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Comments of Power Auctions LLC on the RGGI Final Report
November 15, 2007

1. Introduction

Power Auctions LLC is a leader in the design and implementation of high-stakes auctions worldwide. In the electricity sector, Power Auctions personnel and software operate the quarterly EDF (Electricité de France) Generation Capacity Auctions in France, the quarterly Endesa-Iberdrola Virtual Power Plant Auctions in Spain, and the E.ON Virtual Power Plant Auction in Germany. In the gas sector, we operate the annual E.ON Ruhrgas Gas Release Programme Auction in Germany, the annual E.ON Földgáz Trading Gas Release Programme Auction in Hungary, and the annual DONG Energy Gas Release Programme Auction in Denmark.

In the environmental sector, Power Auctions software operated the UK Emissions Trading Scheme Auction, the world's first auction for reducing greenhouse gas emissions. The auction made available £215 million over 5 years as incentives for participants to enter into the greenhouse gas emissions trading scheme and to reduce their emissions. And in February 2008, Power Auctions will be implementing the Forward Capacity Auction for ISO-New England; many of the generating companies participating in the RGGI auction are also likely to be participants in the Forward Capacity Auction.

As such, Power Auctions LLC welcomes the opportunity to comment on the Regional Greenhouse Gas Initiative (RGGI) Final Report dated October 26, 2007. Our comments are not intended to deal with all aspects of the RGGI auction, but only to make a few specific observations about the Report's recommendations for the auction design.

We agree wholeheartedly with many important aspects of the Report's recommendations, including but not limited to: the auctions should be held quarterly; future allowances should be made available in advance of their vintages; reserve prices should be used; the auctions should be open to anybody meeting financial pre-qualification; bidders should be required to provide financial guarantees; there should be a combined auction for all RGGI states; existing market monitoring efforts should be utilized; and authorized account representatives should be obliged to disclose the "beneficial ownership" of any allowance holdings.

The above recommendations are well motivated by the Report and speak for themselves. They require no further comment by us.

However, a few of the other recommendations of the report are at odds with our own extensive experience of designing and implementing auctions in the energy and environmental sectors, and it is these recommendations about which we will comment.

2. Different vintages should be offered simultaneously in a single auction

The Report recommends that separate auctions should be held for different vintages.

However, one of the main advances in the practice of auctions over the past 15 years has been the realization of the benefits of auctioning related items simultaneously in a single auction process—and the development of effective ways of doing this. The pioneer has been the Federal Communications Commission (FCC) auctions for telecommunications spectrum, in which typically something like 493 separate spectrum licenses are auctioned together in a single auction (*see* Milgrom, 2004).

In the language of economics, different vintages of allowances are *substitutes*. There are at least two important reasons for auctioning substitute products together. First, it is beneficial for bidders, as it enables them to pursue bidding strategies in which they choose optimally between one substitute product and another, depending on the price differentials. Second, it results in the relative prices of the substitute goods being aligned correctly, e.g. a more valuable vintage of allowance will be sold at a higher price than a less valuable vintage of allowance.

Bidders participating in RGGI have a particularly strong reason for wanting different vintages to be offered simultaneously in a single auction. If, instead, separate auctions are held for two different vintages, each bidder will need to guess which auction will generate a more attractive price—since the auctions are independent, there is nothing to keep their prices aligned. To the extent that a bidder guesses wrong, the bidder's company may end up paying a higher price for a vintage with a lower intrinsic value, endangering the bidder's future employment prospects.

By the same token, the States participating in RGGI also have a strong reason for wanting to offer different vintages simultaneously in a single auction. As observed in the previous paragraph, there is a substantial likelihood that the prices resulting from separate auctions will be out of line with one another. State officials will have a difficult time explaining to the various stakeholders (and news media) why it is the case that a vintage with a lower intrinsic value is selling for a higher price, endangering the overall reputation and success of the RGGI program.

There is no difficulty in designing and implementing an auction in which multiple vintages of allowances are offered simultaneously. In the electricity sector, the large virtual power plant auctions have taken a similar approach. For example, in our quarterly EDF auctions, base-load electricity contracts of 3-month, 6-month, 12-month, 24-month, 36-month and 48-month durations are auctioned together; peak-load contracts of multiple durations are also auctioned in the same auction. Implementing a simultaneous auction is both feasible and desirable.

3. The RGGI auction should use a multiple-round, ascending-clock format

The Report recommends that the RGGI auction should use a single-round, sealed-bid format.

However, another of the main advances in the theory and practice of auctions over the past 15 years has been the advent of multiple-round, dynamic auction processes for multiple products. Today, in the telecommunications sector, it is rather unusual for mobile phone spectrum to be sold by a sealed-bid format. In the electricity and natural gas sectors, many of the new and innovative auctions are now conducted using dynamic auction processes. In other possible new applications for auctions, such as in the allocation of landing and takeoff slots at congested airports, dynamic auctions are the principal formats under discussion.

One of the main advantages of dynamic auction processes is the improved price discovery that they yield, as compared to sealed-bid auctions. Thus, it is initially surprising that the Report states: "But further examination suggests that clock auctions perform no better in terms of price discovery than single-round auctions" (RGGI Report, p. 7 and p. 77). The Report's finding remain puzzling until one notices that it also states: "The experience with the Virginia NOx auction and in other settings that we have reviewed suggests that it is best not to reveal the total number of allowances requested in each round" (p. 19). That is, it appears that the experimental clock auctions were conducted by the following procedure: the auctioneer announces a price; bidders respond by bidding quantities; the auctioneer sums the bids to determine an aggregate demand; and then *the auctioneer announces nothing*. This defeats the very purpose of conducting a dynamic auction, and it is at wide variance with real-world practice. For example, in all of the 50 electricity and natural gas auctions that we have implemented (as well as the UK greenhouse gas emission reductions auction), the exact aggregate demand has been announced to bidders after every round. When this real-world protocol is used, clock auctions yield improved price discovery as compared to sealed-bid auctions.

The reason that the Report gives for not revealing aggregate demand after each round is so that "bidders will not be able to determine whether unilateral demand reductions on their part will stop the clock" (p. 19). However, announcing no information to bidders is a rather severe response; the literature and actual practice provide several superior approaches that could be applied singly or in combination. One approach is, instead of a uniform-price auction, to utilize a modified payment rule that eliminates bidders' incentives for demand reduction (*see* Ausubel, 2004). A second approach is to conduct the auction with relatively large price increments but to utilize "intra-round bids" so as to avoid overshooting the clearing price (*see* Ausubel and Cramton, 2004). A third approach is to limit the share of the total supply that any participant can bid for, lessening the effects of unilateral demand reductions (the Report recommends a limit of 33%). Any of these approaches will limit the impact of unilateral demand reductions, but without defeating the purpose of holding a dynamic auction.

In other respects (in addition to not revealing information to bidders), the experiments conducted for the RGGI Report tested nonstandard versions of clock auctions. Consequently, the clock auctions of the experiments would not be expected to yield as good results as those that are used in the real world today. For example, bidders in the experiments merely indicated a single quantity at each price, while in most clock auctions that are used in actual practice, bidders express their demands more richly with "intra-round bids" or "exit prices". These real-world mechanisms make the auction perform better insofar as both revenues and efficiency, and they avoid any need for the "shot clock" which is hardly ever used because of its obvious deficiencies.

It should also be emphasized that one of the best reasons for employing an ascending clock auction is that it provides a well-tested approach for auctioning multiple vintages of allowances simultaneously in a single auction. (The importance of this was argued in Section 2.) In the basic approach, the auctioneer announces a price for each vintage, bidders respond by bidding quantities of each vintage, and the auctioneer sums the bids to determine an aggregate demand for each vintage. The auctioneer then increments each price in relation to the amount of excess demand for the respective vintage. In subsequent rounds of bidding, the bidders are permitted to switch their demands from one vintage to another. Such an auction design enables bidders to pursue bidding strategies in which they choose optimally between one vintage and another, depending on price differentials, and it results in the relative prices of the various vintages being aligned correctly.

Finally, Power Auctions agrees with the Report's recommendation that the same auction format should be used in each quarterly auction. This is the most effective approach with respect to minimizing the participation costs of bidders, as well as the overall cost of implementing the auction. The point of difference is that our recommendation is that all of the quarterly auctions should be conducted as ascending clock auctions.

4. The bidding limit in the auction should be extended to post-auction holdings

The Report recommends that no single entity should be allowed to purchase (or take a beneficial interest in) more than 33% of the allowances for sale in any auction. The rationale given is that open auctions will enhance competition and limit opportunities for collusion. Limiting the share of allowances that a single entity can purchase in an auction raises the cost of using the auction to corner the market without placing too stringent a restriction on what generators can purchase.

Concerns by stakeholders that some party might seek to corner the market would be ameliorated if this limit also applied to post-auction holdings of the allowances. (Otherwise, a single entity might acquire 33% of the allowances in the auction and then attempt to acquire an additional 33% on the spot market.) Such a requirement could be enforced by writing the holding limit into the contractual terms governing the allowances and it could be monitored via the same monitoring mechanism that is otherwise contemplated.

One question that Power Auctions had was how the proposed 33% limit was selected. There is reference to following "the procedure used in U.S. Treasury auctions" (p. 68); however, it is understood that allowances have markedly different characteristics than Treasury bills and, anyway, the individual limit in Treasury auctions is 35%. It would be helpful to have an empirical estimate of the fraction of greenhouse gas emissions in the RGGI States that come from individual (or affiliated) companies and to use this information as an input into setting the limit.

5. Rolling unsold allowances into the next auction works well

The Report discusses two options: rolling unsold allowances into a contingency reserve account; or rolling unsold allowances into the next auction (or next several auctions). The experience from virtual power plant auctions in the electricity sector is that rolling unsold products into the next auctions works quite well. Two protocols are common: (1) all of the unsold quantity is rolled into the next auction; or (2) one-third of the unsold quantity is rolled into each of the next three auctions. Either of these protocols appears to be sensible for the RGGI auctions.

6. More extensive information should be released post-auction

The Report recommends that "information from the auction that should be publicly disclosed includes the auction clearing price, the identities of winning bidders and the quantity of allowances obtained by each winning bidder. The actual value bid by each auction participant should not be disclosed. Information about losing bidders should not be disclosed." (p. 9 and p. 81).

We agree that *individual* bid data should not be disclosed, except for the quantity won by each winning bidder, as disclosing such information could help bidders to monitor any collusive agreements. However, greater transparency is, in general, beneficial. There would appear to be no harm—and potential benefit—in publicly releasing the entire *aggregate* demand curve after the conclusion of the auction.

References

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