

Declaration of Peter Cramton

I, Peter Cramton, hereby declare the following:

0 Qualifications

1. I am Professor of Economics at the University of Maryland and Chairman of Market Design Inc. (MDI). Over the last 20 years, I have published research on auction theory and practice in the leading peer-reviewed economics journals. During the last 12 years, I have applied this research in the design and implementation of auction markets worldwide, especially in North America and Europe. I have led the design and implementation of dozens of high-stake auctions. I have advised telecommunications firms on bidding strategy in more than 25 spectrum auctions (all using the simultaneous ascending format). Since 1998, I have advised ISO New England on electricity market design and I currently am a lead designer of the proposed forward capacity auction for New England. I received my B.S. in Engineering from Cornell University and my Ph.D. in Business from Stanford University. My vita, which includes a list of my publications and other experience, is attached.

1 Introduction

2. Based on my expertise, T-Mobile USA has asked me to reply to the comments filed in response to the Public Notice DA 06-238, "Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006." I have no financial interest in the auction or in T-Mobile. In developing my reply comments, I assume throughout that the primary objective of the FCC is to conduct an efficient auction, one that puts the licenses in the hands of the companies best able to use them.

3. The FCC received several dozens of comments on the AWS Public Notice. This is not surprising given the importance of the auction and the numerous parties eager to compete for the spectrum. I concur with the overwhelming consensus view presented in these comments, which I now summarize.

- *It is important for the auction to take place in Summer 2006.* Any significant slippage in the June 29 date would result in substantial harm to consumers. The timely auction is needed to enhance competition for advanced wireless services.
- *A single simultaneous ascending auction for all licenses is best.* The hybrid approach in which some licenses are sold in a SMR auction and some are sold in a package auction does not make sense. The hybrid approach would undermine the efficient arbitrage across substitutable licenses, which is the hallmark to the success of the FCC's successful auction program.
- *The SMR auction should be fully transparent.* Although there are costs and benefits associated with full transparency, there is now substantial empirical evidence that the benefits outweigh the costs in the AWS auction. It would be especially unwise to eliminate transparency for this major auction, given the excellent track record of the FCC's fully transparent auction format. Although full transparency may have resulted in

some minor problems in some of the early auctions (e.g., the DEF auction), the problems were easily fixed with rule changes and improved auction management. The FCC's current SMR auctions with significant reserve prices, increment bidding, and improved pacing now greatly mitigate the potential costs to full transparency. At the same time, the economic benefits to full transparency are real and significant in the AWS auction. In the AWS auction, full transparency is likely to improve both efficiency and auction revenues.

4. The few commenters that deviated from this consensus view presented positions that were either: 1) uninformed or 2) self-serving and inconsistent with the FCC's objective.

2 The academic comments make useful points but were generally uninformed

5. The comments from other academics were generally uninformed about critical economic issues in the AWS auction. Although all of them made some useful points, the conclusions were not well supported. Most appeared to be drafted in a matter of minutes without any knowledge of the particular features of the AWS auction, the current competitive landscape, the current enhancements to the FCC's SMR auction format, and the long history of successful auctions using the format both in the US and elsewhere. The Milgrom and Rosston comment¹ and the CAPCP comment² were the most thoughtful in at least discussing both the costs and the benefits of full transparency. However, neither provided convincing evidence in support of the opposite conclusions reached—Milgrom and Rosston recommended on balance an anonymous auction, whereas CAPCP recommended full transparency.

6. One thing we do know is that competition in spectrum auctions overall has been exceptionally strong. Indeed, there has been a tendency for bidders to bid more than the value of the licenses, and ex post suffer the "winner's curse."³ Certainly within the class of fully transparent SMR auctions, there have been more auctions in which bidders have grossly overpaid (e.g., the UK UMTS auction and the FCC's narrowband PCS auctions) than auctions in which bidders have underpaid.

7. It is extremely difficult to find any compelling evidence that full transparency has led to low-price equilibria. I tried to find such evidence in the DEF auction, the one people point to as the most vulnerable to tacit collusion, because of weak competition. Despite spending years

¹ "Comments of Paul Milgrom and Gregory Rosston," Stanford University and Stanford Institute of Economic Policy Research, 14 February 2006.

² "Comments on the Auctions of Advanced Wireless Services by the FCC," Center on the Study of Auctions, Procurements, and Competition Policy at Penn State University, 14 February 2006.

³ The winner's curse is the insight that winning an item in an auction is bad news about the item's value ($E(v_i | i \text{ wins}) < E(v_i)$, where v_i is bidder i 's uncertain value), because winning implies that no other bidder was willing to bid as much for the item. Hence, it is likely that the winner's estimate of value is an overestimate. Since a bidder's bid is only relevant in the event that the bidder wins, the bidder should condition the bid on the negative information winning conveys about value. Bidders that fail to condition their bids on the bad news winning conveys suffer from the winner's curse in the sense that they often pay more for an item than it is worth.

studying the roughly 25,000 bids in that auction, I was unable to find such compelling evidence, despite my being very well motivated to find it (I was an expert to the DOJ).

3 Verizon's comment appears self-serving and inconsistent

8. Verizon is alone in recommending the hybrid SMR auction for some licenses and package auction for other licenses. I presume that is because of Verizon's unique position as the likely bidder with the largest appetite and deepest pockets. It is well known that package auctions favor large bidders as a result of the threshold problem (see Cramton et al. 2006). I speculate that Verizon believes that it will be able to dominate the package auction, winning the spectrum it needs there at a discount, while the smaller bidders compete vigorously for smaller packages in the SMR auction. This is the only reason I can think of for why Verizon would endorse the hybrid approach with its obvious inefficiencies.

9. On information policy, Verizon is inconsistent. Verizon supports full transparency in the package auction (where presumably it hopes to acquire its licenses at a steep discount), and supports an anonymous auction for the licenses sold using the SMR format. There is no theoretical or empirical justification for this inconsistent treatment in information policy.

4 Conclusion

10. Let me conclude with the consensus view of the comments, with which I endorse.

11. The FCC should conduct the AWS auction in Summer 2006.

12. The auction should be a fully transparent SMR auction.

13. The FCC now has substantial protections in place to improve the competitiveness of fully transparent SMR auctions. Given these protections, the benefits of full transparency greatly outweigh any remaining costs.

14. I encourage the FCC to continue to explore and test innovative auction designs, such as the clock-proxy auction. However, for the AWS auction it makes sense to use the tried-and-true SMR auction, which has served the FCC and American consumers so well over the last twelve years.

I declare under penalty of perjury that the foregoing is true and correct.



Peter Cramton

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