



# Principles for Choosing 700 MHz Block License Sizes

March 6, 2007

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This analysis was prepared on behalf of SpectrumCo.

## INTRODUCTION

On January 8, 2007, SpectrumCo submitted for the Commission's review an analysis demonstrating that the public interest will best be served by amending the proposed band plan for the 700 MHz auction to create a mix of license areas that includes REAGs, EAs, and CMAs rather than just large EAG blocks.<sup>1</sup> The success of the recent AWS auction and the overwhelming majority of comments in the 700 MHz proceeding support this view. The Commission must still determine the "right" mix of license blocks, however, despite much uncertainty about demand and how the spectrum may ultimately be used. The discussion herein provides additional support for the proposition that SpectrumCo's proposed license mix, which includes one REAG block, four EA blocks, and one CMA block, properly balances the various factors the Commission must consider when making its decision.

The record in the 700 MHz band proceeding indicates a wide range of potential uses for this spectrum, which reflects the flexible rules for permitted uses of the band and the fact that companies have not disclosed (or may not have determined) their business plans. Given the absence of specific information as to how the spectrum will be used, the FCC should maximize the options for potential bidders and ensure that the band plan it adopts provides sufficient flexibility for the widest range of bidders—both incumbents and new entrants. The FCC adopted this approach for the successful AWS auction, modifying the band plan in advance of the auction, despite the absence of perfect information about potential bidders or users of the spectrum, in order to achieve "a reasonable balance of the predicted spectrum needs reflected [in] the record."<sup>2</sup>

It is axiomatic that a well-designed auction will put licensed spectrum in the hands of those who will make the most valuable use of it. Some parties contend that an initial configuration of large licenses is not detrimental because of the availability of secondary markets to disaggregate spectrum.<sup>3</sup> However, auctioning smaller spectrum blocks avoids the transaction costs associated with secondary markets. In fact, it is these costs which make the exercise of determining the "right" mix of blocks so important.

The recently completed AWS auction encompassed a mix of REAG, EA and CMA license areas in 10 MHz and 20 MHz block sizes. The recent use of these license geographies makes them the natural boundaries for license configurations in the upcoming 700 MHz band auction. After reviewing the experience with the AWS auction, three guiding principles emerge:

- EA licenses are best suited to meet the demand for medium and large geographic area coverage, with added efficiencies for each additional block licensed on an EA basis.

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<sup>1</sup> Letter from Michele C. Farquhar, Attorney for SpectrumCo, LLC, to Marlene H. Dortch, Esq., Secretary, Federal Communications Commission, WT Docket No. 06-150 (filed Jan. 8, 2007).

<sup>2</sup> Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands, *Order on Reconsideration*, 20 FCC Rcd 14058, ¶ 21 (2005) ("AWS Reconsideration Order").

<sup>3</sup> See, e.g., Comments of AT&T Inc., at 10-11 (filed Oct. 5, 2006); Comments of Cingular Wireless LLC, at 8 (filed Oct. 5, 2006).

- Only one CMA license is needed to meet the demand for small geographic coverage of spectrum licenses.
- Smaller bandwidths (10 MHz blocks in the Upper 700 MHz band) will maximize flexibility.

#### EA LICENSES WILL MEET MOST DEMAND IN THE AUCTION

EA licenses obviously meet the demands of bidders that have only EA-sized demands for spectrum. But as the AWS auction demonstrated, EA licenses can also be used as building blocks to meet the demands of bidders with larger, but uniquely defined spectrum needs, as well as bidders with regional or national spectrum needs that could also have been met by REAG licenses.<sup>4</sup> In other words, EAs provide bidders with the flexibility to create a package of licenses that best meets their individual needs.

The flexibility provided by EA licenses is further enhanced by the inclusion of multiple EA licenses. Multiple licenses provide alternatives for meeting spectrum demands in all areas by many different types of bidders. Although SpectrumCo's experience in the AWS auction demonstrates that aggregation risk can be managed when there is only one license of the type bid on (20 MHz EA), the opportunity to bid on multiple licenses creates added flexibility to manage aggregation risk. This flexibility, and the consequent efficiency gains, are increased with each additional EA license. As discussed in more detail below, the three 10 MHz licenses in the Upper 700 MHz band proposed by SpectrumCo would be ideal.

Although some suggest that the potential cost of the added flexibility provided by EA licenses instead of REAG licenses is the possibility of added aggregation risk associated with smaller license sizes, there is no conclusive evidence of the existence of aggregation risk in FCC auctions. Moreover, as demonstrated by SpectrumCo's experience in the AWS auction, aggregation risk can be successfully managed and the multiple EA licenses proposed in SpectrumCo's band plan would further reduce any such risk. By way of background, the AWS auction exhibited both aggregation premiums and aggregation discounts.<sup>5</sup> In previous auctions of the Lower 700 MHz band spectrum, the larger EAGs actually sold at a discount to the much

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<sup>4</sup> See generally Coleman Bazelon, "The Economics of License Sizes in the FCC's 700 MHz Band Auction" (submitted as an attachment to Letter from Michele C. Farquhar, Attorney for SpectrumCo, LLC, to Marlene H. Dortch, Esq., Secretary, Federal Communications Commission, WT Docket No. 06-150 (filed Jan. 8, 2007)).

<sup>5</sup> The 20 MHz B Block EAs sold at a discount to the 10 MHz of the C Block EAs on a \$/MHz-pop basis. The 20 MHz F Block REAGs sold at a premium to the 20 MHz B Block EAs. The 10 MHz D Block and E Block REAGs sold at a premium to the 10 MHz C Block EAs, but only at a fraction of the premium of the F Block over the B Block. The B Block sold for an average price of \$0.43/MHz-pop. The C Block sold for an average price of \$0.51/MHz-pop. The D Block sold for an average price of \$0.58/MHz-pop. The E Block sold for an average price of \$0.60/MHz-pop. The F Block sold for an average price of \$0.73/MHz-pop.

The sequential nature of how FCC auctions play out with larger, more expensive licenses reaching final prices sooner than smaller licenses means that if expectations of final license prices overshoot actual license prices, bidders for the larger licenses that reach final prices first will likely overpay. This seems to be what happened with the REAG licenses in the AWS auction. "Expect bids of \$30 billion (range of \$10-\$50 billion); expectations hover near \$15 billion." Tim VandenBerg, Leslie Aplerstein and Joe Lieber, "Issues to Watch: 109<sup>th</sup> Congress," *Washington Analysis*, May 24, 2006, at 7.

smaller CMA licenses.<sup>6</sup> In addition, the initial auctions of 30 MHz PCS licenses showed a significant premium for the smaller BTA licenses over the larger MTA licenses.<sup>7</sup> Therefore, aggregation risk has generally not been determinative of pricing patterns in previous FCC auctions, and SpectrumCo's own experience demonstrates that the potential for any such risk would be eliminated if the FCC offered an adequate number of EA licenses in the 700 MHz band plan.

Moreover, a few commenters in this proceeding have argued that some bidders will have large regional or national demands for spectrum in the 700 MHz band auction and, therefore, larger sized licenses are needed to meet this demand.<sup>8</sup> This conclusion does not follow from its premise. Verizon, Cingular, AT&T Wireless (prior to its acquisition by Cingular), Sprint and Nextel (prior to their combination), and T-Mobile all created national mobile phone networks from licenses no larger than an MTA. Consequently, past experience indicates that EA-sized licenses will be able to meet demand for medium and large spectrum needs.<sup>9</sup>

A further benefit of smaller license geographies such as EAs and CMAs is that they reduce the need for strict performance requirements. With the hundreds of MHz of spectrum now available for mobile wireless applications, the business case for hoarding or intentionally warehousing spectrum is weak. In this environment, it makes no sense for a firm to purchase spectrum that it is not likely to use. The only way a firm will find itself holding spectrum that it does not intend to use is if it is forced to purchase licenses with large geographic coverage that encompasses areas the firm is not interested in. The smaller license sizes allow firms to purchase spectrum only where they need it and, consequently, reduces the likelihood of a firm finding itself with licensed spectrum in areas it does not intend to build out. If firms are able to purchase only what they need, economic incentives will ensure that spectrum is productively used without regulatory mandates.

#### ONLY ONE CMA LICENSE IS NEEDED TO MEET DEMAND FOR SMALLER GEOGRAPHIC AREAS

In contrast to EA sized licenses, which appeal to a broad range of bidders, CMA sized licenses are needed to efficiently meet the demands of bidders with only the smallest geographic spectrum needs. In the AWS auction, 108 of 168 bidders only bid on CMA licenses. CMA

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<sup>6</sup> Combining the results of Auction 44 and Auction 49, the CMAs sold for an average price of \$0.033/MHz-pop and the EAGs sold for an average price of \$0.026/MHz-pop.

<sup>7</sup> Final bids in Auction 4 of the 30 MHz A & B Block MTA licenses averaged \$0.51/MHz-pop. Final bids in Auction 5 of the 30 MHz C Block BTA licenses averaged \$1.35/MHz-pop. Even after adjusting the C Block results for the favorable financing terms afforded bidders, the prices bid are still estimated to be \$0.80/MHz-pop to \$1.10/MHz-pop—57% to 116% higher than the bids in the A & B Block auction. Congressional Budget Office, "Where Do We Go From Here? The FCC Auctions and the Future of Radio Spectrum Management," *A CBO Study*, April 1997 at 19.

<sup>8</sup> See, e.g., Joint Comments of DIRECTV, Inc. and EchoStar Satellite L.L.C., at 3-7 (filed Sept. 29, 2006); Comments of Verizon Wireless, at 4-5 (filed Sept. 29, 2006); Comments of Motorola, Inc., at 6-8 (filed Sept. 29, 2006); Comments of Qualcomm Incorporated, at 16-17 (filed Sept. 29, 2006).

<sup>9</sup> The principles outlined here indicate that there is likely little need for any REAG licenses. There may be other non-efficiency related reasons for including the REAG license geography; the number of REAG licenses, however, should be limited to one. Should the Commission decide to implement package bidding in the 700 MHz band auction, then there is absolutely no need to offer *any* licenses as large as an REAG.

sized licenses are therefore needed to meet the demands of these bidders in the auction (and to reduce the need for these bidders to rely on secondary markets in order to obtain disaggregated spectrum).

Demand from bidders that require such small geographic licenses is somewhat limited because much of this demand derives from rural areas that typically do not support the same number of operators as larger urban markets. Moreover, demand for additional spectrum is likely somewhat diminished in rural areas where population is less dense.<sup>10</sup> This limited demand was seen in the AWS auction. 108 bidders expressed very small geographic demands and never bid on EA or REAG licenses. Restricting the analysis to the set of bidders that only bid on CMA licenses in the AWS auction yields the following results:

- 0 MSA and 1 RSA license attracted 4 CMA-only bidders
- 2 MSA and 17 RSA licenses attracted 3 CMA-only bidders
- 10 MSA and 59 RSA licenses attracted 2 CMA-only bidders
- 47 MSA and 126 RSA licenses attracted 1 CMA-only bidders
- 247 MSA and 225 RSA licenses attracted 0 CMA-only bidders

In other words, only 20 of the 734 CMA licenses put up for auction had more than two CMA-only bidders and over half of the RSAs did not attract a single bid from a CMA-only bidder. Even when considering all bidders, over half of the CMA licenses attracted two or fewer bidders.<sup>11</sup> Accordingly, given that most of the CMA licenses available in the AWS auction have been acquired by a winning bidder (except where a few of these CMA licenses remained unsold), the remaining demand for smaller, rural licenses will largely be met with no more than one CMA license block in the 700 MHz band auction.

In fact, there is a cost to allocating more than one CMA license in the form of unneeded added aggregation risk. If the extra CMA license is not likely to meet demand from small bidders, then it will likely be aggregated by other bidders in the auction. To efficiently aggregate licenses, bidders must be able to manage the risk of a failed aggregation. Managing aggregation risk rests, in part, on the ability to forecast relative license prices. Forecasting relative prices of 734 CMA licenses is significantly more uncertain than forecasting the relative prices of 176 EA licenses. The limited spectrum available in the 700 MHz band auction (60 MHz) means that inefficiently using 10 MHz or 12 MHz in an unneeded CMA license carries particularly high opportunity and social costs. Consequently, including more CMA licenses than are needed to meet the disaggregated spectrum demands of small bidders will reduce the efficiency and likely success of the overall auction, to the detriment of the public interest.

#### SMALLER BANDWIDTHS MAXIMIZE FLEXIBILITY

The current Upper 700 MHz band plan divides the 30 MHz of spectrum available for auction into one 20 MHz block and one 10 MHz block. This division of the band severely limits the

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<sup>10</sup> In rural areas with less dense population, wireless systems are more likely to include cells configured to be at maximum size.

<sup>11</sup> 398 out of 734.

opportunities for this band to be efficiently assigned during the auction. Dividing the Upper 700 MHz band into three blocks of 10 MHz each will create added flexibility that will likely enhance the chances of a successful auction.

For the AWS auction, the FCC decided to reduce the size of the license blocks after further consideration, and rejected creating any licenses larger than 20 MHz.<sup>12</sup> The FCC recognized that some bidders may want 30 MHz or more in a given geographic market, but also acknowledged that larger license blocks eliminate the possibility of the band being assigned to more bidders with smaller spectrum requirements. Likewise, in the upcoming 700 MHz band auction, the extra license created by dividing the one 20 MHz license into two 10 MHz licenses would open the possibility for more bidders to win licenses.

Three 10 MHz licenses in the Upper 700 MHz band will also reduce aggregation risk in the auction, even more so if the three 10 MHz licenses are all EAs. The risk of a failed aggregation is lower if there is more flexibility for a bidder to achieve its desired aggregation. The added flexibility created by three 10 MHz Upper 700 MHz band licenses will bolster bidders' perceptions of the likely success of attempting aggregations. For example, a bidder that desires 10 MHz nationwide will have a higher probability of a successful aggregation—and consequently will be more likely to participate in the auction—if it is creating its aggregation from three 10 MHz licenses compared to one 10 MHz license and one 20 MHz license.

## CONCLUSION

Prior to the auction, the FCC cannot know the license configurations that will best meet competing bidders' demands. SpectrumCo's proposed band plan—1 CMA block, 4 EA blocks, and 1 REAG block—will best allow the auction process to determine the optimal license configurations. It does this by maximizing flexibility while reducing aggregation risk with 4 sets of EA sized licenses that can be used as building blocks to meet the demands of bidders that have medium and large spectrum demands.

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<sup>12</sup> See *AWS Reconsideration Order*, ¶ 10, 15.