



June 26, 2015

Marlene H. Dortch
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268; *Policies Regarding Mobile Spectrum Holdings*, GN Docket No. 12-269

Dear Ms. Dortch:

Mobile Future respectfully submits the attached report, “Bringing Sanity Back to the Spectrum Debate,” by Allan Ingraham and Hal Singer.¹ This paper explores claims made by the Competitive Carriers Association (CCA) and its members, including DISH, Sprint and T-Mobile, and the recent paper they commissioned in an attempt to justify additional set-asides in the upcoming spectrum incentive auctions.

While Mobile Future questions the need for any reserved spectrum, the FCC has already set aside up to 30 MHz of prime, unencumbered spectrum for participants without significant low-band spectrum. CCA presents no evidence that would justify further tilting auction rules in favor of its members.

Using two measures of impairment widely accepted by economists—(1) the inability to win subscribers and (2) the inability to impose price discipline—the Ingraham/Singer analysis flatly debunks any notion of impairment. Quite the contrary, T-Mobile is winning new customers much faster than its national rivals. And, aggressive pricing, promotions and bill credits offered by all nationwide wireless carriers clearly show the vibrant competition in today’s wireless industry.

The strong spectrum position of T-Mobile and Sprint heading into the auction offers further compelling proof that these multi-billion-dollar companies are capable of competing vigorously in a spectrum auction and winning large amounts of licenses. In fact, Sprint (33 percent) and a

¹ The authors are principals at Economists Incorporated. Dr. Ingraham has provided strategic advice to participants in dozens of high stakes auctions worldwide, including AT&T during the FCC’s AWS-3 auction. Dr. Singer has advised agencies and firms on competition-related matters.

combined DISH/T-Mobile (23 percent) already have greater shares of total spectrum, both high- and low-frequency, than AT&T (22 percent) or Verizon (17 percent).

Given Sprint's strong spectrum position, the company already has warned that it may not participate in the incentive auction. The prospect of a DISH/T-Mobile merger in the wake of DISH's dominance of the AWS-3 auctions further calls into question the public merits of providing these companies with additional artificial auction advantages.

The FCC's decision to allocate the least encumbered spectrum to the reserve provides reserve-eligible bidders with a measure of security over the quantity and quality of spectrum available to them. But it creates uncertainty for reserve-*ineligible* bidders that potentially could be denied the opportunity to bid on *any* unencumbered spectrum. Thus, exacerbating this risk by granting additional CCA concessions would directly undermine the interests of the 180 million U.S. mobile consumers who have chosen either AT&T or Verizon as their wireless service provider.

CCA's own paper notes "the FCC has established a balanced approach for the 600 MHz auction that allows AT&T and Verizon to win the substantial low-band spectrum they need, yet prevents them from foreclosing the disruptive competition that competitive carriers bring."

While we still believe a reserve is unnecessary, it has been thoroughly debated and the FCC came to its conclusion just last year. Nothing in the CCA paper appears to credibly support any set-aside, let alone supports increasing it. Given the complexity of the auctions, the FCC should focus on other actions that will benefit all auction participants, such as increasing the amount of clear spectrum available. Making changes to the set-aside at this juncture would be absolutely unjustified and would unnecessarily undermine the auction's success.

Pursuant to section 1.1206 of the Commission's rules, this letter is being filed electronically.

Sincerely,

/s/

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Bringing Sanity Back to the Spectrum Debate: A Response to CCA's White Paper

Allan Ingraham and Hal Singer¹

INTRODUCTION

In its December 2014 Public Notice relating to the upcoming broadcasters' incentive auction ("Auction Notice"),² the Federal Communications Commission (FCC) maintained its decision and underlying analysis regarding the spectrum reserve in the Mobile Spectrum Holdings Report and Order,³ which held that a maximum of 30 MHz would be reserved for participants without significant low-band spectrum.⁴ Simply put, the FCC has decided that a "reserve," of up to 30 MHz will apply to the most likely range of clearing targets that the FCC expects to be realized in the auction.⁵

This reserve becomes a set-aside once a certain revenue target is reached. Strictly speaking, under a spectrum set-aside, only participants that qualify for the set-aside (in the past the FCC has set aside spectrum only for "designated entities" or small businesses) may place

¹ Allan Ingraham and Hal Singer are principals at Economists Incorporated. Dr. Ingraham has provided strategic advice to participants in dozens of high stakes auctions worldwide, including AT&T during the FCC's AWS-3 auction. Dr. Singer has advised agencies and firms on competition-related matters.

² Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002, GN Docket No. 12-268, Public Notice, FCC 14-191 (rel. Dec. 17, 2014) (hereafter "*Auction Notice*").

³ In the Matter of Policies Regarding Mobile Spectrum Holdings WT Docket No. 12-269 Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auction, Docket No. 12-268, Report and Order (rel. June 2, 2014), ¶184 (hereafter "*Mobile Holdings Report*").

⁴ *Auction Notice*, ¶23 n. 67. The FCC proposal focuses on bandplans between 144 MHz and 42 MHz, with particular emphasis on those between 126 MHz and 84 MHz (126, 114, 108, and 84 MHz). This 30 MHz reserve would apply to clearing targets of between 70 and 108 MHz inclusive.

⁵ See *Mobile Holdings Report* at ¶154.

bids on the spectrum in any round of the auction. Under the reserve, all bidders would be able to place bids on the spectrum initially. That is, for a particular clearing target before the Final Stage Rule (FSR) is met, Category 1 spectrum in each geographic region may be freely bid upon by any participant with sufficient eligibility to place such a bid. After the FSR is met, Category 1 splits into “reserve” and “unreserved”. At this point the reserve becomes a set-aside, and reserve-eligible bidders are immune to competitive pressure from reserve-ineligible bidders when bidding on reserved spectrum. This is what the FCC intended when it contemplated a “market-based spectrum reserve.”⁶

Some potential bidders are not content with that resolution despite having initially supported it. The Competitive Carriers Association (CCA) and its members, including Dish Network (“DISH”), Sprint and T-Mobile, are petitioning the FCC to expand the size of the reserve.⁷ In support of their efforts, the CCA commissioned a paper by Drs. Peter Cramton and Pacharasut Sujarittanonta (“C-S”),⁸ two renowned auction experts. The C-S paper argues that the results of a recent FCC spectrum auction, the AWS-3 auction, provide a basis for establishing *some* set-asides given the alleged propensities of AT&T and Verizon to engage in what the authors allege was exclusionary bidding behavior. Under the C-S hypothesis, these

⁶ *Id.*

⁷ See, e.g., Letter from Neville Ray, Chief Technology Officer T-Mobile, to Tom Wheeler, June 2, 2015 (“I write today to urge the Commission to increase the amount of reserved spectrum in the upcoming 600 MHz Auction from 30 to at least 40 megahertz.”), available at <http://savewirelesschoice.com/wp-content/uploads/2015/06/AS-FILED-N.-Ray-Letter-06-02-2015.pdf>; Ex Parte Notice from SaveWirelessChoice, June 1, 2015 (“Second, we discussed the robust and varied support for increasing the quantity and quality of the spectrum reserve to promote greater broadband competition and increased bidder certainty.”), available at <http://savewirelesschoice.com/wp-content/uploads/2015/06/Save-Wireless-Choice-May-28-Wheeler-Ex-Parte-06-01-2015.pdf>. SaveWirelessChoice charter members include the Competitive Carriers Association and Public Knowledge, among others.

⁸ Peter Cramton & Pacharasut Sujarittanonta, Bidding and Prices in the AWS-3 Auction, May 2015, at 15-16, available at <https://competitivecarriers.org/wp-content/uploads/2015/05/AS-FILED-Cramton-White-Paper-AWS-3-Auction-Prices-05-20-2015.pdf> (hereafter C-S).

carriers overbid for spectrum to exclude rivals from gaining a stronger foothold in the U.S. wireless market.

We have been asked by Mobile Future⁹ to respond to the C-S paper. In doing so, we have analyzed the same information that C-S purported to use as the basis of their conclusions.¹⁰ We find that C-S does not provide any basis for expanding the spectrum reserve. Recognizing the limitations of its analysis, C-S modestly concludes that “The FCC has established *a balanced approach* for the 600 MHz auction that allows AT&T and Verizon to win the substantial low-band spectrum they need, yet prevents them from foreclosing the disruptive competition that competitive carriers bring for the betterment of all consumers.”¹¹ Oddly, CCA touts this conclusion as a basis to “*expand* the availability of designated entity (“DE”) benefits in the competitive bidding rules for the 600 MHz incentive auction.”¹²

CCA’s economists suggest that there are important lessons about foreclosure to be learned from the AWS-3 auction, but note that “[t]he motivation for the spectrum reserve in the 600 MHz (low-band) auction is *unrelated* to the outcome of the AWS-3 (mid-band) auction.”¹³ This is a critical admission: CCA’s economists are saying that one cannot make *any* inferences about the incentive-auction design from the AWS-3 auction. The closest C-S comes

⁹ Mobile Future represents several technology and communications companies, including AT&T and Verizon. See About Us, Mobile Future, available at <http://mobilefuture.org/members/>.

¹⁰ Ingraham was an advisor to one of the bidders in that auction.

¹¹ C-S at 15-16 (emphasis added).

¹² Designated Entity Participation Will Enhance Competition in Incentive Auction, May 21, 2015 (citing C-S) (emphasis added), available at <http://competitivecarriers.org/press/rca-press-releases/designated-entity-participation-will-enhance-competition-in-incentive-auction/9118029>. See also Reply Comments of Competitive Carriers Association, May 21, 2015, WT Dkt. No. 14-170, at 2 (“In fact, the [C-S] study found that DE discounts significantly increased auction revenue.”).

¹³ C-S at 1 (emphasis added). On the other hand, C-S claim that “the results in the AWS-3 auction *reinforce* the need for a pro-competitive spectrum reserve in an auction of low-band 600 MHz spectrum, for which smaller carriers will have a greater need.” *Id.* at 15 (emphasis in original). They cannot have it both ways.

to offering a policy prescription for the reserve is this single line in their paper: “The AWS-3 auction results in no way undercut the need for pro-competitive measures like a spectrum reserve in the 600 MHz auction.”¹⁴ This is a far cry from CCA’s claim that the AWS-3 results bolster the need for increasing the set-aside. In this response, we highlight the disconnect between the policies that CCA and its members are advocating and what its economists have offered.

I. CRAMTON AND SUJARITTANONTA PRESENT NO EVIDENCE OF IMPAIRMENT, A NECESSARY CONDITION FOR ANY SET-ASIDE PROGRAM

Implicit in any request for a set-aside of low-frequency spectrum is an assumption that CCA’s members would be impaired in their ability to compete without the “must-have” input. Presumably this impairment relates to the fact that AT&T and Verizon have 37 and 34 percent of U.S. commercial spectrum below 1 GHz, whereas Sprint, T-Mobile, and DISH have 10, 5, and 3 percent, respectively.¹⁵ Never mind that Sprint (33 percent) and a combined DISH/T-Mobile (23 percent) will have greater shares of total commercially licensed spectrum, including high- and low-frequency spectrum, than AT&T (22 percent) or Verizon (17 percent).¹⁶

Yet the C-S paper is silent on whether CCA’s members are currently impaired in their ability to compete effectively, and therefore need preferential access to the broadcasters’ low-frequency spectrum. The closest C-S comes to making the case for impairment is this line: “Unable to employ spectrum to expand capacity, would-be rivals are forced to either operate with higher costs relative to the dominant carriers, reduce the quality of their service offerings,

¹⁴ *Id.* at 2.

¹⁵ Roger Entner, Incentive Auctions: What Matters Here and Now, May 14, 2015, Exhibit 3, *available at* <http://reconanalytics.com/2015/05/incentive-auctions-what-matters-here-and-now/>?

¹⁶ *Id.* Exhibit 1.

or both.”¹⁷ Yet this bold claim is made without *any* citation. Where is evidence that the marginal cost of adding a customer (or completing a call) is higher for Sprint or T-Mobile? Indeed, recent comments by Sprint’s CEO Marcelo Claure are hard to reconcile with the claim of impairment:¹⁸ “Much of Claure’s hope for his network lies in the smart use of the company’s wireless assets, namely its multiple bands of spectrum, which carry all of our data between the smartphone and its cellular towers. Sprint boasts that *because it has three bands of different spectrum, it will be able to deliver a superior experience over time.*”¹⁹

Without a shred of evidence of impairment, it is impossible to assess whether there should be *any* set-aside, let alone the precise amount of the set-aside (for example, 30 versus 40 MHz). Based on two important measures of impairment widely recognized by economists²⁰—(1) the inability to win new subscribers and (2) the inability to impose price discipline—we conclude that CCA’s large members are in fact not impaired in their ability to compete despite their relatively small low-frequency spectrum. T-Mobile is winning new customers much faster than AT&T and Verizon, and T-Mobile’s and Sprint’s aggressive pricing, promotional efforts, and bill credits for switching have caused AT&T and Verizon to drop their prices. Indeed, T-Mobile boasted in recent advertising and on its website that its users “get

¹⁷ C-S at 7.

¹⁸ Contrary to the Department of Justice and T-Mobile’s claims that low-band spectrum is the only critical input to support competition, wireless providers are using their diverse spectrum holdings to deploy advanced networks. For the Department of Justice’s latest comments on the incentive auction and the spectrum reserve, see *Ex Parte filing Department of Justice, WT Docket No. 12-269 (June 24, 2015)*.

¹⁹ Roger Cheng & Connie Guglielmo, *Sprint CEO: Give us two years, and our network will blow past rivals*, CNET, May 27, 2015, available at <http://www.cnet.com/news/sprint-ceo-give-us-two-years-and-our-network-will-blow-past-rivals/> (emphasis added).

²⁰ Robert Hahn, Gerard Faulhaber, and Hal Singer, *Assessing Competition in U.S. Wireless Markets: Review of the FCC’s Competition Reports*, 64 FED. COMM. L. J. (2012).

more data capacity per customer than Verizon”²¹—a claim that is hard to square with the CCA’s demand for a greater reserve. Accordingly, while potential participants in both the reverse and forward auctions still question the need for any set-aside, there is no need for the FCC to expand the current spectrum reserve.

A. The Ability to Win New Subscribers

An obvious way in which the implicit impairment would manifest itself is via a withering away of Sprint’s and T-Mobile’s subscriber bases. Put differently, if AT&T and Verizon were in sole possession of a must-have input (low-band spectrum), then those carriers should be increasing or at least maintaining their market shares, at the expense of Sprint and T-Mobile. According to a May 2015 study by Recon Analytics, however, T-Mobile captured 70.2 percent of the growth in new wireless subscribers in 2014, twice as much as AT&T and Verizon Wireless combined, and 99.7 percent of the growth in the first quarter of 2015.²² This impressive capture rate of new subscribers by a carrier with modest holdings of low-band spectrum is inconsistent with any notion of impairment.²³

The lack of impairment is further underscored by the near-constant concentration measures over the past decade. In its *17th Wireless Competition Report*, the most recent report available, the weighted average HHIs across all economic areas in the United States was 3,027 (as of the end of 2013).²⁴ By comparison, in its *13th Wireless Competition Report*—the last

²¹ T-Mobile, *The Verdict Is In: T-Mobile’s Data Network Is Data Strong*, available at <http://explore.t-mobile.com/4g-lte-network> (visited June 13, 2015).

²² *Id.* Exhibit 2.

²³ Although Sprint lost 2.2 million subscribers on net in 2014, Sprint’s struggles appear to be unrelated to its spectrum holdings; instead, the recent customer loss is more likely related to Sprint’s flawed network-upgrade program, which revealed many dead spots to its customers. *Id.*

²⁴ Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including

report in which the agency declared the industry to be “effectively competitive”—the HHI was 2,675 (as of the end of 2007).²⁵ According to the FCC’s own concentration data, the industry has been “highly concentrated” judging by the DOJ’s standards since 2005 (when the HHI was 2,706). The modest increase in concentration over the past decade (a swing of less than ten percentage points in share) was driven by acquisition of small providers (e.g., T-Mobile’s acquisition of MetroPCS and AT&T’s acquisition of Leap), and is not consistent with the claim that AT&T and Verizon are growing shares via an unfair advantage owing to their low-frequency spectrum.

B. The Ability to Impose Price Discipline

That AT&T and Verizon are forced to respond to price cuts by Sprint and T-Mobile (or other smaller carriers) with price cuts of their own is also inconsistent with the notion of impairment. If a carrier lacks access to a “must-have” input, as implied in the CCA’s call for an even larger reserve, then it should not be able to impose price discipline on rivals that possess low-frequency spectrum. Yet there are several episodes of price competition that were triggered by carriers that lack access to significant amount of low-frequency spectrum. Such evidence is hardly consistent with the claim that CCA’s members need additional low-frequency spectrum to compete effectively.

For example, in its *14th Wireless Competition Report*, the FCC recounted a price war that was triggered by Sprint and T-Mobile in the late-2000s.²⁶ In September 2009, Sprint introduced unlimited mobile-to-mobile calling at no additional charge. In turn, T-Mobile introduced a

Commercial Mobile Services (17th Report) (Dec. 18, 2014), at 17 (Chart II.C.1).

²⁵ Commercial Mobile Radio Services Competition Report (13th Report) (Jan. 16, 2009).

²⁶ *14th Report*, ¶¶ 90-92.

lower-priced version of its unlimited national voice-calling plan, and it reset prices on tiered offerings at significant discounts to its legacy plans. And in response to these moves, Verizon Wireless reduced the prices of its unlimited voice plans for both individual and shared family offerings, which prompted AT&T to do the same.

The next price war among national carriers occurred in January 2010, when Verizon reduced its national unlimited voice plans by \$30 per month; AT&T followed shortly thereafter with a nearly identical reduction in its national plans.²⁷ AT&T and Verizon reportedly were responding to the introduction of low-price unlimited plans by Leap (September 2009) and by MetroPCS (January 2010),²⁸ neither of which owned large amounts of low-frequency spectrum.

A more recent price war triggered by Sprint and T-Mobile involved LTE prices. By offering unlimited LTE data plans, Sprint effectively charged \$0 on a per-gigabyte basis at the margin. T-Mobile offered an “Unlimited Nationwide 4G” plan at \$90 per month (including unlimited voice minutes) that also sets the marginal price on a per-gigabyte basis to zero. Verizon then offered a \$150 credit for every new smartphone line switched from a rival. Analysts attributed this move to T-Mobile’s elimination of two-year contracts in 2013, as well as the carrier’s steep reduction in the price of international plans and unlimited music streaming.²⁹ In response to Verizon’s late-2014 credit, T-Mobile reduced the price of its two-line plan with unlimited calling, texting, and data from \$140 to \$100. Sprint responded by offering to cut prices in half for customers switching from AT&T and Verizon, and by offering 20 GBs (or double T-Mobile’s offer) for \$100 on a four-line plan. In February 2015, Verizon reduced its prices of its

²⁷ Sinead Carew, *Verizon, AT&T Cut Fees, Expand Price War*, REUTERS, Jan. 15, 2010, available at <http://uk.reuters.com/article/2010/01/15/us-verizon-idUKTRE60E2MI20100115>.

²⁸ *Smartphone Pricing War Spreads To Verizon and AT&T*, TOP TECH NEWS, Jan. 19, 2010.

²⁹ *Id.*

More Everything shared plan (for data allowances between 500 MBs and 6 GBs) by \$10 per month.³⁰ Analysts understood the move as an effort to “compete more aggressively with Sprint and T-Mobile on single line and lower-end 2-line family plans.”³¹

This fierce price competition can also be seen at a macro level, as the cellular CPI continues to fall. Since 2002, the price of wireless services *has declined in every year except 2008* (when prices were the same as 2007) according to the Bureau of Labor Statistics. In December 2010, wireless prices were 38.6 percent less than what they were in December 1997; by December 2014, wireless prices were 44.1 percent less than what they were in December 1997.³² To square these trends with a conclusion of heightened market power among wireless carriers, one would need to believe that the costs of providing wireless service has declined, and has done so at an even faster clip than the rate of deflation in the price of wireless service. But because wireless carriers are facing capacity constraints, carriers are more likely moving along an increasing cost curve, rendering the notion of rapidly declining costs implausible.

In sum, there simply is no credible evidence of impairment in the traditional economic sense, and the C-S paper does not advance the claim. And without it, one cannot begin to speak about set-asides, let alone make a case for increasing the reserve.

II. SEVERAL FACTORS MILITATE AGAINST INCREASING THE RESERVE

The FCC has already proposed a spectrum reserve of 30 MHz and re-affirmed that decision. Two factors militate against increasing the reserve. *First*, the FCC’s plan would allocate

³⁰ Phil Goldstein, *Analysts: Verizon’s new price cuts indicate willingness to take on Sprint, T-Mobile*, FIERCE WIRELESS, Feb. 5, 2015.

³¹ *Id.* (quoting Jeffries analysts Mike McCormack and Scott Goldman).

³² Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, Item: Wireless telephone services.

the initial blocks of prime spectrum to the reserve. This provides reserve-eligible bidders (“REBs”) with a measure of security over the supply of spectrum in the auction, while providing reserve-ineligible bidders with uncertainty. In some markets, reserve-ineligible bidders could wind up with no unencumbered spectrum or less spectrum than the reserve. Further restricting AT&T’s and Verizon’s access to unimpaired spectrum could jeopardize the intensity with which they desire to participate in the auction. *Second*, unforeseen circumstances can occur in any spectrum auction, which could raise the cost to taxpayers of increasing the reserve. One REB (Sprint) recently expressed questions about its level of participation in the auction, while two other REBs (DISH and T-Mobile) are in merger talks.

A. The Structure of the Reserve Already Provides Reserve-Eligible Bidders with Sufficient Certainty of Supply to Induce Their Participation

To understand how the spectrum reserve will operate, one must first understand that a key challenge of the incentive auction is clearing spectrum that is presently encumbered by broadcasters. The clearing process will happen through both the reverse segment of the incentive auction and through repacking. Yet some spectrum available in the forward segment of the auction—the segment in which wireless providers would compete for bandwidth—may still be encumbered. The least encumbered spectrum is classified as “Category 1,” which is currently defined as less than 15 percent encumbered. “Category 2” spectrum is encumbered at between 15 and 50 percent, whereas any spectrum more than 50 percent encumbered would not be placed in the forward auction.³³

³³ *Auction Notice*, ¶¶142-45. It is also worth noting that the FCC has asked for comment on whether participants would be interested on the opportunity to bid for spectrum encumbered by more than 50 percent. *Id.* ¶¶147-48.

Importantly, the *first blocks* of Category 1 spectrum available go toward meeting the spectrum reserve. For example, should only three blocks of Category 1 spectrum exist in a partial economic area (“PEA”), once the Final Stage Rule is met, all three of those blocks (presuming at least two REBs collectively demand three blocks) would be off limits to bidders ineligible for the reserve. Put simply, the best spectrum in the auction is first allocated to the reserve in any geographic location where REBs express demand once the Final Stage Rule is triggered, and scenarios exist in which bidders ineligible for the reserve could be denied any amount of unencumbered spectrum despite a willingness to pay prices above those expressed by REBs.³⁴

The FCC has informed stakeholders that it does not anticipate this shortfall to be a problem in many geographic markets.³⁵ Yet the precise nature of encumbrance in any given PEA will not manifest until the forward auction commences. Thus, increasing the size of the reserve risks decreasing the number of PEAs in which reserve-ineligible bidders have access to unencumbered spectrum.

The FCC has already provided REBs with the confidence that up to 30 MHz of spectrum will be provided to them. Reserve-ineligible bidders have far less certainty over the product space they will be eligible to bid for once the Final Stage Rule is met. Therefore, increasing the reserve would heighten uncertainty that already exists for reserve-ineligible bidders but would provide little added certainty to REBs, who already know that they will get first crack at between 30 to 100 percent of the prime spectrum in each PEA. Given that the FCC requires

³⁴ *Id.* ¶¶150-55.

³⁵ *Id.* ¶151 n. 266.

competition from *both* reserve-ineligible and reserve-eligible bidders for the auction to be successful, it would be imprudent to direct more uncertainty toward the class of bidders that have already been saddled with the most uncertainty to begin with.

B. Unforeseen Events Weigh in Favor of Leaving the Reserve Alone

Despite the assurances REBs have already been provided as an inducement to participate in the incentive auction, some amount of uncertainty surrounding REB participation still exists. Sprint's CFO, Joe Euteneuer, recently stated that its participation in the auction is not guaranteed,³⁶ as Sprint is in a different position today than it was two years ago. With LTE now running on its 800 MHz spectrum and with its considerable 2.5 GHz bandwidth, Sprint's primary focus is likely expanding its network and improving customer satisfaction through these existing bands. Mr. Euteneuer's statement carries added weight when considered in the context of Sprint's relative spectrum per subscriber—for example, Sprint has between 2.6 and 3.6 times more spectrum per subscriber than Verizon.³⁷ If the FCC reserves more spectrum than what is demanded by reserve-eligible bidders, the reserve portion of the auction could be a failure, with taxpayers picking up the tab (equal to the difference between what the spectrum is worth and what it sold for in the reserve).

Potentially further restricting the demand for spectrum among REBs, DISH and T-Mobile are reportedly engaged in early merger discussions.³⁸ These CCA members have stated their

³⁶ *Sprint Corp CFO: We Might Not Participate in 600MHz Incentive Auction*, BUSINESS ETC, May 21, 2015, available at <http://www.bidnesstc.com/43378-sprint-corp-cfo-we-might-not-participate-in-600mhz-incentive-auction/> (stating that "The 600 MHz auction is something we're looking at but not necessarily something we need to do.").

³⁷ Entner, *supra*.

³⁸ Rumors of a possible merger were reported even before the AWS-3 auction began. *See, e.g., Dish May Bid for T-Mobile after AWS-3 Spectrum Auction*, FORBES, September 15, 2014, available at: <http://www.forbes.com/sites/greatspeculations/2014/09/15/dish-may-bid-for-t-mobile-after-aws-3-spectrum->

interests to compete—presumably against each other as REBs—in the incentive auction. Although much is unknown at this point,³⁹ these events imply that increasing the reserve would be unwise.

III. THE RESULTS OF THE AWS-3 AUCTION DO NOT SUPPORT CCA’S CASE TO INCREASE THE INCENTIVE AUCTION RESERVE

The conclusions that C-S draws from its analysis of the AWS-3 auction are incorrect. The authors argue that AT&T and Verizon have incentives “to foreclose” rivals—that is, to shut out rivals from winning any spectrum—in the 600 MHz auction.⁴⁰ But C-S fails to acknowledge that (1) foreclosure will be extremely expensive given the nature of the FCC’s pricing rules, and (2) it was DISH, not AT&T or Verizon, that routinely bid to foreclose competition in AWS-3. A more complete analysis of the dynamics of the auction reveals that DISH was the primary reason that T-Mobile failed to win considerable spectrum in the auction. The C-S argument that DISH’s participation in AWS-3 would have been limited but for the bidding credits is inconsistent with DISH’s bidding.

A. Cramton-Sujarittanonta Does Not Support the Theory that Foreclosure Activity in AWS-3 Warrants a Larger Reserve for the Incentive Auctions

C-S argues that bidding by AT&T and Verizon in the AWS-3 auction demonstrates their ability and willingness to over bid for spectrum solely to keep it out of the hands of their

[auction/](#). Rumors of a merger between DISH and T-Mobile have very recently intensified. *See, e.g., Dish and T-Mobile U.S. in Merger Talks: Source*, REUTERS, June 4, 2015, available at: <http://www.reuters.com/article/2015/06/04/us-dish-network-m-a-t-mobile-us-idUSKBN00K06H20150604>.

³⁹ Most recently, financial analysts believe that DISH is presently in talks to borrow substantial funding for a corporate transaction with T-Mobile. *See, e.g., Dana Cimilluca, et al., Dish Network in Talks with Banks about Funding T-Mobile Bid*, WALL STREET JOURNAL, June 11, 2015, available at <http://www.wsj.com/articles/dish-networks-in-talks-with-banks-about-funding-t-mobile-bid-1434056519>.

⁴⁰ C-S at 1 (“This incentive to *foreclose competition* in both urban and rural areas is the predominant motivation for the FCC’s competition policy in the 600 MHz spectrum auction, which wisely reserves some blocks for carriers without access to more than one-third of the low-band spectrum in a given geographic area.”) (emphasis added).

competitors.⁴¹ That allegation flies in the face of what actually happened in the AWS-3 auction in which one of CCA's largest members (DISH) won the second largest amount of spectrum at auction, valued in terms of gross winning bids. In particular, DISH won \$11.29 billion⁴² worth of spectrum in the paired blocks (G-H-I-J blocks), which accounted for approximately one quarter of the paired spectrum as measured in MHz-Pops. This outcome occurred *despite* the fact that AT&T and Verizon were unconstrained by set-aside rules in the AWS-3 auction. If AT&T and Verizon were significantly motivated by foreclosure incentives, as C-S posits, presumably they would have prevented DISH from acquiring as much spectrum as it did. This illustrates that, as a practical matter, the combination of anonymous bidding and geographic licensing in FCC auctions makes a *joint* foreclosure strategy (via conscious parallelism) difficult, if not impossible to implement. Because identities of other bidders are unknown, one is uncertain whether specific rivals have been outbid in specific markets.

Another important factor cutting against foreclosing entrants is the pricing rule used in the AWS-3 and the incentive auction. Because bidders pay their net winning bids in the auction, foreclosure can be extremely expensive.⁴³ Bidders displaced from licenses are free to move their units of demand elsewhere, which then increases the price of other spectrum in the

⁴¹ C-S at 1, 15.

⁴² Measured by gross winning bids, which excludes any bidding credit.

⁴³ For example, prices in the German 3G auction in 2000 were extremely high due to aggressive bidding by Deutsche Telekom. DT was attempting to win an *additional* 2x5 MHz block of spectrum at the expense of Movistar, which was attempting to enter the German market as part of Group3G. DT was unsuccessful in its bid to win the extra block, eventually yielding to Group3G after prices reached historically high amounts. In Mexico's AWS-1 auction in 2010, Movistar attempted to win an extra block in Mexico City. It was ultimately prevented from doing so by extremely aggressive bidding from Telcel, which held an approximate 71 percent market share in Mexico. See, e.g., IFC, IFC Money Scoping Country Report: Mexico, July 29, 2011, at 2, available at: <http://www.ifc.org/wps/wcm/connect/37512b004a052b268adefdd29332b51/Mexico+Public.pdf?MOD=AJPERES>. It is worth noting that Telcel's 71 percent market share far exceeds the market shares of either Verizon or AT&T in the United States.

auction. By accommodating competition—the opposite strategy to foreclosure—bidders can pay less for the spectrum that they win. Although those engaged in auction design do not favor this aspect of the “pay-your-bid” pricing rule, it has the countervailing procompetitive effect of giving large bidders incentive to facilitate entry via “strategic demand reduction.”⁴⁴

Importantly, the incentive auction uses a uniform-pricing rule for each category of spectrum.⁴⁵ Under this rule, the price paid for every unit within a category would equal the price of that category when the clock rounds end (when supply no longer exceeds demand). Therefore, the incentive to strategically reduce demand exists in the incentive auction, which makes a foreclosure strategy extremely costly and encourages accommodation of entrants.

Multi-billion dollar nationwide companies are capable of competing vigorously in a spectrum auction and winning large quantities of licenses. DISH bid very aggressively in the AWS-3 auction, winning approximately \$13.3 billion worth of spectrum through bidding entities SNR and Northstar. Indeed, the C-S paper explains that a possible reason that competitive carriers other than DISH bid less aggressively in AWS-3 is not because they were foreclosed by AT&T and Verizon, but because they may have been conserving financial resources for the incentive auction.⁴⁶

⁴⁴ See, e.g., PAUL KLEMPERER, AUCTIONS: THEORY AND PRACTICE 33-34 (Princeton University Press 2004) (“[A]n ascending multi-unit auction (where the sale price equals the first price at which the number of units demanded falls to the supply available) gives a large bidder an incentive to reduce her demand early in order to pay less for those units she does win.”).

⁴⁵ Specifically, the forward auction would apply a uniform price to spectrum sold within a product category. Therefore, by bidding to exclude a rival within a PEA, a bidder potentially increases the price it would pay for all spectrum it wins—the spectrum it won because it exclude rivals and the spectrum it would have won without a foreclosure strategy.

⁴⁶ C-S, at 7 (“It appears competitive carriers may have sought to conserve spending on mid-band spectrum in the AWS-3 auction to retain financial flexibility to acquire low-band spectrum in the 600 MHz auction.”).

A closer look at bidding in the AWS-3 auction further illustrates how the C-S foreclosure theory is incorrect, as it ignores the exclusionary conduct of DISH. A bid to exclude rivals within a geographic area can be said to occur in a given round in the paired spectrum bands whenever a bidder⁴⁷ was active either (1) through current provisionally winning bids entering the round, or (2) through a new bid in the present round on the major spectrum licenses in the G, H, I, and J blocks in a single Economic Area.⁴⁸ Although such bidding had little meaning in the earliest rounds of the auction, after round 13 (once the aggregate reserve had been met), bids in a market area were potentially winnable. By this measure, DISH (and not AT&T or Verizon) *routinely* bid to win all paired spectrum within a geographic region in the AWS-3 auction. Instances in which bidders were active on all paired licenses in a single round after round 12 are presented in Table 1 below.

TABLE 1: SIMULTANEOUS ACTIVITY ON ALL PAIRED LICENSES IN AN EA FOR TOP 4 BIDDERS

<i>Bidder</i>	<i>Fully Active Instances</i>	<i>Latest Round of Full Activity</i>	<i>Latest Full Activity Round Major Market</i>
DISH*	142	100	64
Verizon	40	27	18
AT&T	1	18	NA
T-Mobile	NA	NA	NA

Note: *DISH is compiled as activity by American AWS-3 Wireless 1, Northstar, or SNR.

Through its three bidding entities, DISH bid 142 times after the aggregate reserve had been met; in contrast, Verizon bid in this manner only 40 times, and AT&T did so only once. Moreover, DISH was engaging in exclusionary behavior later in the auction than any other bidder, when these bids were far more likely to be winnable.

⁴⁷ In the case of DISH, we consider activity from any of its three bid entities: American AWS-3 Wireless 1, Northstar, or SNR.

⁴⁸ The G block comprised 734 CMA licenses, which can be aggregated to form EAs. The H, I, and J blocks were auctioned as larger EAs (176 of them). In this analysis, we consider activity on the G block as activity on the major CMA license within the larger and corresponding EA.

The best example of DISH's attempt to exclude rivals occurred in the largest market in the auction—New York. In round 63 of the auction, DISH placed a new bid on the J block license in New York (EA number 10). At the time, DISH had been the standing high bidder on New York licenses in the G, H, and I blocks for approximately 25 rounds.⁴⁹ DISH's bid is most reasonably interpreted as an attempt to win all paired blocks in the largest geographic market in the auction.⁵⁰ Because the bidder most often attempting to exclude rivals was a bidder that would be eligible for a low-band spectrum reserve, it is not reasonable to conclude that the AWS-3 auction “reinforce[s] the need for a pro-competitive spectrum reserve in an auction of low-band 600 MHz spectrum.”⁵¹

B. DISH Was the Primary Bidder Competing against T-Mobile in the AWS-3 Auction

The C-S paper argues that it was a combination of AT&T, Verizon, and DISH that resulted in T-Mobile winning less spectrum than what many expected in the AWS-3 auction, with the primary responsibility falling on AT&T and Verizon.⁵² Because the paired blocks can be viewed

⁴⁹ Full information auction data is available from the FCC website at http://wireless.fcc.gov/auctions/default.htm?job=auCTION_summary&id=97. As of round 63 of the auction, DISH had been provisionally winning bidder on G block CMA001 (New York City market) since round 37, H block EA010 (New York) since round 41, and I block EA010 (New York) since round 39. Therefore, when DISH placed its J block bid, New York had been silent for roughly 25 rounds. At the time of DISH's bid on New York J block, DISH was taking a position *in the New York Market alone* that boasted gross bid amounts in excess of \$6 billion.

⁵⁰ For completeness, we do acknowledge an alternative interpretation. Namely, that DISH was attempting to park bidding units in anticipation of a transition to Activity Stage 2. We heavily discount this possibility, however, due to the fact that with the New York J block bid, Northstar (the DISH entity that placed the bid) was active on nearly 100 percent of its bid units. After being outbid on New York J in round 64 by AT&T, Northstar made only modest bids in round 65 to just cover its required activity under the Stage 1 rule. That is, there would have been far more cost effective ways to park than by bidding J block in New York. Consequently, the most reasonable interpretation of DISH's behavior in round 63 is that it was attempting to exclude rivals in that market to warehouse spectrum assets that it believed would be most important to wireless service providers.

⁵¹ C-S at 1 (emphasis in original).

⁵² C-S at 14 (“One cannot point to a single party as the cause for the higher prices; rather, it is the bidding of all parties, but especially the largest two bidders, that drove the prices to the final levels.”). We assume that the C-S paper is referring to AT&T and Verizon when it speaks of “the largest two bidders,” as they later state that DISH entities SNR and Northstar were pushed off licenses by AT&T and Verizon and then subsequently outbid T-Mobile.

as substitutes in the auction based on final bid prices, and because AT&T and Verizon won considerable spectrum in the auction, C-S infers that AT&T and Verizon displaced DISH entities SNR and Northstar from the H, I, and J blocks. According to C-S, SNR and Northstar then moved into the G block, where it outbid T-Mobile.

To see why DISH was a primary force driving T-Mobile's lower-than-expected winning bids in the AWS-3 auction, consider two bidding patterns relating to T-Mobile in the first 21 rounds of the auction. *First*, T-Mobile indicated through "jump bids" that its primary interest was winning the G block with supplemental interest in the H block in specific major market areas such as Chicago.⁵³ *Second*, T-Mobile frequently and rapidly reduced its eligibility between rounds 12 and 21 of the AWS-3 auction. T-Mobile's primary "ask" in the auction was the majority of the G block with some supplemental bandwidth in the H block, and T-Mobile significantly scaled back this ask between rounds 12 and 21 of the auction.⁵⁴

Next, consider how DISH bid relative to AT&T and Verizon in these key rounds. Table 2 presents these data.

⁵³ In rounds 1 and 7 of the auction T-Mobile submitted a total of 486 bids that were 3 increments above provisionally winning bid at the time. Given that the "minimum acceptable bid" for new bid submissions is 1 increment, T-Mobile's 3 increment bids represent "jumps" above the minimum. These jumps are of significance because in the AWS-3 auction bidding was done anonymously. The only information available to bidders was the licenses on which they were provisionally winning, the number of new bids submitted on each license in the prior round, and the new minimum bid price of the license. By submitting jump bids, T-Mobile was signaling to the market a single bidder was interested in G nearly nationwide and H in major market areas. Finally, any auction participant with a basic working knowledge of the US wireless industry would have suspected that T-Mobile placed these jump bids. This is because T-Mobile has a very strong position in AWS-1 in the E and F blocks, which are adjacent to the G block in AWS-3. By winning G where it already has E and F block spectrum, T-Mobile could compile at least 2x20 MHz of AWS spectrum, which would be ideal for LTE capacity.

⁵⁴ Indeed, the G block nationwide required 142 million bidding units of eligibility. At the start of round 12, T-Mobile had roughly 340 million bidding units in eligibility, but by round 20 it had reduced its bidding units to 123 million bidding units. Between rounds 12 and 21 of the auction, T-Mobile reduced eligibility by between 10 million and 36 million bid points each round (with the exception of round 18 in which it did not reduce eligibility).

TABLE 2: ELIGIBILITY IN BIDDING UNITS FOR MAJOR PARTICIPANTS BETWEEN ROUNDS 12 AND 21

<i>Bidder</i>	<i>Round 12 Eligibility (Bid Units) (in millions)</i>	<i>Round 21 Eligibility (Bid Units) (in millions)</i>
DISH*	1,320	1,011
SNR & Northstar	920	883.5
Verizon	798	450
AT&T	527.4	427.3
T-Mobile	340	123

*DISH is calculated as the sum of eligibility of American AWS-3 Wireless 1, Northstar, and SNR. Bid points for SNR and Northstar together are included because American AWS-3 Wireless I was exiting the auction between rounds 17 and 24.

The G-H-I-J blocks comprised 834 million bidding units worth of spectrum. When T-Mobile was quickly reducing its bidding units and scaling back its bidding between rounds 12 and 21 of the auction, so too were AT&T and Verizon.⁵⁵ By round 21, AT&T, Verizon, and T-Mobile possessed approximately one billion in eligibility points collectively.

Had DISH not participated in the auction, the level of bidding intensity would have likely diminished significantly between rounds 13 to 21 with T-Mobile positioned to win what it wanted—namely, the G block. In contrast, had either AT&T or Verizon completely exited the auction between rounds 13 and 21, DISH, through SNR and Northstar, had more than enough bid units to still win everything vacated by that bidder and to continue bidding against T-Mobile in the G block.

Accordingly, the C-S characterization of the auction dynamic as a “musical chairs” scenario—in which DISH was seeking out the cheapest block from a set of fungible licenses and was pushed on top of T-Mobile by AT&T and Verizon—is misleading.⁵⁶ Instead, DISH was active on all paired blocks simultaneously. So rather than musical chairs, a better analogy would be

⁵⁵ To this point, it is worth noting that AT&T reduced eligibility significantly in the very early rounds of the auction. Verizon waited until the auction cleared the aggregate reserve, which is why Verizon’s eligibility point reduction is very significant close to round 13.

⁵⁶ C-S at 14.

DISH doing a massive cannonball into the pool and driving T-Mobile (among others) from the water, with AT&T and Verizon weathering the choppy waters. Through this analysis, we correct, for the record, the economic effect that DISH's participation had on the AWS-3 auction. In addition, we note that calls to increase the size of the reserve on the basis of AWS-3 bidding may actually stem from a fear of the manner in which DISH, a reserve-eligible bidder, participated in the AWS-3 auction.

CONCLUSION

Nothing in the C-S paper suggests that the reserve should be increased. The incentive auction is arguably the most complex spectrum auction ever attempted. Rather than re-opening settled issues, the FCC should focus its attention on other intricacies that are vital to the auction's success, such as increasing the amount of clear spectrum available. Increasing the reserve risks discouraging participation both from broadcasters in the reverse auction and reserve-ineligible bidders in the forward auction, who may be less likely to participate in a significant manner if they deem the opportunity to acquire unimpaired spectrum to be limited.