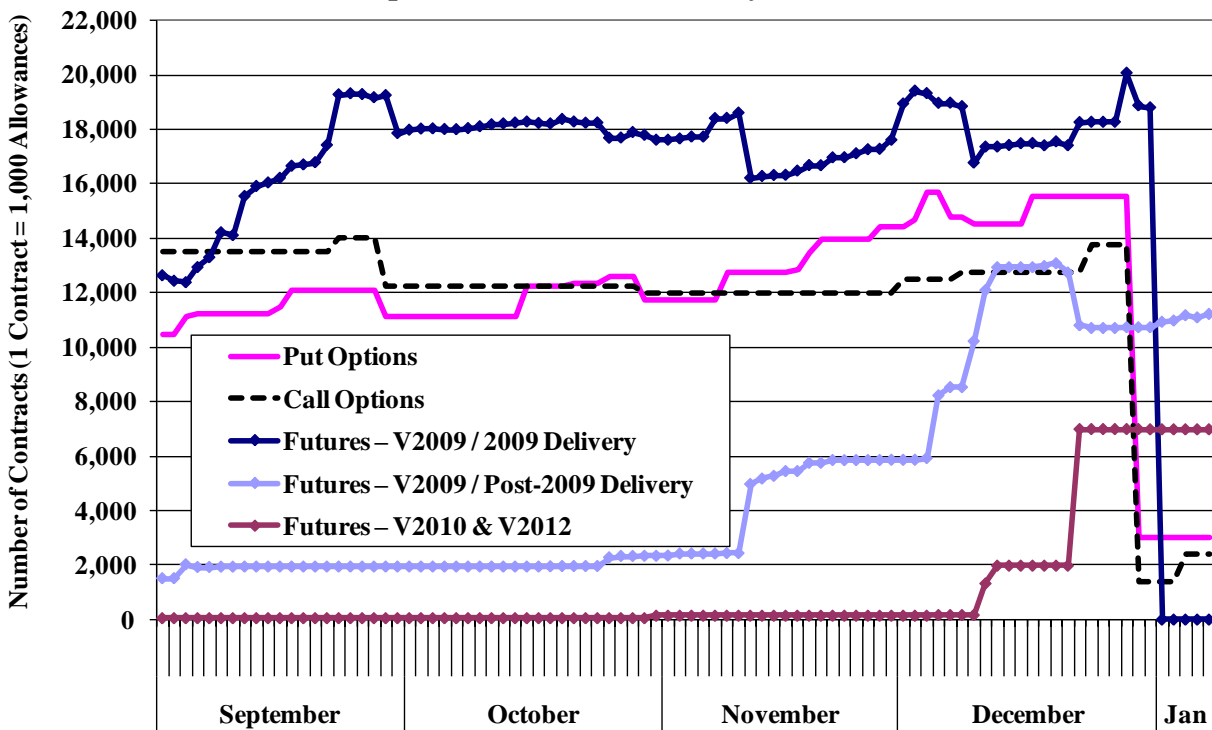
The majority (76 percent) of futures trading volume in the fourth quarter was of contracts for 2009 vintage allowances with 2009 delivery, although trading of other futures contracts became more common, particularly in December. The volume of 2009 vintage allowances with delivery

in 2010 or later increased from 1 percent in September to 42 percent in December. Likewise, the volume of 2010 vintage and 2012 vintage allowances increased from 0 percent in September to 16 percent in December.

The volume of trading in options contracts decreased from an average daily amount of 160 contracts in the third quarter to 135 contracts in the fourth quarter. Of the options traded during the fourth quarter of 2009, 32 percent were call options with a strike price of \$2.25 or \$2.50, and the remaining 68 percent were put options with strike prices of \$2.00, \$2.25, or \$2.50. 86 percent of the total options traded during the fourth quarter were for 2009 vintage products and 14 percent were for 2010 vintage products.

Figure 4 shows the open interest on each day for the futures and options contracts shown in the previous figure.

**Figure 4: Open Interest in CCFE Futures and Options  
September 1, 2009 to January 8, 2010**



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

The figure shows that the positions of firms trading futures and options increased throughout the quarter until the last week in December. Open interest declined substantially at the end of the fourth quarter as a result of the delivery of futures contracts for December 2009 delivery and of the expiration of options contracts with December 2009 expiration. In the first week of January, the delivery of the futures contracts led to a large amount of allowance transfers between unaffiliated parties being registered in COATS (see Figure 5).

The open interest in futures contracts for 2009 vintage allowances with December 2009 delivery was relatively constant from late-September through the fourth quarter, ending December at 18.8 million. These futures contracts reached delivery at the end of December, generally resulting in transfers that were registered in COATS.

The open interest in futures contracts for delivery after 2009 grew rapidly during November and December as firms made adjustments prior to delivery of the benchmark contract (i.e., 2009 vintage and December 2009 delivery). The open interest in contracts for 2009 vintage allowances with delivery in 2010 or later increased from 1.9 million at the end of the third quarter to 10.7 million at the end of the fourth quarter, and the open interest in contracts for 2010 vintage and 2012 vintage allowances increased from 0.06 million at the end of the third quarter to 7.0 million at the end of the fourth quarter.

The open interest in options rose modestly during the period as the expiration of existing contracts kept pace with the increase in open interest from new trading. The open interest in call options remained steady, while the open interest in put options increased during the period from 10.5 million allowances on September 1 to 15.5 million allowances on December 29.

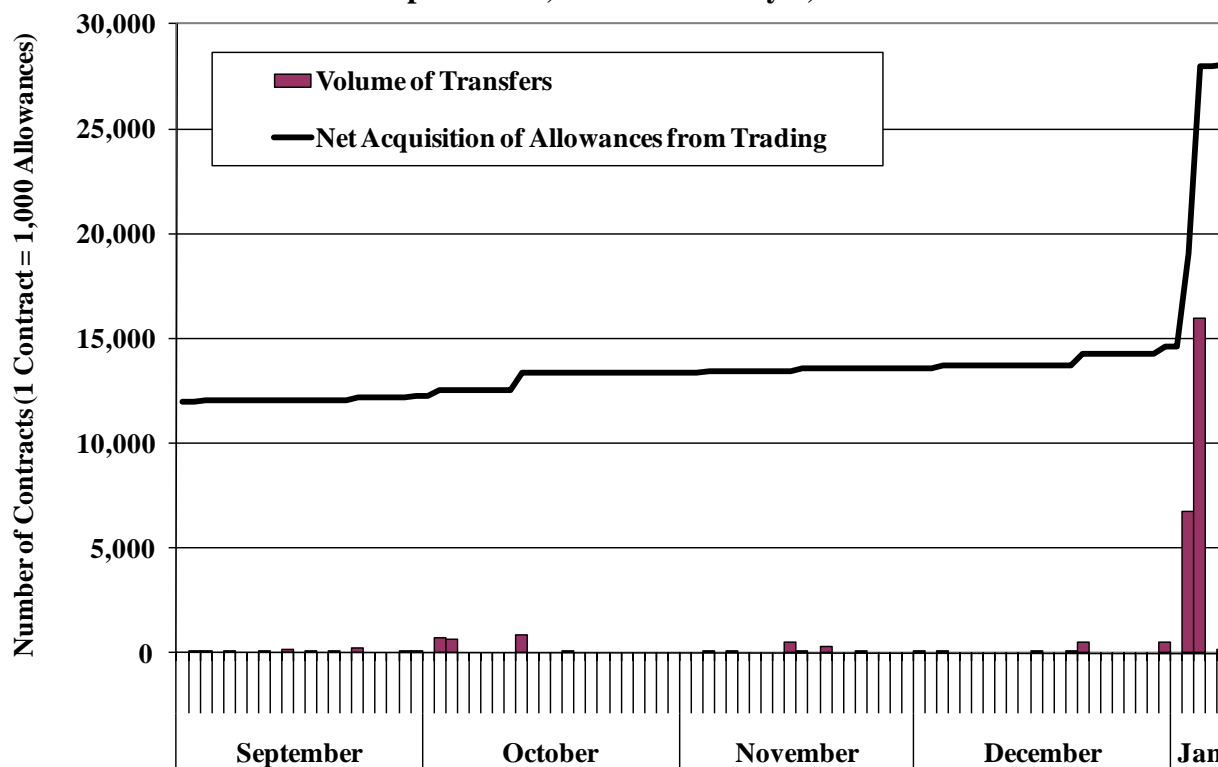
### *Allowance Transfers Registered in COATS*

Figure 5 summarizes the transfer of 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 since October 2008 when the COATS registry came into service.<sup>10</sup> 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 allowances have been in circulation is 28.1 million as of January 8, while the gross volume of transfers between unaffiliated firms is 45.6 million allowances.

**Figure 5: Net Acquisition of Allowances from Trading  
September 1, 2009 to January 8, 2010**



Source: Allowance transfers are based on information in COATS.

The figure shows that the vast majority (22.7 million) of allowance transfers between unaffiliated firms occurred on January 5 and 6. Accordingly, the net acquisition of allowances as a result of

<sup>10</sup> This excludes the majority of allowances, which are held by firms that purchased them directly in the auction or received them through allocations by one of the Participating States.

transactions between unaffiliated firms increased from 12.5 million after delivery of the September 2009 contract to 28.1 million after the delivery of the December 2009 contract. This shows that firms have been able to acquire a substantial number of allowances through the secondary market. This 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 allowances that firms have acquired through the secondary market.<sup>11</sup> The sum of these two quantities rose from 32.5 million allowances after delivery of the September 2009 contract to 46.3 million allowances after delivery of the December 2009 contract. The increase in this sum is substantial, but still modest compared with the 172 million allowances that have been acquired from RGGI auctions through December 2009. Hence, the auctions are still the principal means by which firms have acquired control of RGGI allowances (assuming that open interest in OTC contracts is modest).

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<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 interest in 8 million 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>12</sup> Figure 6 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 7 illustrates the concentration of ownership by showing how widely distributed long and short positions are across firms.

A large number of firms (32 to 34) held significant financial positions in RGGI futures and options contracts throughout the fourth quarter of 2009, although the number of firms dropped significantly (to 20) in the first week of January 2010 after delivery of the December 2009 contracts. 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. Nevertheless, participation by a large number of firms is a positive sign regarding the competitiveness and efficiency of the secondary market.

### *Summary of Open Interest*

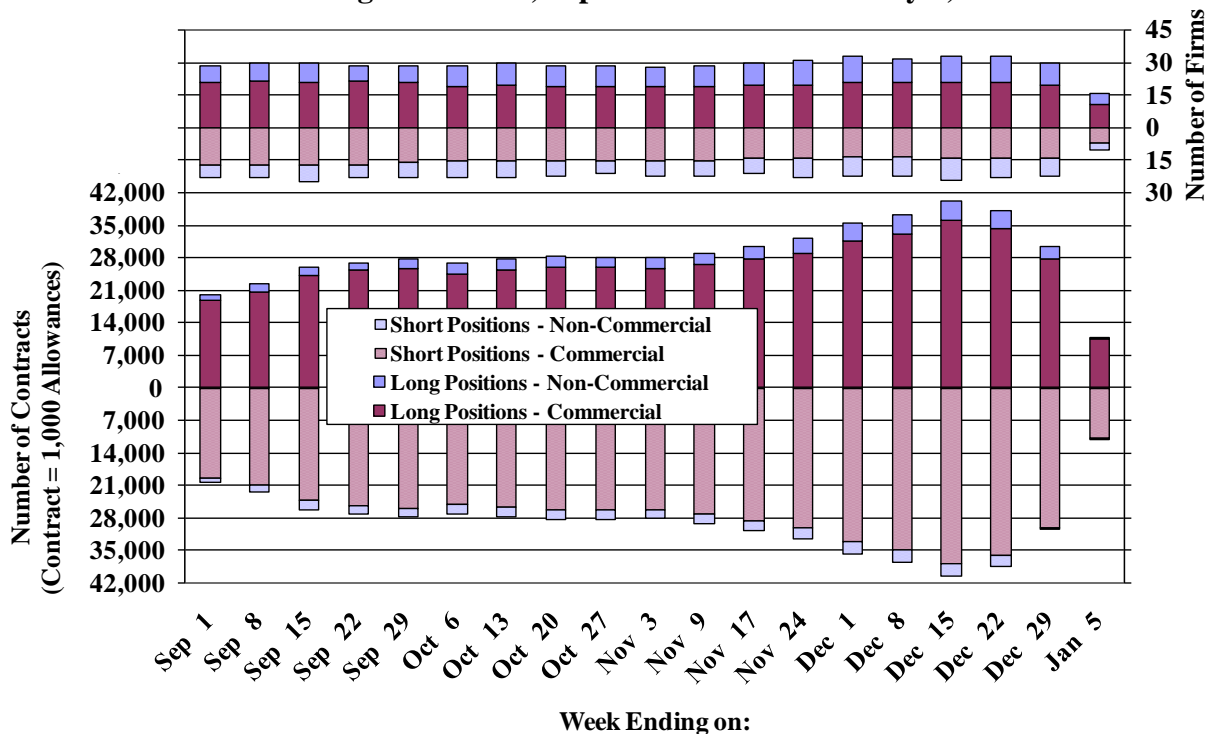
Figure 6 summarizes the long and short positions in 2009 vintage contracts of Commercial and Non-Commercial firms on a weekly basis. It shows the number of firms with long positions and the number of firms with short positions. It also shows the aggregate size of all long positions and the aggregate 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 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 contracts in Figure 6 is smaller than the sum of open interest in 2009

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<sup>12</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

vintage futures and options in Figure 4, because some firms buy or sell options contracts that offset or have a discounted impact on their long or short positions.

**Figure 6: Open Interest in the CCFE Futures and Options  
2009 Vintage Contracts, September 2009 to January 5, 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)

Until the last week of the quarter, the number of firms taking short and long positions remained relatively constant throughout the period. On September 1, 23 firms maintained short positions while 29 firms had long positions. On December 15, 24 firms maintained short positions while 33 firms maintained long positions. After the delivery of December 2009 contracts, 10 firms were left with short positions and 16 firms were left with long positions on January 5. Likewise, the total open interest in 2009 vintage contracts decreased from 38.3 million on December 22 to 11.0 million on January 5.

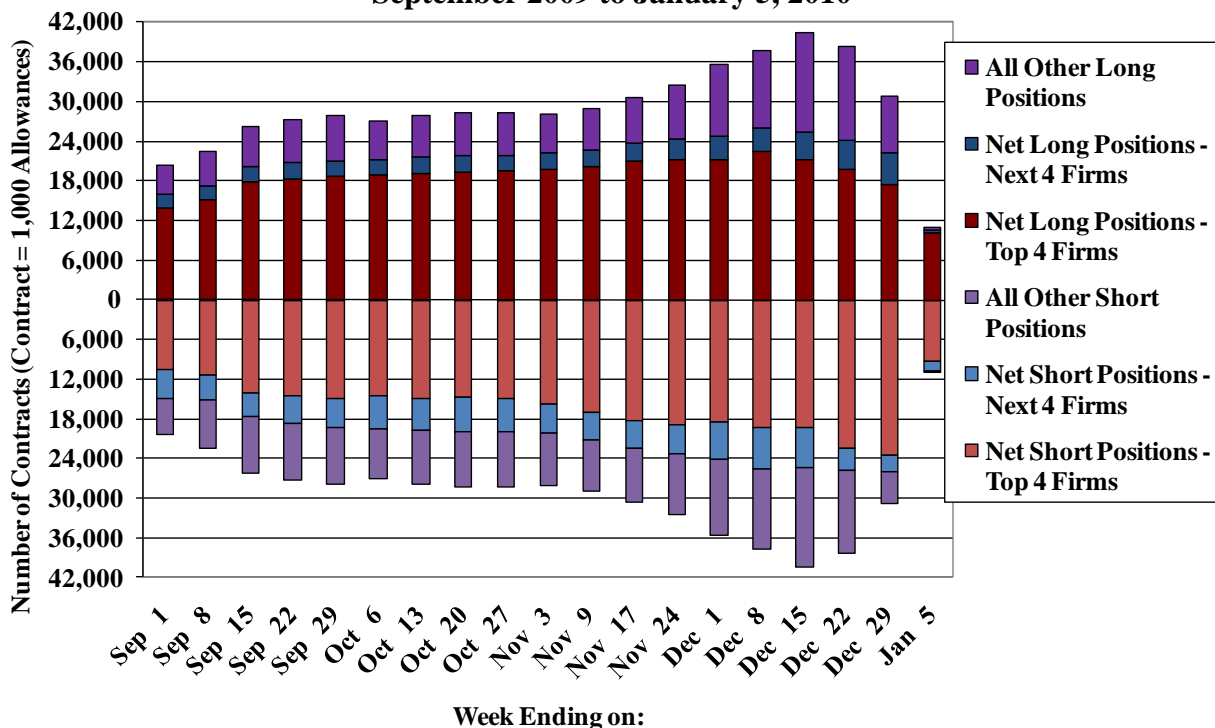
short positions of participants in the market.

Commercial firms (i.e., compliance entities) account for a large majority of long and short positions. The shares held by Commercial firms remained relatively constant during the fourth quarter of 2009, totaling 90 percent of long positions and 94 percent of short positions on December 22. After the delivery of December 2009 contracts, 98 percent of long positions and 99 percent of short positions were held by Commercial firms on January 5. 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 7 summarizes the concentration of open interest in CCFE 2009 vintage futures and options combined. 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 7: Concentration of Open Interest in the CCFE Futures and Options  
September 2009 to January 5, 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 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 contracts. The net long positions of the top four firms accounted for 67 to 71 percent of the total long positions for most of the period before declining to 51 percent toward the end of December prior to the delivery of most 2009 vintage contracts. The net short positions of the top four firms accounted for 48 to 60 percent of the total short positions during most of the period before increasing to 76 percent in the last week of December as other firms reduced the sizes of their short positions prior to the delivery of the December 2009 contract. The shares comprising the long and short positions of the top four firms did not increase as much as those of other firms during the general rise in open interest from the week-ending November 17 to the week-ending December 22.

The current concentrations of long and short positions do not by themselves indicate that the secondary market is not functioning competitively, since there are legitimate reasons why an

individual firm might acquire a position of the size implied by the figure.<sup>13</sup> For example, several large compliance entities are each expected to require more than 30 million allowances in the first compliance period, so large compliance entities that under-purchased in the auctions might be expected to acquire large long positions in the secondary market. Likewise, non-compliance entities purchased more than 30 million allowances in the first six auctions, and thus, might be expected to acquire large short positions in the futures market.

Nevertheless, the acquisition of large futures positions by a small number of firms raises two potential concerns for which we monitor. The first potential concern is that a large concentration of holdings by a single firm might enable it: (i) to benefit from manipulation of the futures price or (ii) to manipulate the futures price more effectively if it chose to do so in order to benefit other positions. If a firm attempts to depress the futures price by quickly selling futures contracts, the effectiveness of the strategy depends on the response of other firms in the market. 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 any strategy to depress prices. Hence, it is encouraging that there are a large number of firms with short positions as well as a large number of firms with compliance obligations that far exceed the largest possible long position in the futures market. Moreover, the CFTC collects and analyzes detailed firm-level information on CCFE futures positions and trading, which helps deter attempts to manipulate the futures market.

The second potential competitive concern is that a firm could acquire a long position in the futures market as a part of a strategy to hoard a substantial share of the supply of allowances. Although the COT reports do not provide firm level information on open interest, the information they provide about the potential size of individual firms' positions is helpful for evaluating the potential for hoarding. At its peak on December 8, net long positions of four

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<sup>13</sup> For example, four firms collectively held net long positions totaling 22.4 million allowances on December 8. The collective holdings of the next four firms imply that each of the top four firms must have held a net long position of at least 3.6 million allowances. Hence, the figure implies that the largest net long position must have been less than 19.7 million allowances. Using the similar reasoning, the figure implies that the largest net short position must have been less than 21.5 million allowances on December 29.

firms added up to the equivalent of 22.4 million 2009 vintage allowances, so the largest net long position of any single firm must have been smaller. Our assessment of the potential for hoarding is discussed further in Section F.



## F. DISCUSSION OF MARKET MONITORING

As the RGGI Market Monitor, we monitor trading in the secondary market in order to identify anticompetitive conduct. Additionally, the Commodity Futures Trading Commission (“CFTC”) evaluates trading in the secondary market consistent with its role as the regulator of futures and option markets in the U.S.

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 allowances. 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 189 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, to 25 percent, and that the net transfers 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. 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

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<sup>14</sup> 172 million allowances have been dispersed in the first six auctions, and 17 million allowances have been allocated by the States.

allowances it planned to buy in the auction. The best protection against this strategy is a market where other firms respond to inefficient reductions in the futures price 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 any strategy to depress prices inefficiently. Hence, it is encouraging that there are a large number of firms with short positions as well as 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.