

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of
Auction of Licenses in the 747-762 and 777-792 MHz
Bands Scheduled for September 6, 2000

Public Notice on Recommended Decision (DA 00-1075)

**Comments of
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In Public Notice DA 00-1075, the Federal Communications Commission seeks further comment on modifying the simultaneous multiple round auction design to allow combinatorial (package) bidding. In particular, under II.A (Auction Design and Procedures; Simultaneously Multiple Round with Package Bidding), the question is asked as to whether the Commission should allow all possible packages composed of the twelve individual licenses.

We believe that the answer is yes, the Commission should indeed allow all possible packages. We agree with the Commission when it states that “combinatorial bidding procedures could have significant benefits for the auction of the licenses in these bands”. The Commission clearly has an incentive to structure its auctions to allow bidders to realize their synergies on combinations of individual licenses in such a way that will be both fair to bidders and practical to implement. It is our belief that the disallowal of combinatorial bids in previous auctions may have been a consequence of persuasive arguments that the only choice was between completely disallowing, or permitting all possible, combinatorial bids, and the latter option, in the worst-case scenario would have been computationally intractable, based on the then-current state-of-the-art knowledge of combinatorial auctions.

However, a combinatorial auction procedure now exists that incorporates synergies by permitting all combinatorial bids [1]. In addition, this auction procedure is transparent to the bidders. The inherent computational complexity of combinatorial bidding cannot be eliminated. However, in this auction procedure the computational burden of evaluating synergies rests with the bidders claiming those synergies, while the auctioneer simply checks that a bid is valid.

This combinatorial auction procedure, called PAUSE (Progressive Adaptive User Selection Environment), was originally developed for use in assigning Carrier of Last Resort responsibility for Universal Service, and this is the context in which it is described in [1]. However, as pointed out in Section 2 (page 590) of that paper, this auction structure can, with minor modifications, be adapted for use as a combinatorial spectrum auction. This is explicitly done in [2], which includes an example illustrating how the procedure could be used for the assignment of radio spectrum licenses.

References

- [1] F. Kelly and R. Steinberg, “A Combinatorial Auction with Multiple Winners for Universal Service”, *Management Science* 46, 2 (April 2000), 586-596.
- [2] R. Steinberg, “A General Combinatorial Auction Procedure”, University of Cambridge, June 2000. Available at: <http://combin.fcc.gov/> .