

Final Fixes to the Broadcast Incentive Auction Rules to Maximize Social Welfare

Peter Cramton, University of Maryland, 3 July 2015

As the FCC finalizes the rules for the broadcast incentive auction, there are a number of simple modifications that the Commissioners should make to enhance the likelihood that the auction will maximize social welfare by robustly clearing the maximum spectrum consistent with broadcaster and carrier preferences. These changes are minor but critical adjustments to the starting prices and the bid decrement rule. These adjustments have been extensively tested through hundreds of simulations of the reverse auction using the FCC proposed rules and ISIX impairment methodology.¹

Starting prices

Perhaps the easiest fix is a simple correction of the scaling of starting prices so that the station with the highest volume has a starting price of \$900 million. The current rule includes VHF stations to identify the station with the highest volume. This happens to be the VHF station WABC in New York. As a result of a change in baseline population data released on 30 June 2015—stemming from a facility shift from the Empire State Building to the World Trade Center—WABC has a significant population coverage increase. Under the current rule this would have the perverse effect of *reducing* starting prices of every station in the auction but WABC, discouraging broadcaster participation.

I am confident this is not the FCC's intent. Since the FCC adopted the \$900 million rule, there has been one major piece of information that is relevant to the setting of starting prices—the outcome of the AWS-3 auction. This competitive auction sent a clear market-based signal that spectrum is worth more than two times the value Wall Street analysts estimated immediately before the auction. Thus, the direct market information suggests the FCC should *increase* the starting prices to better reflect carrier preferences and motivate broadcaster participation. Certainly it would be absurd to decrease all stations' starting prices because of an unintended quirk in the rules.

The simple fix is to base the price scaling on the *UHF station* with the highest volume—that is a station that actually could be paid its starting price. This would attach the highest starting price to UHF station WNJU at \$900 million. The fix would represent a modest increase in starting prices of about 5% for all stations, thereby motivating participation. Of course a much larger increase in starting prices is warranted based on the AWS-3 market outcome, but this modest move is at least in the right direction. It also is 100% consistent with the apparent intent of the existing rule that no station receive a starting price above \$900 million.

A second starting price anomaly is that there are three markets based on the FCC's proposed formula that have opening prices that are below Greenhill I Prices. Stations in these markets block major markets but have relatively little population coverage. The FCC would be wise to increase the starting prices in these three markets to Greenhill I levels. Otherwise, there is a real likelihood these stations will not participate in the auction, which will cause major markets like Los Angeles to freeze at significantly higher prices, reducing efficiency and increasing auction revenue requirements—exactly the opposite of the FCC's intent.

The FCC has made the argument that the FCC's starting price formula does a better job than the reweighted formula of rewarding big-market stations with lots of covered pops. This is false. Putting a weight of $\frac{1}{4}$ rather than $\frac{1}{2}$ on population coverage results in stronger incentives for stations blocking big markets, including the main stations with large population coverage in the major markets. This is confirmed by a simple comparison

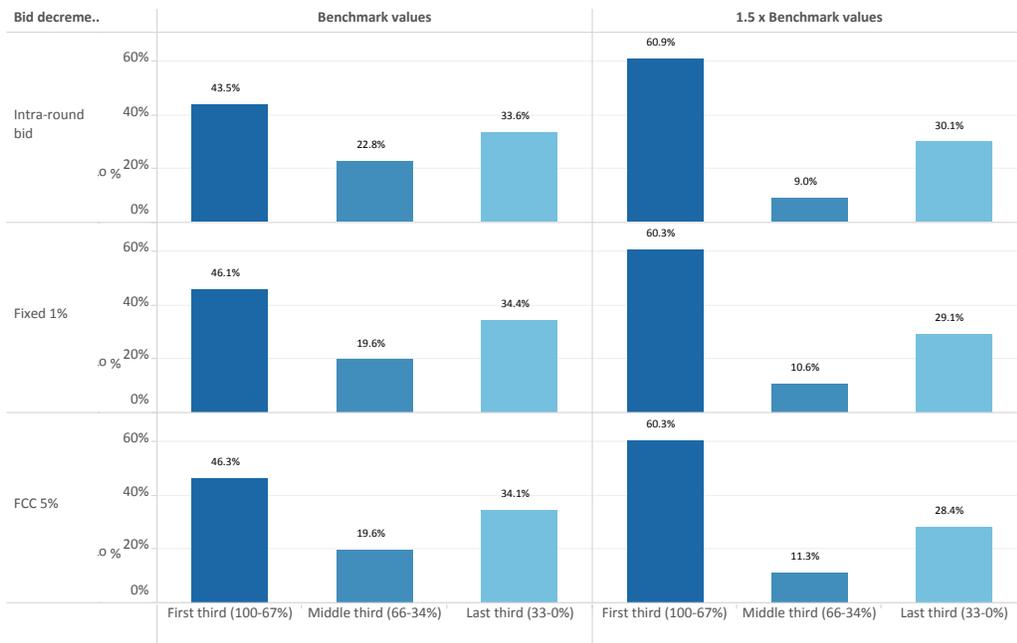
¹ See Peter Cramton, Hector Lopez, David Malec and Pacharasut Sujarittanonta, "[Design of the Reverse Auction in the Broadcast Incentive Auction](#)" and [Appendix](#), filed 15 June 2015 at the FCC (GN Docket 12-268).

of starting prices with the FCC and the reweighted formula. The difference between the two formulas is that the reweighted rule results in less price discrimination against stations blocking major markets but with smaller broadcast population. This price discrimination—underpaying the low-pop stations—may save a few dollars of clearing cost if successful, but it is a dangerous instrument. To robustly clear the maximum spectrum, a weight of ¼ on broadcast population performs much better, as our simulations demonstrate.

Bid decrements

Without intra-round bidding, the proposed 5% bid decrement destroys gains from trade (up to \$2 billion on a \$50 billion auction) relative to a 1% fixed bid decrement. This is because the bidders are unable to express their true exit prices. The FCC has argued that the inefficiency from the 5% rule is not too great. I disagree. In addition to the loss from the inability to express exit bids consistent with true preferences, there is an additional loss from rushed decision making. With the 5% rule, many major markets would likely freeze in the first few days of the auction. This rushed decision-making with poor information surely will reduce the efficiency of the auction. Careful analysis and deliberation takes time, which is why it is critical that major spectrum auctions proceed at a measured pace. The highly successful AWS-3 auction lasted 2.5 months. The only difference here is that the reverse auction is even more complex. The decision-making for even small broadcasters is far from trivial—time and information is needed to make efficient decisions.

One justification for the 5% rule that I have heard is that not much is apt to happen in the early rounds of the auction, so it is expedient to drop the price quickly in these early rounds. This is false. We have conducted hundreds of simulations of the reverse auction. The figure below shows the share of the clearing cost that appears in the first-third, middle-third, and last-third of the auction. With the benchmark values, well over 40% of the freezing is in the first third of the auction. In more challenging cases with station reservation values 1.5 times benchmark, more than 60% of the freezing occurs in the first-third of the auction.



With the 5% decrement rule, the first-third of the auction would take 8 rounds. There is no reason for such haste. The 1% fixed decrement rule (1% of the starting price) takes 100 rounds; the FCC proposed rule takes 52 rounds. At four rounds per day—a reasonable pace for all but the first day or two—the auction would take at most *two weeks longer with the 1% rule*. There is essentially no cost from an additional two weeks, yet there are clear and significant benefits. This should be an easy fix for the FCC.