

Comments on the FCC Wireless Bureau's Proposed COMPETITIVE BIDDING PROCEDURES FOR AUCTION 73

(DA 07-3415, August 17, 2007; AU Docket No. 07-157)

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The authors' curriculum vitae are attached as Appendix A.

Summary

We comment on the FCC Wireless Bureau's proposed procedures for competitive bidding in Auction 73 (DA 07-3415, August 17, 2007; AU Docket No. 07-157).

Our primary concern is the role of the proposed aggregate reserve price for each of the five blocks in combination with provisions for prompt re-auction with weaker performance requirements if the reserve price is not met.

- Using reserve prices that are based on a comparison with the high bids for AWS licenses in Auction 66 in mid-2006 ignores the effect of altered conditions and increased volatility in capital markets when Auction 73 opens in January 2008.
 - Even a small increase in the cost of capital causes a large reduction in bidders' valuations of licenses. Continued tightness in the market for investment funds could itself cause failure of Auction 73 simply because reserve prices have not been adjusted to account for higher costs of capital.
- The use of aggregate reserve prices is new, other than the aggregate reserve price for Auction 66 that was less than 20% of the final gross of the winning bids and was based on a calculation of opportunity costs. The Bureau now proposes to use a different methodology than it did for Auction 66—and every previous auction—with no apparent justification.
 - The Bureau does not seem to have appreciated the threshold and free-rider problems engendered by aggregate reserve prices for entire blocks, nor the prospect that major bidders prefer that the reserve prices are not met so that there will be a re-auction with weaker service rules and diminished competition from losing bidders in the initial auction.
- The use of reserve prices gauged to presumed market value is contrary to the theory of optimal reserve prices when bidders' valuations have substantial components in common and the seller's objective is revenue maximization, and even more contrary when the objective is maximization of overall social benefit.
 - The Bureau's reliance on final bid prices in Auction 66 of the AWS licenses has several deficiencies that we describe in detail. Some of the major concerns are that the more stringent performance requirements in Auction 73 make Auction 66 a poor basis for comparison, and setting reserve prices equal to expected revenues is an untested and unjustified way to implement reserve prices.
 - The Bureau does not seem to have considered the effects of the reserve prices on efficiency and revenue in the initial auction, nor the likelihood that losing bidders in the initial auction will not bid in the re-auction because they know they have already been outbid and likely will be outbid again in the re-auction, which would drastically reduce competition and revenue in the re-auction.

- The Bureau does not seem to have appreciated the hazards of having two auctions in quick sequence with the same reserve prices and weaker performance requirements, and later a third auction if the initial reserve price is still not met.
 - The aforementioned threshold and free-rider problems are compounded because there is no incentive in the initial auction for high bidders to raise their bids to meet the aggregate reserve prices—since they can do so in the re-auction for licenses with weaker service rules, and/or an altered band plan, and less competition from bidders who are discouraged from bidding again after losing in the initial auction. The Bureau does not seem to have examined the strategic incentive for major bidders to suppress their bids to force a re-auction, nor their strategies for filings and appeals that could delay the re-auction.

- The Bureau has not clarified exactly what will ensue after a reserve price is not met in the initial auction, nor after it is again not met in the re-auction.
 - We are concerned about several ambiguities that we describe in detail, such as exactly who is eligible to bid in the re-auction. We do not find any provision in the Bureau’s rules that implements the Commission’s directive that the Wireless Bureau “propose and adopt procedures that give applicants an opportunity to obtain bidding eligibility specifically for the alternative licenses, in addition to the initial licenses.”
 - We are concerned that the Bureau does not commit to the extent and form of the package bidding that might be allowed in the re-auction (e.g., for C1, C2, and C in a three-level hierarchy), nor has the Commission committed to the license specifications.

In sum, we think that the Commission’s intent to make the initial auction a test may fail to achieve its purpose of proving whether the stringent performance requirements for the licenses in the initial auction still enable aggregate reserve prices to be met. Deficiencies in the auction design do not allow for a valid test of the cost of the provisions on the licenses.

We also comment on specific aspects of the bidding procedures. Among others:

- We observe that it is in the FCC’s interest as regards both efficiency and revenue to increase the degree of substitution among licenses. We propose an amendment to the activity rule to increase substitutability between license D and the package of 8 REAGs in block C.

- We suggest that the Bureau clarify and strengthen the rules regarding anonymity during the initial auction. But also we ask that a bidder who wins in the initial auction can ask the FCC to reveal this fact before the re-auction, since this revelation may be forced by accounting rules or necessary to meet financial commitments.

1. Unprecedentedly high aggregate reserve prices coupled with re-auction provisions

In this section we discuss a major threat to the auction success caused by the interplay of three proposed elements:

- 1) Unprecedentedly and arbitrarily high reserve prices
- 2) Aggregate per-block reserve prices rather than license-by-license reserve prices
- 3) Provisions for a prompt re-auction with modified license rules and the same high reserve prices.

We express our concern that the reserve prices are too high, based on faulty comparisons with the prices in the AWS auction, and against the established and successful designs used by the Commission in previous auctions. We also see the imposition of reserve prices at the aggregate level of an entire block to be a major departure from previous practice that is very risky in itself, and worsened further by the free-rider problem that it creates for the bidders within each block. All of this is compounded by the prospect of a “prompt” re-auction of those blocks failing to meet their reserve prices in the initial auction, but with a different band plan and weaker performance requirements. The prospect of a re-auction may be a self-fulfilling prophecy because of the possibility that the aggregate reserve prices will discourage entry into the bidding and suppress bidding activity and prices in the initial auction.

Our comments are collected into three subsections. In the first we comment on those aspects affecting the efficiency of the license allocation and the government’s revenue. In the second we comment on vulnerabilities to strategic behavior. In the third we argue that the high reserve prices are contrary to established auction theory and the Commission’s practice. We finish this section by recommending a different calculation of the reserve prices.

1.1. Effects of capital markets on bidders’ valuations

In this section we criticize the Bureau’s proposed reserve prices because the comparison with the aggregate high bids in the auction of AWS licenses ignores subsequent volatility in capital markets. The Bureau assumes implicitly that conditions in capital markets and the wireless communications industry will be the same in early 2008 when Auction 73 begins as when Auction 66 occurred in mid-2006. Making this assumption runs a substantial risk that reserve prices exceed bidders’ valuations of the 700 MHz licenses. We state our argument in two parts. The first describes evidence that conditions in the capital markets have become less favorable for investments in new wireless businesses. The second describes the implications for bidders’ valuations of the licenses offered in Auction 73.

- Worsening conditions in the market for collateralized debt have spread widely in financial markets during recent weeks. The resulting tightening of credit markets could exclude more than one firm from obtaining financing from investors for entry on a national scale and reduce valuations for the licenses substantially. This is especially germane for the D Block license and the package of 8 REAGs in Block C. It is also widely recognized that the risk factors in Auction 73 are much greater than in the AWS auction. Higher risk is associated with the D Block license because it depends on a still-to-be-negotiated network sharing agreement with Public Safety, with the C Block because it has open access provisions that are entirely new in the wireless markets, and other licenses have more expensive buildout requirements based on geographical coverage. Investor advisory services have also published concerns about declines in subscription growth, market saturation, and intensified competition. To cite one example:
- "The telecom sector appears to be struggling to maintain its [performance] of recent quarters. Several of the pillars of recent strength are showing signs of weakness. Wireless and broadband subscriber growth is slowing significantly, while M&A synergies are becoming less material and industry consolidation appears largely over. ... The carriers cited market maturity as a factor in slower growth; wireless subs have now surpassed 80% of the population." [Morgan Stanley Telecom Services, "Deteriorating Wireless Trends Revisited, August 24, 2007]
- The second part of our argument is that a small change in the cost of capital changes greatly the valuation of a license. Recall that a bidder's valuation of a license is typically obtained by computing the "net present value" of the expected costs and revenues over many years into the future. The net present value is computed by discounting future costs and revenues by the firm's cost of capital, expressed as a rate of interest. The result of this calculation is very sensitive to the cost of capital. In the example analyzed below we illustrate this fact by assuming a realistic pattern of costs and revenues, and by supposing that the cost of capital increases from a rate of return of 12% to 15% per year due to tighter conditions in capital markets.

Example of the effect of raising the cost of capital from 12% to 15%.

Suppose that the total cost of buildout is \$5 billion and thereafter the net revenue is \$1.6156 billion per year. Suppose further that the costs of buildout are incurred in years 1, 2, and 3 in the amounts \$2 billion, \$2 billion, and \$1 billion, and that the stream of net revenues of \$1.6156 billion per year begins in year 4. One can then calculate that:

- 1) If the cost of capital is 12% per year then the net present value is \$5.0000 billion.
- 2) If the cost of capital is 15% per year then the net present value is \$2.5866 billion.

Thus in this example the three percentage point increase in the cost of capital decreases the net present value by nearly 50%, i.e., from \$5 billion to \$2.5866 billion. The effect of an increase in the cost of capital illustrated in this example is typical. In general, a rise in the cost of capital has a magnified effect on a firm's valuation of a license. Even for an established firm like Verizon and AT&T, its valuation of a license can be reduced due to altered conditions in capital markets.

In summary, we challenge the Bureau's reliance on high bids for AWS licenses in September 2006 as a standard against which to estimate valuations for the 700 MHz licenses offered in Auction 73 in early 2008. Relying on the outcome of a previous auction takes no account of altered conditions and volatility in capital markets in the interim, and risks failure of the auction simply because the reserve prices exceed bidders' valuations based on current costs of capital in 2008.

1.2. Re-auction, threshold problem, and lowered revenues

Until a block's aggregate reserve price is met, all bidders for every license in the block will be affected by uncertainty about whether their bids are "real" (since they are voided if the block is re-auctioned) and the license is "real" (since the performance requirements and/or block definition will change if the block is re-auctioned). Of particular importance will be the incentive of each bidder individually to bid minimally on specific licenses in hopes that other bidders on other licenses will volunteer to bid higher on those licenses to push the aggregate of all bids over the reserve-price threshold. That is, there is a free-rider problem among the bidders, which could result in lower revenue and/or failure to achieve the reserve price, even if the performance requirements for the licenses offered in the initial auction serve the public interest better than the performance requirements for the alternative licenses.

Thus the aggregate reserve price for each block creates a new "threshold problem" in which every player is hoping that others will increase their bids on other licenses to meet the aggregate reserve price. The higher the reserve price, the higher the probability players assign to the re-auction and hence the less incentive they have to bid aggressively in the current auction. It can lead to a situation where without the reserve price the bids would easily exceed the reserve price, but with the reserve price and the option for re-auction, the bids end up much lower in the initial auction. The situation is complicated further by the fact that no bidder will know if others are bidding seriously or not, i.e., whether the bidding shows genuine interest or just gaming of the system to force a re-auction.

We anticipate that if the aggregate of the high bids for a block fails to meet the reserve price in the initial auction and then again in the prompt re-auction with weaker performance requirements and the same reserve price, then surely the Commission will reconsider the matter. The likely outcome is that a 3rd attempt to auction the block is delayed substantially, and the reserve prices are lowered significantly and made specific to each license.

Our view is that there is a severe risk that this outcome will occur at least for some blocks. The reasons it might occur are intrinsic to the design of the auction and re-auction. Using standard game theory logic, one can work backward in time through the scenario to see the forces at work.

- For the 3rd auction the reserve prices would likely be license-specific after the repeated failure of the aggregate reserve price to be met. Because the use of an aggregate reserve price for each block induces a free-rider problem among the

bidders that might have been the cause of failure to meet the reserve price, the Commission would be amply justified in eliminating this feature in the 3rd auction. That there would be a substantial interval between the 2nd and 3rd auctions seems inevitable because the Commission and the bidders would both want a thorough reconsideration of “what went wrong” in the first two attempts to auction the licenses in the block.

- In the 2nd auction the bidders face the free-rider problem in meeting the reserve price. This problem is exacerbated by their assigning little importance to achieving the aggregate reserve price, because they anticipate that if it is not met then after some further delay there will be a 3rd auction with license-specific reserve prices.
- In the 1st auction the free-rider problem is equally severe, and it too is exacerbated by anticipation that the reserve price is unimportant, since failure to meet it merely initiates a sequence of one or two subsequent auctions, first with the same aggregate reserve price and then another with lower, license-specific reserve prices.

Thus, even in the 1st auction the bidders are affected by the prospect that eventually the Commission will reduce or abandon use of an aggregate reserve price for an entire block.

Further compounding the problem for the FCC is the prospect that competition will diminish with each successive auction. Each losing bidder (i.e., one who is not the high bidder on a license) has diminished hopes of eventually winning the license (since he has already been outbid) and therefore less incentive to bid in the next auction for the same license. Losing bidders in the 1st or 2nd auction can expect investors to withdraw after they see little prospect of eventually winning the license. For example, suppose that the bidding in the initial auction is vigorous for some licenses in a block, but because of little activity on other licenses in the block the aggregate reserve price is not met. If bidder 1 outbid bidder 2 on one of the active licenses in the initial auction, then in the re-auction it is doubtful whether bidder 2 will bid on this license since he was outbid previously.

This can be catastrophic for the government’s revenue – the eventual winner of a license need not pay more than the valuation of the 2nd highest bidder, but if there is no other bidder, then the government obtains only the reserve price. Seeing this, the high bidder for a license has no motive to raise his bid to help meet the aggregate reserve price for the block in the 1st and 2nd auctions. Thus the bids in all three auctions can end up much lower than if the auction started with a lower reserve price that all would expect to be exceeded.

We recognize that the Commission’s motive in choosing this auction design is to “test the market” to see whether the stringent performance requirements for the 1st auction’s licenses will nevertheless command prices comparable to the AWS auction, and if not, to re-auction with weaker requirements (and the same reserve prices) in the 2nd attempt. Our view, however, is that this test will likely fail, not because the conditions do not serve the public interest, but because the auction mechanics and do-over provision set up a test that most parties *want* to fail. The aggregate reserve prices are likely not to be met precisely

because the bidders anticipate the 2nd and 3rd auctions. The consequence would be a delayed and inefficient allocation of licenses with diluted performance requirements, delayed and reduced revenue for the government due to weakened competition, and overall a reduction in benefits for the public.

The Commission's Order offered no justification for applying reserve prices to the aggregate over all licenses in a block, nor apparently any awareness of the free-rider problem it engenders. Reliance on a re-auction was motivated by a "let the market decide" rationale because the Commission was uncertain about the effects of the licenses' performance requirements (geographical buildouts, and open platforms) even though these were judged to be in the public interest.² Unfortunately, this reliance on a re-auction can adversely affect the outcome of the initial auction, even to the extent of causing it to fail as bidders wait for the "real" auction that is the re-auction of all those blocks failing to exceed their aggregate reserve prices.

1.3. Strategic behavior in the two auctions

In this subsection we remark on how the auction design allows various strategies that could undermine the initial auction.

We mentioned above a bidder's motive to "wait and see" if other bidders will drive the aggregate of a block's bids up to the reserve price for that block – this is the free-rider problem. The activity rule will of course encourage bidders to find ways to "wait and see" that maintain their eligibility, and the most likely of these will be an excessive proliferation of "parking" bids. Also prominent will be cautious bidding to see if failure of the C block to meet its reserve price will open a new array of C1 and C2 licenses without open platform requirements, with smaller bandwidth, and in the C1 block, licenses offered in each of the smaller 176 EAs rather than the larger 8 REAGs. All of these strategies will of course require a bidder to proceed on the basis of several layers of business plans – Plans A, B, C, etc.

² In the 700 MHz Order (¶ 313), the Commission stated regarding the C block that:

The treatment of these licenses under such a reauction scenario, however, reflects our determination that the cost of the open platform requirements to wireless service providers – evidenced by the magnitude of the devalued bids – would reveal a significant problem with the requirements, such as a greater negative impact on network operations than we are predicting. As such, our assessment of the net public interest benefit of imposing these requirements (*i.e.*, the benefit of fostering the development of innovative devices and applications vs. the potential negative effects on network operations) changes. We believe that these circumstances, (*i.e.*, the failure of the auction results for conditioned C Block licenses to satisfy the C Block-specific reserve price) are unlikely to occur. But if they do, they provide sufficient evidence to conclude that we have weighed the public interest balance incorrectly, and that the cost of the open platform restrictions was too high – not because the auction would have failed to generate enough Federal revenue, but because the low level of bidding would indicate inherent problems with operating a wireless system under this type of open platform regime.

Unfortunately, failure to meet the C block reserve price could be caused by providing a re-auction with weakened service rules for all re-auctioned blocks. If offered the option of waiting for similar licenses with weaker service rules then most bidders would prefer to wait, thus obviating the initial judgment of the Commission that the stricter service rules are in the public interest, quite apart (as the law requires) from revenue considerations.

Our deepest concern, however, is that some bidders will employ strategies intended directly to ensure that a re-auction is necessary. Particularly vulnerable are the C and D Blocks because they provide the best chances for new entrants to compete nationally with the major wireless carriers. Fracturing the C1 block licenses into separate EAs (with no assurance presently that package bidding will be allowed) and eliminating their open platform requirements, and ensuring the Commission's reconsideration of the public-private partnership for the D block license, could help the dominant incumbents deter entry of nationwide competitors. Thus it is possible that the major incumbents will bid on the C and D Blocks in the initial auction only if the entrants are able to bid enough to meet the reserve prices for these blocks, even though these incumbents' valuations of the blocks with the restrictions exceed the reserve prices.

Even if entrants meet the reserve prices for C and D, incumbents will want to force a re-auction for at least one block to delay license awards for the C and D Blocks and jeopardize the business plans and financing of the entrants. Thus, one can expect filings and litigation (about the currently ill-defined specifications of the alternative licenses, provisions for entry of new bidders, etc.) that could delay the re-auction for many months.

An implication of the previous paragraph is that the success of the initial auction may hinge on the activity rule to keep the major incumbents actively involved in the bidding. But the activity rule was initially designed for the much more straightforward PCS auctions, not an auction with a built-in provision for re-auctions with changed service rules. There is little assurance that the activity rule can get incumbents to reveal their true willingness-to-pay for the licenses offered in the first of two auctions, the second of which they prefer due to less stringent performance obligations. Indeed, once it is clear that without their bids the re-auction will ensue, the major incumbents may prefer to drop out of the bidding.

1.4. The proposed reserve prices are arbitrarily high

The threat that the initial auction will fail is amplified by the magnitude of the proposed reserve prices, which are based on market prices in the AWS auction. This reserve policy is contrary to the theory of optimal reserve prices, which finds that in auctions of items with substantial value components that are common across bidders it is best to use low reserve prices; i.e., ones no higher than the seller's (in this case the public's) opportunity cost of alternative uses or deferring sale – which in this case means the revenue from a much delayed 3rd auction, net of the loss to consumers of delayed service and delayed competition that would lower retail prices. This policy is also contrary to the established and successful FCC practice of using much lower reserve prices in previous auctions.

The Commission's Second Report and Order sets out block-by-block aggregate reserve prices for the five blocks to be auctioned.³ Our understanding is that the aggregate

³ 700 MHz Notice, ¶¶7, 51.

reserve price for each block is intended to ensure that the Treasury “recover[s] an appropriate portion of the value of the public spectrum resource....”⁴ It appears that the Commission is trying to define “an appropriate portion” as the market price using the results from the AWS auction completed last year. There is no established theory or practice that suggests that using an estimate of the sale price as the reserve price is the best way to obtain the value of the resource from competitive bidding in an auction. A take-it-or-leave offer might be optimal in a bargaining situation, but the purpose of an auction is to elicit from bidders their willingness to pay for licenses because the seller does not know and cannot know their actual valuations. The proposed policy amounts to a “take it or re-bid in the re-auction” with weaker performance requirements, which hardly amounts to a credible strategy by the seller. Further, it is inexplicable that the Bureau offers no explicit calculation of the costs to the licensees of the geographical buildout requirements, which require many more installations and thus are much more expensive.

As the Commission acknowledges and the law requires, the FCC’s goal should be social welfare maximization, not revenue maximization in the auction. Essentially a reserve price should ensure that the spectrum is sold, but not sold for an unreasonably low price. Traditionally, the FCC has used modest reserve prices or small minimum opening bids to satisfy this goal. The AWS auction had a reserve price, but that reserve was tied directly to an opportunity cost – the cost of relocating incumbent users. In this case, the reserve price is not tied to an opportunity cost such as, for example, the cost of funding the DTV transition. As a result, the reserve prices in this auction are not set to measure the opportunity cost and may, as we argued above, create perverse incentives for bidders to hold back in their bidding.

1.4.1. High reserve prices are contrary to established auction theory

In a single-unit common-value auction, a reserve price might be beneficial (to increase revenues) if there is a large gap between the known valuation of an asset by the bidder with the highest valuation and the bidder with the second highest known valuation. In this way, a reserve price might increase the amount that the seller receives. However, to make the reserve price have an effect, the seller must set the reserve price higher than the price known to be willing to be paid by the second-highest bidder.

If the reserve price is higher than the price willing to be paid by the second-highest bidder, then the auction will have only a single bidder. Any other bidder would not participate because it would know that it could not win the auction with a profit. So, the highest-value player wins the auction at the reserve price.

However, if the highest-value bidder knows that there will be a subsequent re-auction with a lower reserve price or weaker service conditions that enhance the value of the license, then that will induce the bidder not to raise her own bid to satisfy the reserve price but instead to wait for the re-auction.

⁴ 700 MHz Notice, ¶ 51.

With multiple licenses forming a block, a bidder for a portion of the block (e.g. a bidder interested in a single EA) might bid, but each high bidder would still have the same incentive to win at the re-auction for a lower price or lessened restrictions. In addition, each bidder has an incentive to hold back on raising her own price to make the block price satisfy the reserve in the hopes that other bidders will raise their bids. The incentive to hold back is mitigated somewhat by the bidding and activity rules, but by no means completely. For example, once it is clear that the reserve price will not be met without “volunteers” raising their bids, all high bidders can stop bidding and others can relinquish their eligibility since all that matters now is the re-auction.

As we argued before, an especially perverse consequence of the re-auction of a block is that losing bidders in the initial auction have little incentive to bid in the re-auction, since they know already that they were outbid initially. But without the second-highest bidder present in the re-auction, the one who bid highest in the initial auction might now obtain the license for a lower price and with less stringent performance requirements, if the reserve price is met in the 2nd auction – or even better, wait for the 3rd auction of the block and obtain the license for an even lower price than offered in the initial auction. Indeed, failure to meet the aggregate reserve price in the first auction will be a strong predictor that the same reserve price will not be met in the re-auction since much the same forces are at work.

We have warned in our previous filings: both auction theory and practice tell us that if it is clear before the (re-)auction who the winners will be, then the auction attracts no (or virtually no) competition and ends in embarrassingly low revenues. The Commission has wisely introduced the anonymity restrictions to increase the chances of new entrants to succeed in the initial auction and as a result enhancing competition in the initial auction. But should the re-auction be needed, these efforts will be wasted and the prospect of that invites bidders to withhold their bids.

In summary, having such high reserve prices may frustrate the Commission’s objectives to have the spectrum used efficiently and quickly. In fact, auction literature about common value auctions shows that the optimal reserve price should be no more than the opportunity cost of re-offering the license later.⁵

⁵ See Dan Levin and James L. Smith, “Optimal Reservation Prices in Auctions,” *The Economic Journal*, Vol. 106, No. 438 (Sep., 1996), pp. 1271-1283. The abstract: “The authors relax the IPV [independent private values] assumption; characterize optimal reservation prices in a richer class of auctions; and show that, when information is correlated, the seller’s optimal reservation price converges to his true value, often monotonically and rapidly, as the number of bidders grows.” This conclusion is strengthened further when the seller’s objective is social efficiency. Other articles obtain different conclusions because they rely on the assumption of independent private values – which is far from true in the spectrum auctions – and assume that the objective is revenue maximization. Several of these are the following:

Avery, Christopher and Terrance Hendershott (1998), “Bundling and Optimal Auctions of Multiple Goods,” Working Paper, Harvard University.

Bulow, Jeremy and John Roberts (1989), “The Simple Economics of Optimal Auctions,” *Journal of Political Economy*, 97, 1060-1090.

Maskin, Eric and John Riley (1984), “Optimal Auctions with Risk Averse Buyers,” *Econometrica*, 52, 1473-1518.

1.4.2. The use of AWS auction revenues to calculate reserve prices is arbitrary and without precedent

Even if one thinks, contrary to theory and practice, that the reserve price should be set equal to expected revenue, the comparison to the AWS auction for determining expected revenue and hence reserve prices is arbitrary and unprecedented. While we are not offering an opinion on the valuation of the 700 MHz spectrum and we stress that the optimal reserve prices should be set at a small fraction of the expected revenues, there are at least three reasons why the revenues in Auction 73 may differ from the AWS auction revenues. First, as discussed above, changed macroeconomic factors and credit market conditions will have an effect on the bidding in the auction.⁶ Second, there are important new conditions imposed on all licenses that are being auctioned that will require licensees to incur much greater buildout costs. Third, the 700 MHz spectrum has different propagation characteristics that make the licenses more suitable for low population density areas.

The way that the Notice bases the reserve prices on the AWS prices provides little basis for a reasonable comparison with the AWS band. The Notice simply assumes that various different factors will offset, or be worth specific amounts. For example, the buildout requirements on the Lower A, B and E Blocks are substantially more stringent than the AWS buildout requirements, and hence will require much greater expenditure. Because these factors lead to higher upfront construction costs, the willingness to pay for the license, also an upfront cost, should be lower by a similar amount.

In addition, the Notice has no discount at all for the unpaired spectrum in the Lower E block. While there are technologies such as TDD that can operate in unpaired spectrum, the E block has less spectrum and does not have the potential to be paired, thus the options for its use are lower and it should sell at a discount to paired spectrum.

Furthermore, the high power, high tower “option” in the Lower 700 MHz – and its concomitant interference concerns – is unique to this auction and represents a significant departure from the more traditional AWS power output requirements. It is difficult to know in advance how these unique rules will affect bidder valuation relative to AWS prices. The imposition of reserve prices arbitrarily keyed to prior auctions, with different service rules, will only impede the revenue- and social welfare-maximizing price discovery process.

Myerson, Roger B. (1981), “Optimal Auction Design,” *Mathematics of Operations Research*, 6, 58-73.
Riley, John G. and William F. Samuelson (1981), “Optimal Auctions,” *American Economic Review*, 71, 381-392.

⁶ To the extent that recent events have increased borrowing costs for potential bidders, that would lead in turn to a lower willingness to pay for spectrum and a lower market clearing prices. Simply using the AWS prices from a time period with lower capital costs would lead to an overestimate of the current market value of the spectrum. For example, just this week, there has been a flurry of news stories about the effect of changed capital markets on private equity deals such as Home Depot.

Google asserted that it would be willing to bid \$4.6 billion for the C Block if the Commission adopted its four openness principles.⁷ However, the Commission did not adopt those principles and if Google decides not to bid, our earlier paper shows that the incumbents might be able to get this block at a very low price.⁸ The incumbents may benefit even more from the reserve price's effects of delaying entry and impairing competition so they do not have an incentive to bid aggressively on the C Block.

Finally, with respect to the D Block, the Notice arbitrarily states, "However, in light of the D Block license conditions essential to the public safety purpose of the public/private partnership, it might be appropriate to expect bidders to bid only about 75 percent to 80 percent of such an amount, or about \$1.33 billion."⁹ We can find no rationale whatsoever, for the 75 percent to 80 percent. It would be much better for the Bureau to estimate the extra costs of the buildout required to meet the extra requirements of the D Block license.

For the D Block, the buildout, service and reliability requirements are much greater than for the AWS licenses. The need to negotiate with Public Safety after the auction adds uncertainty and potential costs. Appendix B to this report provides a summary of the requirements that the D Block licensee must satisfy, in addition to negotiating an agreement with the Public Safety Broadband Licensee. Rather than taking what appears to be an arbitrary (and low) estimate of these costs, at a minimum, the Commission should try to estimate the costs and come up with a justifiable adjustment to the AWS valuation.¹⁰ For example, the Technical Appendix at Attachment C to the Frontline Comments suggests that the increased coverage requirements for the D Block will lead to an 82% increase in the number of cell sites compared to a 75% coverage requirement in the C Block (itself considerably more onerous than the AWS "substantial service" requirement). An 82% increase in site count, combined with increased per-site expenses due to hardening and redundancy of the network for public safety, and added negotiation risks to boot, is likely to lead to more than the FCC's assumed 20 to 25% discount.

In each of the blocks the FCC imposed conditions different than those on the AWS licenses: buildout, openness, and working with public safety. It is possible that the Commission is attempting to use reserve prices to serve as a proxy for the amount that it is willing to sacrifice in terms of auction revenue to get these terms. For example, the FCC might determine that the increased buildout on the A Block is worth \$50 million in terms of social value. Using the reserve prices (with indeterminate re-auction rules as discussed below) is a bad and indirect way to try to accomplish that goal. In fact, it is unlikely to create a true comparison of value. If putting a maximum price tag on the more onerous conditions were the Commission's goal in setting artificially high reserve prices, it would be better to allow bidders to submit bids for the licenses with different sets of

⁷ Letter from Eric Schmidt to Kevin Martin, July, 20, 2007.

⁸ We do note that Eric Schmidt said that Google "probably" would bid in the auction at a Progress and Freedom Foundation conference. However, it is not clear that Google will bid, nor is it clear that it will bid \$4.6 billion for the C Block in that auction.

⁹ 700 MHz Notice¶ 52.

¹⁰ We have taken a different approach to reserve price below (the one the FCC used last year with the AWS auction) so we do not do this calculation.

restrictions and then compare the totals from the two sets of bids and determine the winner based on the predetermined differential. There is a well developed theory and practice of such “menu auctions” in which bidders can express their willingness to pay for licenses with differing performance requirements.

In our opinion such an auction design would be better than the current one. It would allow the market to decide whether the relative credit offered by the FCC for agreeing to the additional conditions is worth paying the additional development costs. Also, it would dissolve the temptation (discussed above) of the players to restrict their bids to cause the re-auction. Unfortunately, it is our understanding that this is beyond the scope of the Wireless Bureau’s mandate to make such changes to the auction design, since it is directed by the Commission to use the re-auction with different service requirements and aggregate reserve prices. In Appendix C to this report, we sketch out another way for the FCC to embed its value for the restrictions it is placing on the licenses, but again, we think this proposal may be beyond the scope of the Public Notice so we leave it in an appendix. Therefore we focus our recommendations on the only other remaining part of the design that can solve this problem: the level of the reserve prices.

1.5. Recommendation: Reasonable reserve prices

We recommend that the Wireless Bureau set the reserve price, even if it is for an entire block as directed by the Commission, to take account of the ultimate affects of diminished competition in the 1st auction from a high reserve price, and the subsequent weakening of competition in the 2nd auction if the reserve price is not met in the 1st auction, as well as the dire effects of failing to meet the reserve price in the 2nd auction and thus necessitating a 3rd auction. We also recommend that the Bureau take account of the established theory about optimal reserve prices.

Our understanding is that the aggregate reserve price for each block is meant to ensure that the Treasury “recover[s] an appropriate portion of the value of the public spectrum resource....”¹¹ The Commission had the same instructions for its auction of the AWS spectrum, but in addition, it had a constraint that it had to pay for the relocation of incumbent government users.

In the AWS auction, the Commission set a reserve price of \$2.06 billion (the actual reserve price was half of this amount, but only half of the bids counted toward the reserve price). The Commission set the reserve price at \$2.06 billion because it had been determined that relocating the incumbent government users from the half of the spectrum they occupied would cost \$1.03 billion. Had the auction raised less than \$1.03 billion, it would have been a bad idea to relocate the government users because the spectrum was worth less to the new users than the cost of relocating the existing users.

¹¹ 700 MHz Notice, ¶ 51.

Under the opportunity cost principle, the reserve price should be thought of as a maximum of two measures: the cost to relocate incumbent users and the value of waiting and selling the spectrum at some later point in time.

In the AWS auction, the Commission used the relocation cost as its measure of opportunity costs, presumably implicitly assuming that the value of waiting to sell the spectrum was lower (in fact, delay probably has a negative social value). Ultimately, the AWS auction realized revenues substantially greater than the reserve price.

There are at least three possible ways to use the AWS reserves to guide the choice of reserves in the 700 MHz auction. First would be to use the same overall value of \$2.06 billion since the Commission was apparently equating the two blocks for value as well. Second would be to take the AWS reserve as a percentage of the AWS sales price, \$13.7 billion (15%) and apply it to the expected sales price of the 700 MHz auction (CBO has a high estimate of \$14 billion) to get a reserve price.¹² Third would be to use the opportunity cost of relocating the broadcasters based on the amount allocated for the final subsidy of set top boxes (\$1.5 billion if supplemental funds are allocated).¹³

The implied reserve prices from following these methods are listed below (using the ratios from the FCC’s initial proposed reserve prices that do not adjust for the unpaired nature of the E Block):

	<u>AWS Reserve</u>	<u>15% of estimated revenues</u>	<u>Set Top Box</u>
Block A	\$370M	\$378M	\$270M
Block B	\$282M	\$287M	\$205M
Block C	\$950M	\$969M	\$692M
Block D	\$273M	\$278M	\$198M
Block E	\$185M	\$189M	\$135M
Total	\$2.06 billion	\$2.10 billion	\$1.5 billion

Overall, it would be much better for the FCC to set more modest reserve prices as described in the table above. That will lead to vigorous bidding and market prices and would be consistent with the rules used by the FCC in the past.

In summary, setting the reserve prices so unprecedentedly high creates a real risk that the Auction 73 will end up as a major fiasco and embarrassment for the FCC. The reserve prices are much too high, create a threshold problem making the bidders withhold bids and look for “parking” strategies to withhold bidding until the reserve is met, and reward such delay strategies by a promise of less restrictive licenses in the re-auction. We are

¹² We argued above that these estimates should be revised to account for the changes in the cost of capital and macroeconomic conditions. The benefit of using reserve prices on the order of 10-20% of expected revenues is that even if the economic conditions change, it is highly likely that such reserve prices will not turn out to be prohibitively high.

¹³ Total relocation costs would include the cost already borne by granting the broadcasters the rights to use a second channel, but those costs are sunk and not impacted by the auctioning of the spectrum now.

afraid that each of these factors is potentially dangerous on its own and that the combination of the three of them can end in disaster.

Based on that discussion and given the limited Bureau's mandate, we recommend:

Recommendations:

- 1. In line with the past practice, set the reserve prices, at most, at \$378M for Block A, \$287M for Block B, \$969M for Block C, \$278M for Block D and \$189M for Block E. These more reasonable reserve prices should apply to both the initial and the contingent re-auction.**
- 2. To avoid delays in the deployment of the Public Safety Network, base the reduction of the D Block reserve on a realistic estimate of costs of the stringent public safety requirements rather than the arbitrary 22% discount.**
- 3. In estimating the value of the E Block take into account the restricted usability of the unpaired spectrum.**

2. Provisions for re-auction

In this section we further comment on the provisions in section "V. CONTINGENT SUBSEQUENT AUCTION" (DA 07-3415, paragraphs 94-103) of the Bureau's request for comments. Since we already discussed in the previous section some of the negative consequences of the re-auction provisions for revenue and timely and efficient allocation of the licenses, here we focus only on the major uncertainties that remain about the organization of the contingent re-auction. If unresolved before the auction, this uncertainty will have a further negative impact on bidding.

2.1. Need for clear rules for the re-auction

2.1.1. Eligibility

We are concerned that although the Commission directed "the Wireless Bureau to propose and adopt procedures that give applicants an opportunity to obtain bidding eligibility specifically for the alternative licenses, in addition to the initial licenses" there seem to be no specifics in the Bureau's proposed rules for new bidders to enter the re-auction in a way that is consistent with the primary directive that the Wireless Bureau "establish procedures that limit qualified bidders in a subsequent auction of alternative licenses to those bidders that qualify to bid in the upcoming auction offering 700 MHz Band licenses in all of these blocks." We ask that the Bureau clarify substantially the rules for determining exactly who are the qualified bidders in the re-auction. For example, is qualification determined by the initial short-form application, by initial upfront payments, or before the re-auction by some repetition of these procedures with allowance for altered eligibility now that the performance requirements or band definitions are altered? Must a bidder solely for the alternative licenses offered in the re-auction file a short-form and make upfront payments before the initial auction?

2.1.2. Changes in license specifications

We are concerned that the re-auction will delay grant of licenses for all blocks, even those whose reserve prices were met in the initial auction. The Bureau supposes that a re-auction can begin within two months of the close of the initial auction, but we see risks that complaints or legal actions could delay the beginning of the re-auction for many months, especially since the Commission leaves until later what some of the altered specifications will be. To avoid further costly delays, we argue that the Commission should specify before the initial auction the changes to license specifications it will make in the re-auction.

2.1.3. Auction rules for the re-auction

The Bureau also leaves in doubt whether in a re-auction there will be package bidding for C1 and C2 (and for a package of C1 and C2). We specifically urge the Bureau to allow package bidding in the re-auction for three levels of block C so that it would be possible to bid for a package of C1 and C2, as well as for packages of C1 and C2 separately. Remarkably, the D Block license would be re-auctioned under exactly the same conditions as failed to meet the reserve price in the initial auction just a few months before, except for the vague “possibility of re-evaluating all or some of the applicable license conditions” (which is an open invitation for filings requiring further delays).

We believe that these aspects will cast a cloud of uncertainty over the initial auction until the aggregate reserve prices are exceeded for every block, and indeed this uncertainty about the final outcome of the 700 MHz auctions could persist well past the close of the initial auction. Business plans and bidding strategies will necessarily be affected by uncertainties about the specifications of the licenses that will ultimately be granted by the FCC. For example, a bidder might win local licenses in the A, B, or E Blocks in the initial auction, yet not know whether a re-auction will enable bidding on additional local/regional licenses in the C1 and C2 Blocks. We urge the Bureau and the Commission to remove as much uncertainty as possible by clarifying beforehand the specifications of the licenses and their performance requirements that would be offered in the re-auction.

3. Ensure flexibility to bid on substitutable licenses

In this section we comment on a problem with the activity rule caused by the disparity between the size of the license for the D Block and the size of a package bid for the C Block’s REAGs 1-8. To obtain maximum efficiency of the auction outcome, the activity rule should allow a bidder to alternate bids for licenses that are substitutes, without sacrificing eligibility. In the re-auction it will be possible for a bidder to alternate among license D and packages of C1 and C2, which in many ways are substitutes (albeit with differing service requirements). But this will not be possible in the initial auction, as proposed by the Bureau, because a package bid for the C Block includes more than twice the MHz as the license for the D Block.

In the following, we explain how this deficiency can be remedied in the initial auction without splitting the C Block as it will be should there be a re-auction:

Count the PBSL's MHz in determining the MHz-pops for the license on the D Block for the initial auction. This would make the D license comparable in MHz-pops to the C package, reflecting the D Block licensee's ability to make use of the PSBL spectrum.

3.1. Background

The Simultaneous Multiple Round (SMR) auction design is used worldwide to allocate goods. An important property of the SMR procedure is that it promotes efficient allocation of the items. In particular, an SMR auction allows discovery of efficient relative prices of the auctioned items. It does this by allowing bidders to choose at each stage what to bid on depending what are the relative prices at that time. At the end of the auction, this achieves efficient allocation of the goods at the final prices. In contrast, in a sequential auction bidders must decide on their bids for the first item before they know the prices of the subsequent items, which makes it difficult to design good bidding strategies and makes it likely that the final allocation will be inefficient.

The SMR auction has an ideal equilibrium in which each player bids sincerely by increasing his bids on the goods that he values most, net of current prices. This leads to efficient allocation of the goods via dynamic simultaneous price discovery. In an SMR with no activity rules, however, a player can have incentives to use other strategies, for example a "wait and see" strategy in which the player does not bid until the relative prices are set by others and only then decides which licenses to acquire. Unfortunately, if several bidders employ such a strategy, the auction proceeds slowly and price discovery is impaired.

To exclude the "wait and see" strategy, an SMR auction imposes an activity rule that forces interested bidders to be active throughout the auction – and in particular to be active early if the bidder wants to remain eligible to bid later in the auction. Activity rules must strike a balance between promoting activity and efficiency. Efficiency could be compromised if at an early stage a bidder drops out of bidding on item A, and then at some later stage he wants to bid on A again, but cannot because he is no longer eligible to bid on A due to the activity rule.

For example, suppose that two goods A and B are auctioned and a bidder values A by \$100 more than B. Suppose that he starts bidding for A, but at some point the current highest bid on A is more than \$100 more than the highest bid on B. This bidder wants then to switch to bidding on B because its net value is now greater than the value of A net of the current price. Further, if the difference between the two highest bids on A and B later drops below \$100, the bidder wants to resume bidding on A. If he can do so, as the original design of SMR assumes, then at the end of the auction he will acquire the good that is more valuable to him given the final prices. However, if the auction rules are such that, after moving from bidding on A to B, he cannot later resume bidding on A, then at the end of the auction he may regret that he cannot now out-bid the highest bid on A. The end result is an inefficient allocation and often reduced revenue for the seller. The problem is compounded further when all the players alter their bidding strategies to avoid losing eligibility that they might later regret.

If the auction offers relatively similar objects (unlike Auction 73) then the activity rules proposed by the Wireless Bureau for the upcoming auction performs well; e.g., if the FCC is selling 100 licenses that each count equally for eligibility then the activity rule prevents bidders only from having low demand at low prices and high demand at high prices, which is not a binding constraint when the goods are substitutes.¹⁴

However, when auctioning different licenses that count much differently toward activity (as in Auction 73), the standard activity rule performs poorly. Specifically, even if a bidder is interested in acquiring any package of the licenses if the prices are right, the activity rule prevents movement of bidding activity in both directions between smaller and larger licenses (for example, with the same geographical coverage but with different bandwidth).

Disparities among the licenses' sizes have a further consequence that results from the bidders' strategies of sustaining eligibility by bidding on larger licenses. Typically the prices for the larger licenses are settled first and the prices for the smaller ones later. This occurred in the recent AWS auction where the REAG licenses sold for much more than licenses carved into smaller geographic areas that should have sold for the same price in the aggregate had there been no auction design problems. The induced sequential auction can cause ex-post regret, an inefficient allocation, and reduced revenue. Thus much of the benefit of the SMR auction design is lost, all because of an activity rule that looks innocent but in fact is poorly adapted to handling disparities in the sizes of licenses.

3.2. Recommendations

These problems are especially important in the 700 MHz auction because the band plan and the additional restrictions on the C and D Blocks as well as the stringent build-out and service requirements on the A, B, and E Blocks make the auctioned licenses very different in terms of value and they also count very differently for activity.

There are two ways to reduce these problems. The first is to create licenses that are as close substitutes as possible. The second is to adjust the activity rule to take into account the differences across licenses to allow for bi-directional movements of bidding activity.

In the context of this Public Notice without changing the band plan, we suggest adjusting the activity rule in the first phase of the auction to enable easier bidding for different blocks. In particular, if the C Block is not split, then to promote efficiency adjust the

¹⁴ It can have drawbacks for bidders that consider licenses to be complements and are afraid to bid early because of the exposure risk. This is a known problem, but relaxing the activity rules to resolve that would mean allowing more of the "wait and see" strategies. In the case of exposure risk, the "wait and see" strategy is not necessarily bad for the efficiency of the auction outcome, but the problem is that if we allow this strategy for players to fight the exposure risk, we automatically allow it for other bidders with less benign motives. Two ways to strike a balance are to have a less strict activity rule early in the auction (and a stricter one later), and/or to allow package bids. Although the proposed auction rules employ both, they are not sufficient in the way they are implemented because they do not take into account the differences in licenses that we discuss.

MHz-pops on the D Block to include the MHz from the PBSL license, thus making it count as 22 MHz, the same as the C package of the REAGs 1-8. Then a bidder would be able to substitute between the D Block and the package for the C Block REAGs 1-8 depending on their relative prices.

A relevant consideration is that allowing for the bi-directional movement of activity makes it easier for a bidder to “park” their eligibility, which can hinder price discovery, though usually to a minor extent. We think that parking will not be a large issue in the 700 MHz auction, especially if our recommendations below regarding opening bids and bid increments are adopted.

Recommendation:

Ensure efficient substitution between the C and D Blocks by counting the PBSL MHz in determining the MHz-pops for the D Block license.

4. Meaningful anonymity is important to new entrants

In this section of our comments we urge the Bureau to clarify further the provisions for anonymous bidding as well as their relation to the anti-collusion rules.

In Section IV.A.1 of the Notice, the Wireless Bureau asks for comment on the details regarding the proposal for implementing anonymous bidding. We agree with the Bureau that to achieve the goal of reducing predatory and collusive strategies it is important to sustain anonymity not only during the auction but prior to the auction regarding eligibility. Such anonymity promotes entry into the auction since new entrants do need to be afraid of being treated differently from other bidders in the auction.

Therefore, we think that most of the proposed anonymity rules, in particular the far reach of the anonymity rules within every auction, serve very well the intended purpose. However, to prevent any predatory strategies or signaling, we suggest that the FCC should clarify that it intends the anonymity rule to apply not only to the FCC but also to the bidders. That is, bidders should not be allowed to discuss or make public announcements regarding their bids or bidding strategy. In essence, the FCC should be clear that the combination of the anonymity provisions and the collusion rules mean that bidders cannot communicate privately or publicly about bids, bidding strategy or eligibility.

Of course, some communication with potential bidding partners or investors must be allowed. Therefore, we suggest that in addition to the proposed rules the FCC specifies the following:

- a) Starting on the date of the short form, no bidder can publicly announce the amount of the bidder’s upfront payment and bidding eligibility. Also, a bidder cannot also publicly announce its bidding strategy, in particular, which licenses it has or is going to bid on or the bidding amounts. Bidders can discuss this

information subject to confidentiality clauses with potential or current partners and investors (subject to the Commission's collusion rules).

b) During the auction the bidders are not allowed to publicly announce any information about their past or future bidding in Auction 73.

c) The FCC should emphasize that its rules do not supersede the antitrust laws and that any personnel, consultants and attorneys should take caution not to reveal (intentionally or inadvertently) any information that can impact the auction. In general, the antitrust laws focus on firms with market power and any firm with market power should be extremely cautious about any communication that might impair the auction or participation in the auction by new entrants.

Even the slightest indication of interest toward or against a specific license prior to the auction can spoil the benefits of anonymity and have major anti-competitive effects. Bidders should be made aware that such behavior will be deemed anti-competitive and therefore may have serious legal consequences.

It is our understanding that these points are not additions to the anonymity rules proposed by the Bureau, but rather clarifications of the intended policy needed to remove any remaining uncertainty regarding the rules.

4.1. Anonymity should be voluntary between the first auction and the re-auction

Maintaining anonymity after the end of the first auction through the end of the subsequent contingent auction creates more serious tradeoffs. First of all, should the contingent auction be needed, we think that it is plausible (and perhaps likely) that there could be a considerable delay between the first and the second auction.

Maintaining secrecy for three months or more past the close of the auction (especially if the money is due right after the close of the first auction) will be difficult and will be especially harmful to new entrants and smaller businesses that may need to access outside money for their business plans. Such problems could lead to strategic actions by incumbents to delay intentionally the start and subsequent close of the re-auction.

On the other hand the benefits of keeping secret the identities of the winners in the first auction are limited. Once the final prices are set, the bidders are safe from predatory strategies. Also, as long as the eligibility, upfront payments and the identities of all non-winning past bids are kept secret, that would still ensure secrecy about the bidding plans for the second auction: bidders would not learn the individual strategies of their competitors nor they would know their eligibilities (planned or remaining).

Therefore, we propose a small change in the proposed anonymity rules: if the contingent re-auction is needed, winners of licenses in the first auction can ask the FCC to reveal publicly their identity. As a result, if a bidder is afraid that such release of information will be harmful, it can opt to keep the information private. However, if a bidder needs to have the information released to facilitate discussions with investors and to start

developing the network, it can opt to have the information revealed on a license by license basis.

Even though there is a risk that some bidders can use such information release to intimidate other bidders in the subsequent auction, such strategy cannot be focused on any firm in particular and hence cannot create much more harm than any other anonymous aggressive behavior.

Recommendations:

- 1. Clarify that anonymity rules interact with the collusion rules to prevent discussion of bids, eligibility and bidding strategy.**
- 2. Make the anonymity provisions voluntary between the first auction and the re-auction and begin the license grant process without waiting for the conclusion of the re-auction.**
- 3. Clarify that any release of information affecting the auction is subject to antitrust enforcement if it adversely affects the auction or post-auction competition for service.**

5. Additional auction rules

5.1. Package bidding

The FCC has directed the Wireless Bureau to implement package bidding for the C Block unless it finds package bidding to be “impracticable.” The FCC’s package bidding proposal for the C Block should be easily implemented by bidders and by the FCC. Comments in this proceeding filed by Paul Milgrom and Karen Wrege and a subsequent report by Greg Rosston discussed how the FCC could implement a constrained package bidding system with a hierarchical package design.¹⁵ The FCC’s proposal follows the hierarchical design and has only three packages so that bidders will understand the results and be able to derive bidding strategies.

The FCC should not abandon this package bidding design, because doing so would increase the exposure risk that new entrants would face in attempting to put together a competitive nationwide business. As Bulow, Levin, Milgrom and Salant said in their report filed with Alltel’s comments, the incumbent providers do not face an exposure risk but new entrants do.¹⁶ Package bidding levels the playing field and removing it would seriously damage the prospects for new entry.

¹⁵ Comments and Reply Comments of Paul Milgrom and Karen Wrege in WT Docket 06-150. Rosston, Gregory, “Implementing Package Bidding in the 700 MHz Band to Improve Consumer Welfare,” submitted in WT Docket 06-150, February 5, 2007.

¹⁶ Comments of Jeremy Bulow, Jonathan Levin, Paul Milgrom and David Salant in WT Docket 06-150, July 9, 2007.

5.2. Bid increments and minimum opening bids

The FCC has proposed to move from its standard 9 bid increment “click box” bidding to allow only one or three bid increments. As discussed above, the purpose of a simultaneous multiple round auction is to allow price discovery, and one of the most important aspects is to be able to determine relative prices. Limiting the bid increments limits the ability of relative prices to adjust. While multiple increment (“jump”) bidding has been used sparingly, it can serve a useful purpose in adjusting relative prices.

For the D Block, we see no purpose served by having the minimum opening bid be lower than the reserve price. (As we have discussed above, the reserve price should be reduced). Regardless of the level of the reserve price, accepting bids below the reserve price conveys no information to the auction. It can also impair price discovery on other licenses by providing a place for a bidder to “park” its eligibility risk-free.

A valuable addition to the bid increments would allow a bidder at any time to place a bid for the C Block package of REAGs 1-8 equal to the reserve price for the entire C Block. This would ensure that subsequent bidding on the C Block would be sincere since other bidders would know that the C Block had reached the reserve price. Like the D Block, a package bid on the C Block below the reserve price conveys no information and serves as a risk-free parking spot. If the C Block package covered all 12 REAGs, then the minimum opening bid for the package should equal the reserve price, just like the D Block. But, since the REAG 1-8 package is not the complete block, allowing a bidder to input a bid equal to the reserve price can help speed the auction and promote more sincere bidding on all licenses.

5.3. Dropped bids

The FCC should clarify what happens to a bid that is placed on one of the C Block REAGs when another bidder places a higher bid on the same REAG. If the second bidder later “drops” its bid, does the first bidder’s bid become part of the bids that are then used to compare against the package bid, or is it set at that level with the FCC as the “bidder?”

5.4. Payment clarifications

Finally, the FCC should clarify two questions as to payment:

- When are payments due by winners of the auction if there is a contingent re-auction?
- When do upfront payments get returned if there is a contingent re-auction?