REPORT ON THE SECONDARY MARKET FOR RGGI CO_2 ALLOWANCES

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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 from August 2008 through January 2009 and discusses the results of our market power screens. Several patterns have emerged in the initial period of activity in the secondary market:

- Although trading volumes remain light compared to the number of allowances sold in the auctions, the average volume of allowance futures trading grew from 155,000 allowances per day in September 2008 to 330,000 per day in January 2009.
- Despite continued fluctuations in market price, overall market price volatility has declined over the period.
- A substantial number of firms (at least 25) have participated in the trading of standard futures and options contracts on public exchanges, which is a positive sign for the competitiveness of the secondary market at this early stage.

In the initial period of trading in the secondary market, we find no evidence of anticompetitive conduct. Participation by a large number of firms is an encouraging sign of competitiveness and efficiency in the secondary market. Nevertheless, 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_2 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 are traded on two public exchanges: the Chicago Climate Futures Exchange ("CCFE") and the Green Exchange, an initiative of the New York Mercantile Exchange ("NYMEX"). Three categories of standard contracts are traded on public exchanges:

- 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.
- 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 stayed below $5, the firm would let the option expire without exercising it.
- 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. 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.

C. Summary of Prices

This section of the report summarizes prices in the secondary market for RGGI allowances during the initial months of trading. Figure 1 summarizes prices in the secondary market from August 15, 2008, the first day of trading on the CCFE, through January 30, 2009. The light blue line shows the closing price on each trading day of the CCFE futures contract with the nearest delivery month.[1] Futures prices are not shown for the Green Exchange where very few contracts have been traded thus far. The triangles show the prices of the OTC futures contracts with the nearest delivery month reported in Point Carbon's weekly Carbon Market North America publication.[2] The squares show the volume-weighted average price of physical deliveries to COATS on each day when a trade occurred and where the parties recorded the transaction price.[3]

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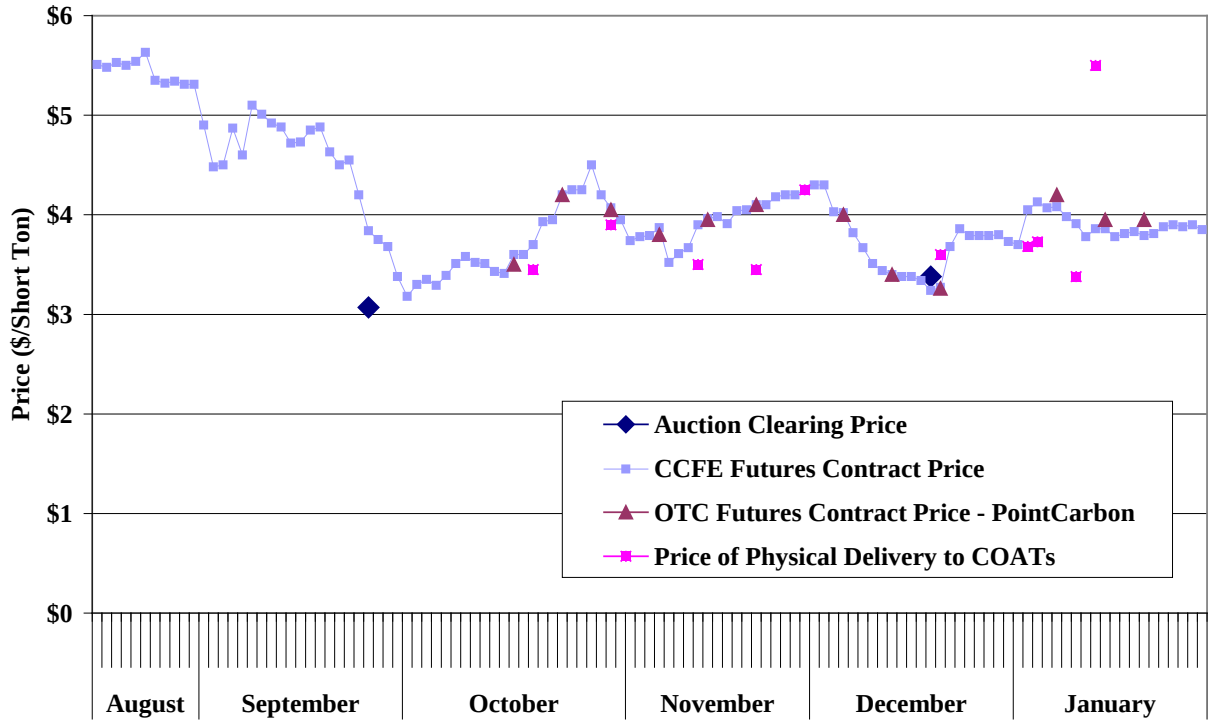
[1] Until the end of December, the figure shows the price of the CCFE futures contract with December 2008 delivery. In January, the price of the futures contract with January 2009 delivery is shown.

[2] Until the end of December, the figure shows the price of the OTC futures contract with December 2008 delivery. In January, the price of the futures contract with December 2009 delivery is shown.

[3] When an allowance transfer between non-affiliated parties is recorded in COATS, the parties are required

For comparison, Figure 1 also shows the clearing prices in the auctions held on September 25 and December 17.

Figure 1: Prices in the Secondary Market for RGGI Allowances
August 15, 2008 to January 30, 2009



Sources: Auction clearing prices are available at "www.rggi.org/co$_2$-auctions/results", CCFE futures contract prices are available at "www.ccfe.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi", OTC futures contract prices are reported by Point Carbon at "www.pointcarbon.com/news/cmna/", and the prices of physical deliveries to COATS are based on information in COATS.

Most information about RGGI allowance prices comes from the trading of standard futures contracts on the CCFE. CCFE futures prices declined considerably early in the period, from a high of $5.63 on August 22 to a low of $3.18 on October 1. Since August, the prices of oil and other energy commodities have dropped considerably, signaling lower demand for energy in the foreseeable future than previously forecasted and implying lower demand and prices for RGGI allowances.

to record the date and price of the transaction.

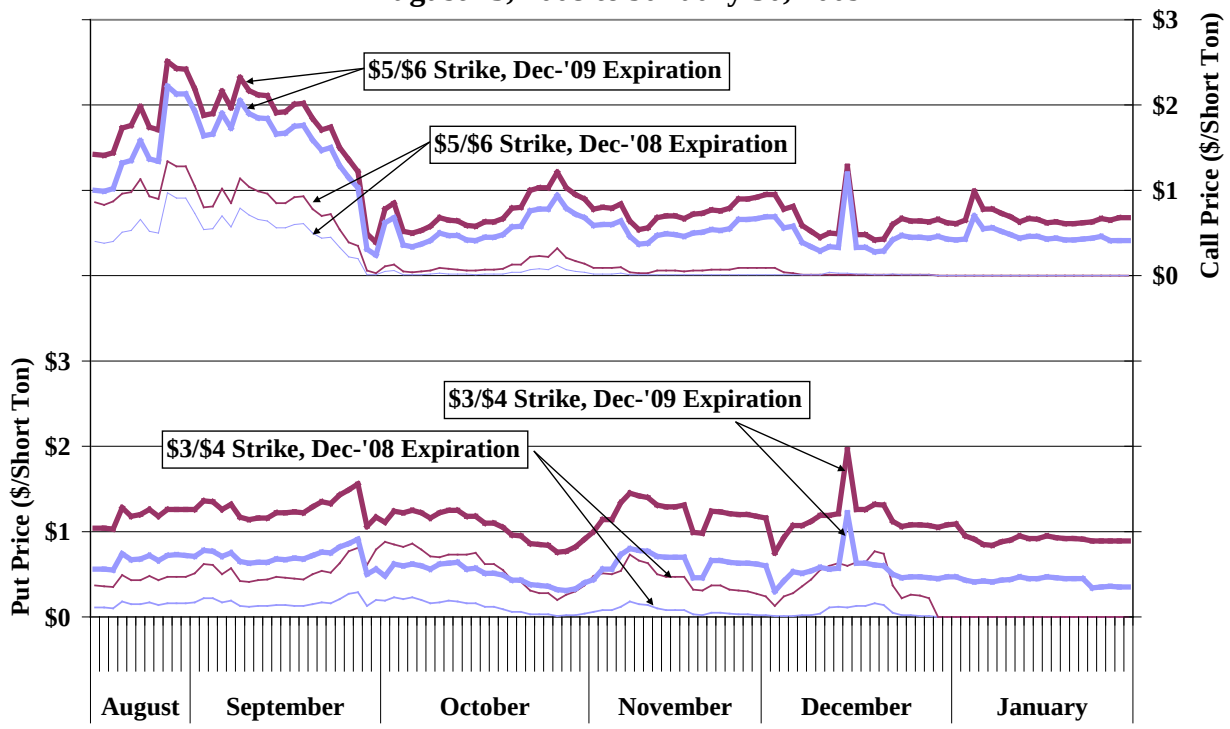
The clearing prices in the September 25 and December 17 auctions were generally consistent with prices in the secondary market, although Figure 1 shows that the secondary market prices dropped in the weeks immediately preceding the auctions and then subsequently rebounded.

OTC futures prices reported by Point Carbon have been very consistent with the CCFE futures prices. This is not surprising given that the types of trades reported by Point Carbon have contract provisions similar to CCFE futures contracts. However, in January, the OTC futures prices appear slightly higher than the CCFE futures prices in the figure, because the delivery month of the OTC futures contract shown is 11 months later than the delivery month of the CCFE futures contract shown. A futures contract with a later delivery month trades at a small premium, because the buyer retains its funds longer and earns additional interest prior to delivery.

Although the prices of some physical deliveries to COATS have been consistent with the prices reported by the CCFE, others have been significantly higher or lower. For example, it is unclear why a small quantity of allowances was transferred at a price of $5.50 on January 14. It is possible that this trade resulted from the exercise of a put option with a $5.50 strike price, or that the terms of the contract may have bundled the sale of allowances with additional services that raised the price of the transaction. The usefulness of the transaction prices reported in COATS is limited by the fact that transferring parties do not report the details of the contract.

Figure 2 summarizes the prices of eight options contracts since trading opened on the CCFE. Although a total of 30 different options contracts traded during the period, Figure 2 illustrates how option prices vary by the strike price and expiration date and how they respond to news affecting the outlook for RGGI allowances. The top half of the figure shows the prices of four call options, two with strike prices of $5 and two with strike prices of $6. The bottom half of the figure shows the prices of four put options, two with strike prices of $3 and two with strike prices of $4. For each strike price, two expiration dates are shown.

Figure 2: Prices of Put and Call Options for RGGI Allowances
August 15, 2008 to January 30, 2009



Source: Options prices are available at "www.ccfe.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, the call options with December 2009 expiration (the two thick lines in the top half of Figure 2) track closely throughout the period, with the $5 strike option trading at a $0.14 to $0.29 premium over the $6 strike option on most days.

The expiration date of an option also greatly affects its value. The options with the earlier expiration date (December 2008) are substantially less valuable than the comparable options with a later expiration date (December 2009). For example, by December 22, 2008, the call options shown above with December 2008 expiration had become almost worthless, because allowance futures were trading below $4 and it seemed unlikely that the price would move sufficiently for it to be profitable to exercise the option. In contrast, the comparable call options with December 2009 expiration were available at $0.67 for a $5 strike price and at $0.47 for a $6 strike price, reflecting considerable uncertainty about allowance prices over the subsequent 12 months.

Fluctuations in option prices 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, and (ii) the expected volatility of the underlying commodity over the period before the expiration date. When call option price increases coincide with put option price decreases, it signals an increase in the expected price of the underlying commodity. For example, this occurred when the futures price rose from $3.41 on October 15 to $4.50 on October 28.

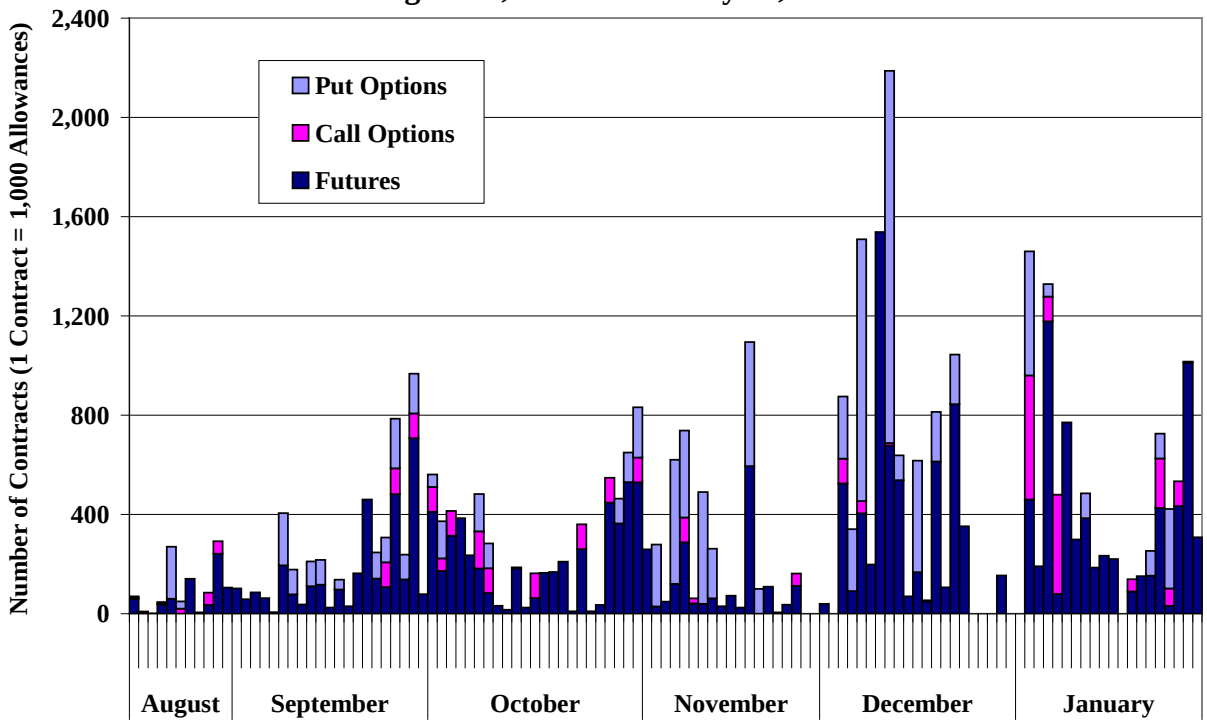
Conversely, when call option prices and put option prices move in the same direction, it signals a change in the expected volatility of the underlying commodity price. For example, put and call prices dropped immediately following the announcement of the clearing price of the first auction on September 29, suggesting that the outcome of the auction reduced the uncertainty of the market regarding future RGGI allowance prices.

D. Volumes and Open Interest

The three figures in this section summarize the volume of trading and the open interest in exchange-traded futures and options. Open interest is the 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.

Figure 3 shows the volume of trading on the CCFE each day for futures, call options, and put options. Figure 4 shows the open interest on each day for these contracts. Figure 4 also shows the amount of allowances held by firms in the COATS registry as a result of trades between unaffiliated firms. This excludes the majority of allowances, which are held by firms that purchased them in the auction, received them through allocations by one of the Participating States, or had them transferred from an affiliated firm.

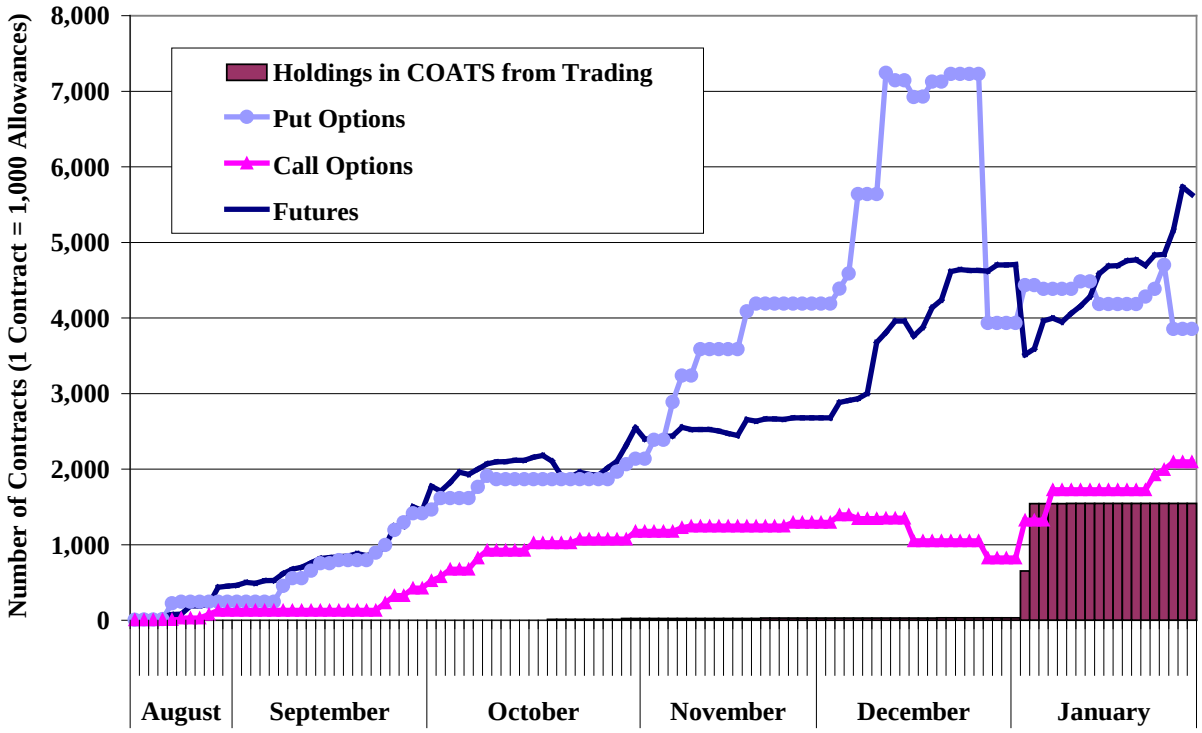
Figure 3: Volume of Trading of CCFE Futures and Options
August 15, 2008 to January 30, 2009



Sources: Options volumes are available at "www.ccfe.com/mktdata_ccfe/optionsSummary.jsf?symbol=rggi" and futures volumes are available at "www.ccfe.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi".

The volume of trading was modest throughout the period, although it increased from an average daily amount of 155 futures contracts and 70 options contracts in September to 330 futures contracts and 130 options contracts in January. The volume of trading is relatively small compared to the volume of allowances sold in the first two auctions, a total of 44 million allowances. Of the options traded, 76 percent were put options and 49 percent were put options with a strike price of $3, suggesting that a substantial number of firms have sought protection in the event that RGGI allowance prices drop substantially below current levels.

Figure 4: Open Interest in CCFE Futures and Options
August 15, 2008 to January 30, 2009



Sources: Physical holdings of allowances are based on information in COATS, open interest in options is available at "www.ccfe.com/mktdata_ccfe/optionsSummary.jsf?symbol=rggi", and open interest in futures is available at "www.ccfe.com/mktdata_ccfe/futuresSummary.jsf?symbol=rggi".

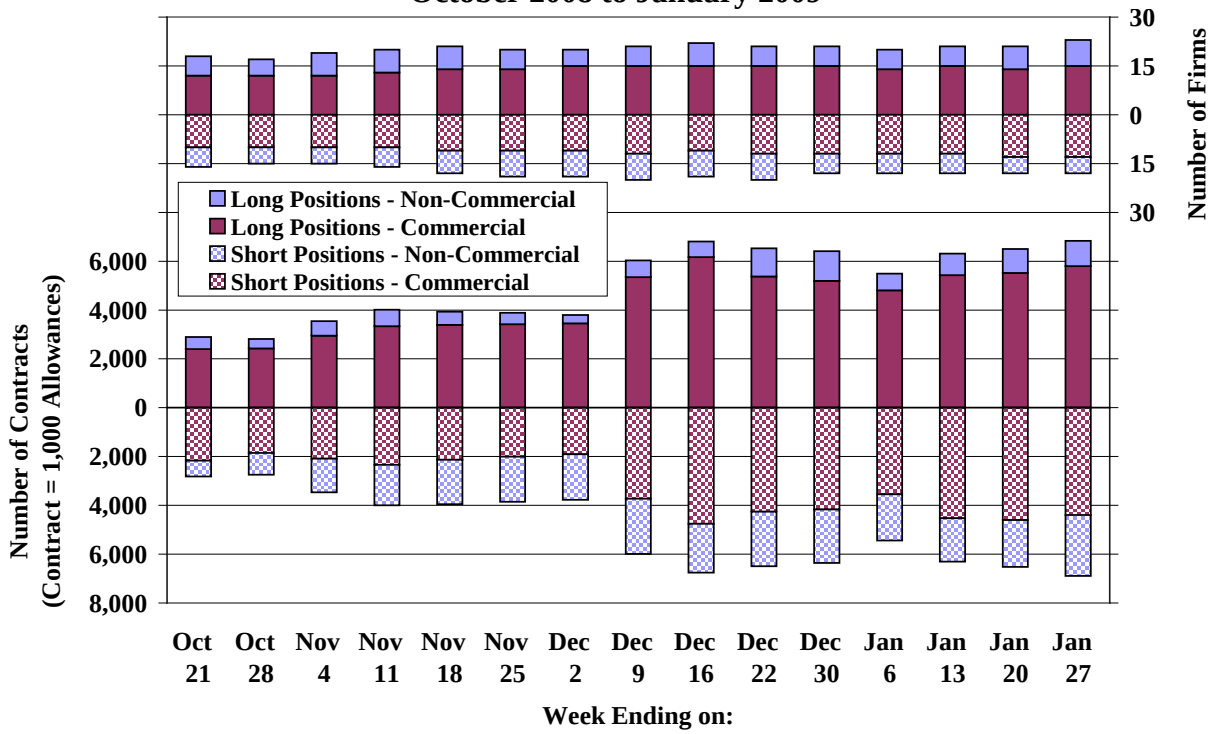
The open interest shows that the positions of firms trading futures and options have been increasing over the period. The first significant decline in the open interest in futures resulted from the delivery of futures contracts with a delivery month of December 2008. On January 5 & 6, the delivery of these futures led to the first substantial rise in the allowance holdings registered in COATS as a result of trading. Otherwise, very few allowance trades have been registered in COATS.

The open interest in options was generally increasing until December 29 when a large number of put option contracts reached expiration. 3,040 of the 3,295 put option contracts reaching expiration on December 29 had a strike price of $3, suggesting that some firms with long positions were seeking insurance against an unexpectedly low clearing price in the December 17 auction. The declines in open interest on December 15 and January 15 resulted from the expiration of a small number of options on those days.

Figure 5 provides additional information about the firms trading CCFE futures and options from the weekly Commitment of Traders ("COT") reports, published by the Commodity Futures Trading Commission ("CFTC"). 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 likely to be designated as Commercial and non-compliance entities are likely to be designated as Non-Commercial. Each Tuesday, the CFTC publishes a summary of the long and short positions of participants in the market.

Figure 5 summarizes the long and short positions of Commercial and Non-Commercial firms on a weekly basis since the CFTC began to publish the COT reports. It shows the number of firms with long positions and the number 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 Figure 5 is smaller than the sum of open interest in 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 5: Open Interest in the CCFE Futures and Options
October 2008 to January 2009



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

Since the CFTC began publishing COT reports for the CCFE, a substantial number of firms have been active in taking short and long positions (18 and 23 as of January 27). Commercial firms (i.e., compliance entities) account for the majority of long and short positions, although the positions held by Non-Commercial firms are also substantial. As of January 27, 85 percent of long positions and 64 percent of short positions were held by Commercial firms. The share of long positions held by Commercial firms is similar to the share of allowances purchased by compliance entities in the first two auctions (82 percent and 85 percent, respectively). Non-Commercial firms have participated in the secondary market primarily by taking short positions. However, it is likely that many firms with short positions on the CCFE also hold physical allowances that were purchased in one of the auctions.

The preceding figures show that while the volume of trading of standard futures and options contracts has been modest, the volume of trading has been rising. At the end of January, the total open interest in exchange-traded futures and options contracts was approximately 7 million

allowances and the net physical transfer of allowances from trading that is registered in COATS was 1.5 million allowances. However, the total transfer of allowances from trading is still far lower than the 44 million allowances that have been auctioned thus far.

E. Discussion of Market Monitoring

As the RGGI Market Monitor, we monitor trading in the secondary market in order to identify anticompetitive 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. 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 44 million allowances have been auctioned and the volume of trading in the secondary market has been modest thus far, it is not yet possible for the holdings of any participant to raise potential hoarding concerns.

Another potential competitive issue 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. In a highly liquid market, this strategy would not be profitable because it would have a minimal effect on the futures price. Hence, it is encouraging that the CFTC reports that a substantial number of firms have been taking short and long positions in RGGI futures and options contracts. However, we will continue to monitor for this concern.