

June 26, 2007

VIA ECFS

Chairman Kevin J. Martin  
Federal Communications Commission  
445 Twelfth Street, SW, TW-A325  
Washington, DC 20554

Re: Ex Parte Presentation  
Docket Nos. 06-150, 06-229, 03-264, 94-102, 98-96, 01-309

Dear Mr. Martin:

This letter is to supplement the discussions which representatives of United States Cellular Corporation ("USCC") including Leroy T. Carlson, Jr., Chairman of USCC, Joseph R. Hanley, Vice President–Technology, Telephone and Data Systems, Inc., Grant B. Spellmeyer, Director-External Affairs, USCC, Peter M. Connolly and the undersigned held with you and your legal advisor, Erika Olsen, on June 13, 2007 regarding the economic basis for our conclusions that the use of the constrained package-bidding will not enhance auction revenues as some have claimed.

Attached is a Statement prepared by Professor Robert J. Weber, Frederic E. Nemmers Distinguished Professor of Decision Sciences at the Kellogg School of Management, Northwestern University, which provides examples illustrating a real and unavoidable problem that package bidding tilts the playing field in favor of larger bidders, even in cases where smaller or regional bidders jointly assign the greatest value to the licenses offered. At the same time, it opens a substantial possibility that the tilt will lead to lower auction revenues than would be obtained through the well-tested SMR (without package bidding) procedure the FCC has successfully used for more than a decade.

Also attached are graphics depicting the revenues effects in each of the examples described in Professor Weber's Statement.

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This letter is submitted pursuant to Section 1.1206 of the Commission's ex parte rules, 47 C.F.R. §1.1206. In the event there are questions regarding this matter, please contact the undersigned.

Sincerely,

  
George Y. Wheeler

Attachement

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## STATEMENT OF PROFESSOR ROBERT WEBER

June 26, 2007

### **Revenue Reduction as a Result of Package Bidding**

**Introduction.** There are a number of problems inherent to (multiple-round) auctions which allow package bidding. Here, we focus on a single question: Can the use of package bidding reduce auction revenues, relative to what would be expected from simultaneous multiple-round (“SMR”) auctions without package bidding? This statement provides two simple examples to show that package bidding procedures can indeed lead to revenue loss. The examples are not intended to show that package bidding *must* reduce revenues. Rather, they serve to show that any argument favoring package bidding on a pure revenue basis (or, in the case of the second example, on an efficiency basis) must be questioned.

**Example 1: *A package bid can preclude competition from a smaller bidder.*** Imagine two bidders competing for two licenses. One (“large”) bidder values the pair of licenses at \$80, and assigns no value to possession of only one of the two (i.e., the large bidder has “national-coverage” aspirations). The other (“small”) bidder is willing to pay \$30 for either, but is limited to \$30 in capital (i.e., the small bidder realistically has only regional aspirations).

Under SMR (without package bidding), the small bidder could be expected to eventually push the price of each license to \$30 (by bidding in each round for the cheaper license, as long as its price is no more than \$30). This would force the large bidder to bid a bit over \$30 for each license in order to win both. The SMR auction would yield revenues of roughly \$60.

In contrast, package bidding gives the large bidder the opportunity to shut out the small bidder at a much lower price. Under package bidding, the first could win by bidding a bit over \$30 for the package of both licenses. Even by bidding aggressively (up to its maximum of \$30) on one of the licenses, the small bidder cannot top the package bid. In effect, package bidding allows the first bidder to “get (bid for) two for the price of one.” The package bid, for all practical purposes, counts as many simultaneous pairs of bids – (\$0, \$30), (\$1, \$29), ..., (\$30, \$0). There is no way for the small bidder to simultaneously beat all of these bids.

In consequence, the package bidding auction would yield revenues of only roughly \$30. That is, the SMR auction will likely yield twice the revenues of the package bidding auction.

In both the SMR and the package bidding design, the large bidder walks away with both licenses (and this *is* the economically-efficient outcome). However, the package-bidding design allows him to also walk away after paying only half of what he would have paid to the auctioneer under SMR.

**Example 2: Package bidding can reduce revenues due to the “threshold problem.”**

Consider a “large” bidder who values each of six licenses at \$40. He is willing to buy all six of these licenses at the auction. To keep this example as simple as possible, assume that this bidder’s valuations are purely additive, i.e., the bidder gains nothing from license complementarities, and therefore values the package of all six at \$240.

Six other “small” bidders each values a particular (and unique to that bidder) one of the licenses at \$52, and the others at \$0. *However, no one of these bidders knows the valuations of the other small bidders. Each thinks the others might value “their” licenses as much as it does, but also might assign lower values to their licenses.*

Under SMR, the licenses would likely go to the small bidders for a bit over \$40 each, or about \$240. This is, of course, the economically-efficient allocation.

A package bidding auction may yield lower revenue. Consider the end of a given round, at which point each small bidder is the high bidder for one of the six licenses at \$32. At this point, the total revenue from these six licenses is \$192.

The large bidder next bids  $6 \times \$35 = \$210$  for the package of these six licenses.

In the following round, assume that the minimum-bid-increment rule requires bids totaling  $6 \times \$38 = \$228$  to beat the package bid. In order to overcome the package bid, there is a “threshold burden” of  $\$228 - \$192 = \$36$  that the six bidders must share.

In the next round, two of the small bidders raise their bids to \$38. The other four small bidders move their bidding activity elsewhere (onto licenses other than these six). The package bid of \$210 remains high (since the 2 bids of \$38 and 4 previous bids of \$32 total only \$204, which does not come close to reaching the needed \$228).

What should the two small bid-raisers now do? For all they know, any of several possibilities may apply:

*Scenario 1.* The other four bidders were near their bid limits at \$32. The bid-raisers must each raise their bids to \$50 in order to – in conjunction with the resurrectable bids of \$32 – beat the package bid by the minimum-bid-increment amount ( $2 \times \$50 + 4 \times \$32 = \$228$ ).

*Scenario 2.* The other four bidders are willing to go as high as \$35 apiece – and will, if prices elsewhere rise too high. To help the others eventually to beat the package bid by the minimum-bid-increment amount, the bid-raisers must at some time raise their current \$38 bids to \$44 ( $2 \times \$44 + 4 \times \$35 = \$228$ ), and then wait (while somehow preserving eligibility).

*Scenario 3.* The other four bidders are actually willing to go to \$38 or higher apiece themselves – and will, if given time ( $6 \times \$38 = \$228$ ). The bid-raisers shouldn’t raise their bids on the package licenses any further.

The key issue here is that the bidders don't know one another's objectives, valuations, or capital constraints. The six licenses differ in demographic and geographic coverage, and in how they fit each bidder's business model.

In confronting the shared threshold problem, each small bidder must make a judgment of the "right" strategy for its bid based on its best *guess* about the other small bidders' valuations and bidding strategies.

If it were "right" for the bid-raisers to further raise their bids (Scenarios 1 or 2), then it would be "right" for one of the non-bid-raisers, even with a private valuation of \$52, to keep its bid at \$32: When the bid-raisers raise theirs, it will be less costly for the non-bid-raiser to then step in at a cheaper price for its piece of the package. But if this is the situation an initial bid-raiser must accept, then either initial bid-raiser would have been better off holding back, and not immediately raising its own \$32 bid!

On the other hand, if it were "right" for the bid-raisers to wait (based on a belief that Scenario 3 applies), then the package bidder would ultimately win the package at \$210 if in fact Scenarios 1 or 2 applied.

There is no single "right" thing to do! Therefore, even if all of the smaller bidders act rationally, there's a positive probability that the package bidder walks away with the package at \$210.

Compared to the SMR auction, package bidding may both yield lower revenue (\$240 under SMR versus \$210 under package bidding) and deprive the small bidders of licenses even though they value them jointly much more than the large bidder values the package (i.e., the auction outcome may be an inefficient allocation of the licenses).

None of the smaller players have to guess at what the others' valuations are under SMR (unlike under package bidding, where they share the inherent threshold burden and must gamble through their bidding decisions).

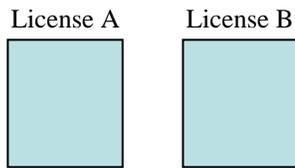
**A game-theoretic perspective.** Multiple-round package bidding presents smaller bidders with a type of "negotiation" problem, as they try – through their bids – to "agree" upon their individual shares of the joint threshold burden. One of the most striking results in information economics is that negotiation problems of this type *must* (at equilibrium, i.e., given rational behavior by the participants) at times yield inefficient outcomes.

Even in two-party negotiations over price, those in relatively "strong" positions (in the auction case, "strong" means "with not much to gain if the price to be paid rises further") must be willing to signal their strength by walking away from the bargaining table (rather than raising their current offer/bid). Their counterparts – in order to avoid being fooled by a non-serious "walker" – must at least sometimes not flinch first by calling the walkers back (that is, must refuse to raise their own bids). This is where the potential inefficiency – and loss of auction revenues – arises.

**Summary.** The first example is a bit extreme, and is offered only to provide the simplest of examples showing that package-bidding procedures can lead to revenue loss.

The second example illustrates a real and unavoidable problem – the “threshold problem” – which would assuredly be present in *any* of the proposed package-bidding schemes. Package bidding tilts the playing field in favor of larger bidders, even in cases where smaller or regional bidders jointly assign the greatest value to the licenses offered. At the same time, it opens a substantial possibility that the tilt will lead to lower auction revenues than would be obtained through the well-tested SMR (without package bidding) procedure the FCC has successfully used for more than a decade.

Example 1: Revenue shortfall because package bidding shuts out a smaller bidder.

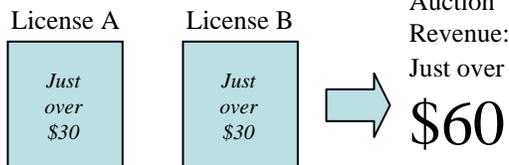


Budgets:

Bidder 1 :      Total = \$80

Bidder 2 :    \$30      or      \$30      Total = \$30

### SMR AUCTION

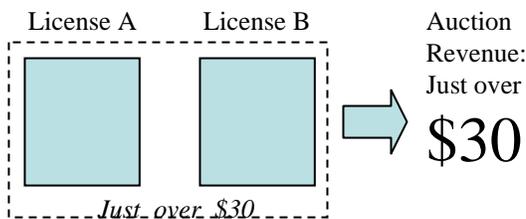


Bids:

Bidder 1 :    Bids just over \$30 on each individually and wins each for just over \$30

Bidder 2 :    Bids up to \$30 on one then stops and bids up to \$30 on the other

### PACKAGE BIDDING AUCTION



Bids:

Bidder 1 :    Bids just over \$30 on the package of both and wins both for just over \$30

Bidder 2 :    Bids up to \$30 on each individually but never overcomes the package bid

Example 2: Revenue shortfall because package bidding creates the threshold problem.

Licenses:	A	B	C	D	E	F
Budgets:						
Bidder 1 :	\$40	\$40	\$40	\$40	\$40	\$40
Bidder 2 :	\$52					
Bidder 3 :		\$52				
Bidder 4 :			\$52			
Bidder 5 :				\$52		
Bidder 6 :					\$52	
Bidder 7 :						\$52

**SMR AUCTION**

Each sells for just over \$40 →

Auction Revenue: Just over **\$240**

Bids:  
 Bidder 1 : Bids up to \$40 on each individually  
 Bidders 2-7 : Each bid just over \$40 on a license and win

**PACKAGE AUCTION**

**Round x**

Licenses:	A	B	C	D	E	F
Provisionally Winning Bids (PWBs):						
Bidder 1 :	-	-	-	-	-	-
Bidder 2 :	\$32					
Bidder 3 :		\$32				
Bidder 4 :			\$32			
Bidder 5 :				\$32		
Bidder 6 :					\$32	
Bidder 7 :						\$32
<b>Total PWBs:</b>	<b>\$192</b>					

**Round x+1**

Licenses:	A	B	C	D	E	F
PWBs:						
Bidder 1 :	--- package bid for A-F at \$210 ---					
Bidder 2 :						
Bidder 3 :						
Bidder 4 :						
Bidder 5 :						
Bidder 6 :						
Bidder 7 :						
<b>Total PWBs:</b>	<b>\$210</b>					

**Round x+2** assuming a bid increment of 10%, the minimum acceptable bid for the package will be \$228.

In order to beat the package bid, bidders 2 - 6 must increase the sum of the individual bids to at least \$228. But bidders do not know one another's objectives, valuations or capital constraints. There are many different ways this "threshold burden" could be shared in order to collectively bid \$228:

Scenario 1

4 bidders choose not to raise above \$32, leaving the other 2 bidders to try to make up the deficit. Each of them would be required to raise their bids to \$50.

\$32	\$32	\$32	\$32	\$50	\$50	⇒	\$228
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Scenario 2

4 bidders choose to bid up to \$35 but not higher, leaving the other 2 bidders to try to make up the deficit. Each of them would be required to raise their bids to \$44.

\$35	\$35	\$35	\$35	\$44	\$44	⇒	\$228
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Scenario 3

All of the bidders eventually decide to go \$38.

\$38	\$38	\$38	\$38	\$38	\$38	⇒	\$228
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There is a positive probability that the individual bidders will fail to successfully "coordinate and negotiate," letting the package bid win at **\$210**.