

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

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| In the Matter of |) | |
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| Comment Sought with Respect to Regulatory Flexibility Act and Paperwork Reduction Act in Connection with Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002 |) | AU Docket No. 14-252 |
| |) | |
| Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions |) | GN Docket No. 12-268 |
| |) | |

COMMENTS OF COMPETITIVE CARRIERS ASSOCIATION

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COMMENTS OF COMPETITIVE CARRIERS ASSOCIATION

Competitive Carriers Association (“CCA”) respectfully submits these comments in response to the Wireless Telecommunications Bureau’s (“Bureau”) Public Notice¹ seeking comment on the impact that proposals in the Federal Communications Commission’s (“FCC” or “Commission”) *Auction Comment Public Notice*² will have on its Final Regulatory Flexibility Analysis (“FRFA”). The Commission is required to perform these analyses in connection with the *Incentive Auction NPRM*³ and *Incentive Auction Order*.⁴

¹ *Comment Sought with Respect to Regulatory Flexibility Act and Paperwork Reduction Act in Connection with Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, AU Docket No. 14-252, GN Docket No. 12-268, Public Notice, DA 15-60 (rel. Jan. 15, 2015) (“*IRFA – FRFA PN*”).

² *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, AU Docket No. 14-252, GN Docket No. 12-268, Public Notice, 29 FCC Rcd 15750 (2014) (“*Auction Comment PN*”).

³ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Notice of Proposed Rulemaking, 27 FCC Rcd 12357 (2012) (“*Incentive Auction NPRM*”).

I. INTRODUCTION AND SUMMARY

CCA represents the interests of more than 100 competitive wireless carriers, most of which are small carriers who serve otherwise underserved portions of rural America and many of which lack sufficient access to low-band spectrum. CCA's carrier members, especially its smaller members, are keenly interested in the Incentive Auction and are hopeful about the competitive benefits that could result.

The Commission deserves high praise for crafting a procompetitive framework for the upcoming Incentive Auction. Many of the policy decisions from the *Incentive Auction Order*, including smaller geographic license sizes, mandated interoperability and the creation of the market-based spectrum reserve, are all sound design decisions that will bear fruit for wireless consumers for years to come. There are, however, a few discrete proposals for implementing the auction in which the Commission has failed to account for their impact on small businesses and, more importantly, that could threaten the competitive framework already established by the Commission.

There are three specific proposals in the *Auction Comment PN* that go largely if not entirely unanalyzed in the Commission's FRFA, including: (1) the price per MHz-POP benchmark for determining whether the final stage rule has been satisfied; (2) the upfront payment amounts for the auction; and (3) the minimum opening bid amounts for the auction. Each of these proposals has significant economic consequences for small businesses and will influence small businesses' decisions on whether to participate and how competitive they can remain in the Incentive Auction. The Commission needs to include a more fulsome factual,

⁴ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567 (2014) ("*Incentive Auction Order*").

policy and legal analysis for these proposals for the agency to meet its requirements under the Regulatory Flexibility Act.

CCA appreciates the opportunity to submit comments on this subject matter, as decisions ultimately reached by the Commission on issues discussed below will significantly affect small businesses' participation in the forward auction, and, thus, the FRFA performed by the Commission.⁵

II. BACKGROUND

Through this “once-in-a-generation Incentive Auction,”⁶ the Commission acted in furtherance of Congress’s mandate to “design auctions to ‘include safeguards to protect the public interest in the use of spectrum,’ including the objectives to disseminate licenses ‘among a wide variety of applicants’ and to promote deployment of new technologies, products, and services to ‘those residing in rural areas.’”⁷ In particular, an integral part of the Incentive Auction is the “spectrum reserve,” which will make up to 30 MHz of spectrum in each license area available for bidding by non-dominant carriers or carriers lacking sufficient low-band spectrum in a market.⁸ The Commission created this spectrum reserve explicitly in recognition of the objectives laid out by Congress under Section 309(j) of the Communications Act.⁹ This

⁵ CCA has previously submitted a comprehensive white paper on these issues, a copy of which is attached to this filing. See Competitive Carriers Association, *Pricing in the 600 MHz Incentive Auction*, GN Docket No. 12-268, WT Docket No. 12-269 (filed Sept. 15, 2014) (“*CCA Pricing White Paper*”).

⁶ *Polices Regarding Mobile Spectrum Holdings, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, WT Docket No. 12-269, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6133 ¶ 68 (2014) (“*MSH Order*”).

⁷ *Id.* ¶ 56.

⁸ *Id.* ¶¶ 146-95.

⁹ *Id.* ¶ 179 (citing 47 U.S.C. § 309(j)(3)(A) and (B)).

“market-based spectrum reserve,” however, only becomes available once the final stage rule of the auction is satisfied.¹⁰

Following adoption of the *Incentive Auction Order*, the Commission released its *Auction Comment PN*, which seeks comment on detailed proposals for implementing the rules adopted in the *Incentive Auction Order*. The *Auction Comment PN* contains familiar proposals for traditional spectrum auctions, such as calculations for bidding units,¹¹ upfront payments¹² and minimum opening bids¹³ for the forward auction, as well more novel proposals such as a double-trigger for satisfaction of the final stage rule.¹⁴

The Regulatory Flexibility Act of 1980 requires the Commission to prepare an initial regulatory flexibility analysis accompanying a notice of proposed rulemaking, and a final regulatory flexibility analysis when it promulgates final rules pursuant to an NPRM,¹⁵ which the Commission did when it adopted the *Incentive Auction NPRM* and *Incentive Auction Order*, respectively. Among other requirements, a final regulatory flexibility analysis must contain:

[A] description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected¹⁶

¹⁰ *Id.* ¶¶ 184, 187.

¹¹ *Auction Comment PN* ¶¶ 160-63.

¹² *Id.* ¶¶ 164-67.

¹³ *Id.* ¶¶ 170-75.

¹⁴ *Id.* ¶¶ 47-54.

¹⁵ *See* 5 U.S.C. §§ 603, 604.

¹⁶ 5 U.S.C. § 604(a)(6).

CCA has previously identified portions of the auction rules that could negatively affect small entities. In particular, CCA’s Pricing White Paper explains why the price per MHz-POP benchmark for determining whether the final stage rule has been satisfied is unnecessary, and worse, how this benchmark could reduce the amount of spectrum ultimately cleared or result in auction failure entirely.¹⁷ Similarly, CCA has urged the Commission to account for the historical differences between urban and rural markets when setting upfront payment and minimum opening bid amounts for the forward auction.¹⁸

Now, CCA files these comments in response to the Bureau’s Public Notice “seek[ing] comment on how the proposals in the [*Auction Comment PN*] could affect either the IRFA or the FRFA.”¹⁹

III. DISCUSSION

A. The Price Per MHz-POP Component of the Final Stage Rule is Unnecessary, and will Deter Small Entities from Participating in the Forward Auction

The final stage rule adopted in the *Incentive Auction Order* incorporates two components, both of which must be satisfied for a particular round of the auction to qualify as the final stage.²⁰ In addition to requiring proceeds to cover auction costs, the Commission proposes in the *Auction Comment PN* “an average price per MHz-pop benchmark of \$1.25 for spectrum offered in the largest 40 PEAs by population in the forward auction”²¹ This requirement is unnecessary,

¹⁷ See generally *CCA Pricing White Paper* at 6-10; see also Petition for Reconsideration, GN Docket No. 12-268 (filed Sept. 15, 2014); *Ex Parte* Letter from Rebecca Murphy Thompson, General Counsel, CCA to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, *et al.* at 1-2 (filed Feb. 5, 2015) (“*Feb. 5 Ex Parte*”).

¹⁸ *CCA Pricing White Paper* at 11-16.

¹⁹ *IRFA – FRFA PN* ¶ 4.

²⁰ *Auction Comment PN* ¶ 46.

²¹ *Id.* ¶ 47.

contrary to the Commission’s stated purpose of the spectrum reserve, and will negatively affect smaller auction participants.

In the first instance, CCA has previously noted that “smaller carriers that will depend on the reserve to acquire spectrum will be largely powerless to determine whether or not the FCC-mandated price floor is met,”²² and the Commission’s proposal to tie the price per MHz-POP trigger to the largest 40 Partial Economic Areas (“PEAs”) by population underlines this problem.²³ The competitive carriers who will be most dependent on reserve spectrum largely do not operate in the 40 largest PEAs, and therefore will have little to no influence over whether the price benchmark is met.

More importantly, imposing an additional requirement on top of the obligation to pay the enormous purchase and relocation costs to which broadcasters are entitled will harm small businesses by subjecting them to “unnecessary and disproportionately burdensome demands.”²⁴ The first component of the Commission’s final stage rule, which no one has challenged, requires full funding of all statutorily required expenses, including all revenues broadcasters can ever receive from the auction.²⁵ Because the payment obligations to broadcasters are readily expected to exceed \$10 billion, reserve-eligible bidders will, by definition, have to ensure the public receives substantial value for its spectrum resources before the spectrum reserve comes into existence.

As a result, the second component of the final stage rule serves no purpose other than to prevent those who most need spectrum – especially small businesses – from actually acquiring

²² See *Feb. 5 Ex Parte* at 2.

²³ *Auction Comment PN* ¶ 47.

²⁴ Regulatory Flexibility Act, Pub. L. 96-354, 94 Stat. 1164.

²⁵ *Incentive Auction Order* ¶¶ 340, 342-343.

the spectrum they need to compete in the marketplace. For example, a high price benchmark could force non-dominant bidders to reduce their eligibility in the auction before the benchmark is met, which under the rules could reduce (or eliminate entirely) the reserve blocks.²⁶ Dominant carriers, in turn, will have additional incentive to double-down on gaming competitive carriers out of the auction, due to the added foreclosure value tied to eliminating reserve-eligible competitive carriers from the auction before the spectrum reserve becomes available.²⁷ Another potential risk is that, despite the auction generating enough revenue to fund all of its statutory mandates, the auction nonetheless misses the established price benchmark—forcing the Commission to either lower its spectrum clearing target or declare the entire auction a failure.²⁸ Moreover, the Commission may be assuming these risks in vain. The price per MHz-POP trigger was adopted to provide that, beyond the closing conditions, “prices for licenses in the forward auction reflect competitive values *without reducing the amount of spectrum repurposed for new, flexible-use licenses.*”²⁹ But as argued above, “competitive values” for this spectrum will be paid by forward auction bidders as a result of broadcasters’ market-based reverse auction bids.³⁰ And

²⁶ See *CCA Pricing White Paper* at 8.

²⁷ *Id.* at 9 (noting that “[d]uring the auction, in the period after the Spectrum Act expense targets are met but before the release of the reserved spectrum is triggered by the satisfaction of the final stage rule, bidding by dominant providers could shut out the smaller bidders and cause them to drop out of the auction or lower their eligibility. These competitive bidders, forced to reduce their eligibility before the spectrum reserve is triggered, would thus be disqualified from winning some or all of the reserved spectrum blocks.”)

²⁸ *Id.* at 8.

²⁹ *Auction Comment PN* ¶ 49 (citation omitted) (emphasis added).

³⁰ Lower reserve prices have historically generated larger total revenues in spectrum auctions, but higher reserve prices have constrained final sale prices. *CCA Pricing White Paper* at 6-7. The proposed reserve therefore not only harms small businesses, but also seems unlikely to achieve its stated objective of raising more auction revenue.

with respect to statutory objectives, Auction 97 generated far more revenue than expected, fully funding FirstNet —as well as most other statutory funding objectives, such as 911 grants, public safety research grants, the State and Local Implementation Fund, as well as deficit reduction.³¹ For all these reasons, the price per MHz-POP trigger is unnecessary and, indeed, violates the Regulatory Flexibility Act because there are a number of alternatives that would prove far less damaging to small businesses.³²

The FRFA accompanying the *Incentive Auction Order* currently omits any substantive discussion of the factual, policy or legal reasons for adopting a price per MHz-POP component to the final stage rule, what alternatives to this component were considered by the Commission and why they were ultimately rejected.³³ CCA once again urges the Commission, consistent with its statutory objectives and the requirements of the Regulatory Flexibility Act, to “promote competition and diversity while still achieving sizable revenues by eliminating the profit prong of the [final stage rule], or, at the very least, announcing some rational basis for establishing a price for the profit prong and then keeping that price as low as feasible.”³⁴

B. Including Auction 97 Results in the Calculation of Upfront Payments and Minimum Opening Bids will Harm Small Bidders

Similarly, the FRFA should address the impact that the proposals in the *Auction Comment PN* related to upfront payments and minimum opening bids will have on small entities. CCA

³¹ See Middle Class Tax Relief and Job Creation Act of 2012 § 6413(b).

³² 5 U.S.C. §§ 603(c), (d)(1)(B).

³³ See *Incentive Auction Order* at App. B, ¶ 59. Indeed, the *Incentive Auction Order* FRFA refers to the final regulatory flexibility analysis accompanying the *MSH Order* for its analysis of the spectrum reserve’s impact on small entities. *Id.* ¶ 59, n.97. That analysis, in turn, contains only a single paragraph discussing the Commission’s requirement that firms certify that they are eligible to bid on reserve spectrum. See *MSH Order* at App. C, ¶ 32.

³⁴ *CCA Pricing White Paper* at 10 (emphasis added).

applauds the Commission for not adopting a single, unadjusted price per MHz-POP for upfront payments and minimum opening bids.³⁵ The Commission's proposal to tie these amounts to a population-weighted price index, to group together similarly indexed PEAs and to apply the lowest index value to all of the PEAs within the group is an elegant means of accounting for the historical differences in prices between markets.³⁶ As CCA demonstrated in its White Paper, empirical data from past auctions shows that licenses for higher-populated markets have generated a disproportionate share of revenue as compared to rural markets.³⁷ CCA remains concerned, however, by certain outliers below the median PEA population resulting from the Commission's methodology.³⁸ Additionally, because licenses have never before been auctioned on a PEA basis, CCA urges the Commission to provide more information, either through the FRFA or some other means, on the creation of the price index, including how results from past auctions for spectrum licensed in Economic Areas and Cellular Market Areas were adapted for use with licenses to be offered based on PEAs.

Moreover, CCA objects to the Commission's proposal to incorporate the final results from Auction 97 into the price index for determining bidding units (and, therefore, upfront payments and minimum opening bids),³⁹ because this exercise could prejudice smaller bidders.

³⁵ *Auction Comments PN* ¶ 162.

³⁶ *Id.*

³⁷ *CCA Pricing White Paper* at 11-15. Auction 97 provided additional evidence supporting this claim. For example, while the average price per MHz-POP paid in the auction was \$2.21, the average price for licenses in Chicago was \$6.11 per MHz-POP. See Stefan Zehle, Coleago Consulting, Record Spectrum Prices for High Bands in US AWS-3 Auction (Feb. 2, 2015), available at <http://www.coleago.com/record-spectrum-prices-high-bands-us-aws-3-auction/>.

³⁸ See *Auction Comment PN* at App. F.

³⁹ *Id.* ¶ 162.

While Auction 97 raised a record-breaking \$45 billion, \$28.5 billion of this was pledged by the two dominant providers, and more than \$43 billion was bid by participants with a nationwide spectrum footprint. Simply stated, while Auction 97 may have been successful from a fiscal perspective, small businesses and, correspondingly, the consumers they serve did not fare well in this auction. Forklifting the prices paid for AWS-3 spectrum onto the upfront payment and minimum opening bid requirements for 600 MHz spectrum would add insult to injury. Because the amount of spectrum to be offered in the forward auction is still unknown, high upfront payment amounts could result in bidders locking up a substantial amount of capital for an extended period of time in hopes of the auction achieving a high clearing target, even if this ultimately ends up not being the case—resulting in an inefficient allocation of resources.⁴⁰ Because the FRFA does not (and could not) account for the results of the AWS-3 auction, the Commission now should review the likely deleterious effects the Auction 97 results, if included in Incentive Auction prices, will have on small entities wishing to participate in the Incentive Auction.

IV. CONCLUSION

The Commission's proposal to incorporate a price per MHz-POP component into the final stage rule goes largely unexplained in the FRFA accompanying the *Incentive Auction Order*, despite the significant damage this component will inflict on smaller carriers that hope to participate in the Incentive Auction. Similarly, including the final results from Auction 97 for determining upfront payments and minimum opening bids could have significant ramifications for competitive carriers. The Commission should—at a minimum—explain the factual, policy and legal reasons for these proposals, as required by

⁴⁰ *CCA Pricing White Paper* at 15-16.

the Regulatory Flexibility Act. If the Commission finds it cannot meet its burden under the Act, it should abandon these proposals when promulgating final rules for the auction.

Respectfully submitted,

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PRICING IN THE 600 MHz INCENTIVE AUCTION

I. INTRODUCTION

In May 2014, the Federal Communications Commission (“FCC” or “Commission”) adopted measures to increase competition by promulgating rules for the 600 MHz broadcast incentive auction¹ as well as policies governing excessive concentration of mobile spectrum.² The release of preliminary auction guidelines and revised spectrum policies represented an important milestone, including the adoption of many pro-competitive rules like an interoperability requirement, smaller geographic license sizes, and the creation of a sliding scale of “reserved” spectrum for non-nationwide carriers and carriers with less than one-third of the total available low-band spectrum resources in a market.³ Still, critical policy decisions involving the pricing mechanisms for spectrum during the incentive auction remain unsettled, which will have a significant impact on competitive carriers’ participation in the auction and on the competitive success of the auction as a whole.

In this study, CCA explores three types of mandatory minimum pricing levels to be used in the incentive auction: (1) mandatory minimum payments, also known as reserve prices; (2) the final stage rule, which is a mandatory minimum payment that triggers the creation of spectrum blocks for carriers with limited low-band spectrum resources in a given geographic area; and (3) minimum opening bids and upfront payment amounts required of bidders that seek to participate in the incentive auction.⁴

First, mandatory minimum payments in the incentive auction should remain market-based, predictable, and reasonably low. The Spectrum Act requires the incentive auction generate sufficient proceeds to pay broadcasters for exiting the band, cover certain statutorily-fixed relocation expenses for those incumbents that remain, and fully satisfy any remaining Federal financial obligations to the First Responder Network Authority (“FirstNet”).⁵ Once those baseline expenses are covered,

¹ *Expanding Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 28 FCC Rcd 6587 (2014) (“*Incentive Auction Report and Order*”).

² *Policies Regarding Mobile Spectrum Holdings: Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6133 (2014) (“*MSH Report and Order*”).

³ Contrary to the rhetoric of some parties, the reserve blocks are not “set aside” for non-dominant carriers. On the contrary, the two dominant carriers are themselves eligible to bid on the reserve blocks in any geographic market where the carrier does not already control more than one-third of the total low-band spectrum. The FCC’s narrowly tailored requirement means that Verizon and AT&T are ineligible for the reserve blocks only in certain geographic markets where their share of critical inputs is especially high and particularly likely to result in the risk of anti-competitive foreclosure.

⁴ To avoid confusion with “reserve blocks,” this study refers to “reserve prices” as “mandatory minimum payments.”

⁵ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6403(c)(2), 126 Stat. 156 (2012) (“Spectrum Act”). In addition to recouping expenses, the incentive auction, together with three additional auctions authorized by the Spectrum Act—the H Block, AWS-3 and 1695 Band auctions—are charged with raising the roughly

applying requirements for additional revenue not only increases the risk that the auction assigns an artificially limited amount of spectrum for higher-valued uses, but also perversely threatens to generate less – not more – revenue for the U.S. Treasury.

Second, the spectrum reserve blocks should exist independently of a mandatory minimum payment requirement and, if the blocks must remain dependent on satisfaction of a mandatory minimum price associated with a final stage rule, then the price should be based on a functioning market, not arbitrary price floors established by the government. The Commission has previously recognized that anti-competitive foreclosure from critical input resources remains a danger even with provisions in the auction rules reserving, on a contingent basis, limited amounts of spectrum for non-nationwide carriers and bidders that do not already hold more than one-third of the available low-band spectrum.⁶ So long as the final stage rule’s mandatory minimum payment mechanism that triggers the creation of reserve blocks is low, then it poses no great concern. But if the final stage rule’s mandatory minimum payment requirement is high or is set in an arbitrary manner that clouds the auction with uncertainty – as the MHz-POP prong of the minimum payment requirement would – then the reserve blocks never come into existence or may do so only after eligibility has been lost, which will result in non-dominant carriers facing anti-competitive foreclosure by the dominant wireless carriers.

Third, the minimum opening bids and minimum upfront payments established for each license offered in the auction should reflect differences between urban and rural areas. A disparity exists between past auction revenue from spectrum licenses that serve low population areas and those that serve high population areas. Relative levels of population do not account for the difference in price. Rather, urban areas generate more revenue *per unit of population* than licenses in rural areas do. This longstanding disparity means that establishing license-specific minimum payments based strictly on the population of a geographic area license will result in prices for rural areas that are much higher relative to final sale prices than the minimum prices for urban areas. To ensure rural areas have as much access to broadband spectrum as urban areas, the license-specific minimum opening bids and minimum upfront payments established for each license should reflect different prices in urban and rural markets. More generally, these license-specific payment mechanisms should be kept low in recognition of both the exceptionally low incidence of disingenuous bidding and the variability in the total number of licenses available as a result of the unique elements of the incentive auction.

\$7 billion in federal funding identified by Congress for the Public Safety Trust Fund, which will support FirstNet. *Id.* § 6413(b)(3). The FCC has noted that it is “optimistic that the proceeds from the H Block and AWS-3 auctions will be sufficient to fully fund amounts for FirstNet,” which would eliminate the need for the incentive auction to generate any funds for that purpose. *Incentive Auction Report and Order* ¶ 345.

⁶ See *MSH Report and Order* ¶ 181 (“[T]o qualify to bid on reserved licenses in a PEA, an entity must not hold an attributable interest in 45 megahertz or more of below-1-GHz spectrum in a PEA, . . . or must be a non-nationwide provider.”). Both the Antitrust Division of the U.S. Department of Justice and the Commission have found that aspects of the mobile broadband marketplace present a risk that dominant providers might engage in foreclosure strategies, including high market concentration, highly concentrated holdings of low-band spectrum, high barriers to entry, and high margins between price and the incremental cost of providing service to an additional customer. *Id.* ¶ 62 (“We agree with the Antitrust Division of the [Department of Justice], one of our nation’s expert antitrust agencies: there is a risk of foreclosure in downstream wireless markets.”).

The ultimate goal of the incentive auction is to put spectrum to its highest valued use for the benefit of consumers throughout the U.S.⁷ Departing from this goal by establishing arbitrary government profit targets increases the risk of a failed auction and anti-competitive foreclosure.

II. BACKGROUND

Congress established the basic structure of the incentive auction in the Spectrum Act. As directed by Congress, broadcasters will have the opportunity to sell some or all of their broadcast spectrum licenses in exchange for incentive payments in a “reverse auction,” and the FCC will make the spectrum recovered from the broadcasters available as part of a “forward auction” offering flexible-use licenses suitable for mobile broadband use.⁸ The auction will provide additional funding for participating broadcasters to develop new content, services, and delivery mechanisms while simultaneously providing additional broadband capacity that can alleviate congestion and facilitate the deployment of new wireless services and applications.⁹ The goal of the incentive auction is to put the broadcast spectrum to its highest and best use,¹⁰ while satisfying the statutory requirement that forward auction revenues be sufficient to pay winning broadcast bidders in the reverse auction and cover the relevant administrative costs of the auction and those relocation costs subject to reimbursement,¹¹ as well as any remaining Public Safety Trust Fund amounts.¹² Although the goals of the incentive auction were established by statute, the unique and complex nature of the incentive auction poses new challenges for the FCC as it crafts rules to govern the proceedings.

In a typical spectrum auction, the Commission offers a known quantity of spectrum in pre-defined blocks and in pre-established areas. The FCC may establish a mandatory minimum payment, or multiple mandatory minimum payments, either disclosed or undisclosed, below which licenses subject to auction will not be awarded.¹³ This mandatory minimum payment serves as a floor for revenues; if bids do not reach a certain threshold, the spectrum licenses governed by that mandatory minimum payment will not be sold and would typically be offered for sale in subsequent auctions.

Likewise, in a typical spectrum auction the Commission requires applicants for licenses subject to competitive bidding to submit an upfront payment.¹⁴ At the outset of an auction, each bidder

⁷ “Our central objective in designing this incentive auction is to harness the economics of demand for spectrum in order to allow market forces to determine its highest and best use.” *Incentive Auction Report and Order* ¶ 2; see also *MSH Report and Order* ¶ 68 (“We conclude that if we do not act at this time to ensure the highest use of low-band spectrum, the competitive choices available to wireless consumers will likely be substantially less attractive.”).

⁸ See *Incentive Auction Report and Order* ¶ 1.

⁹ See *id.*

¹⁰ See *id.* ¶ 2.

¹¹ See Spectrum Act § 6403(c)(2).

¹² See *Incentive Auction Report and Order* ¶ 26; *MSH Report and Order* ¶ 151.

¹³ 47 U.S.C. § 309(j)(4)(F); 47 C.F.R. § 1.2104(c).

¹⁴ 47 C.F.R. § 1.2106(a).

establishes its initial eligibility for bidding by making a deposit that secures the right to bid on those licenses, in specific markets, for which that bidder wishes to be eligible.¹⁵ Generally, the Commission requires upfront payments to ensure that bidders have something at stake to motivate them to participate meaningfully in the auction and to ensure that bids are truthful and non-fraudulent.¹⁶ These upfront payments constitute real commitments of resources by bidders, because bidders will be without access to this capital for many months.¹⁷

A typical spectrum auction closes when the mandatory minimum payment has been met and demand has been satisfied. After the auction closes, the bidders' upfront payments are credited toward any down payment required for licenses for which an entity is the high bidder.¹⁸ If all of the spectrum available at a typical auction is not sold, the FCC has the ability to aggregate the unsold bands for resale in a later auction, although the Commission generally prefers closing an auction with all spectrum licenses successfully auctioned.

The incentive auction follows the basic pattern of typical FCC spectrum auctions, but with several unique characteristics. Instead of starting out with a specific spectrum allocation, the simultaneous nature of the forward and reverse auctions means that neither the Commission nor the bidders will know how much spectrum will be available, or in what markets, until the auction begins. Even as the auction progresses, the amount and location of the available spectrum will change as bidders in the reverse auction amend their bids. The way the auction closes also differs from the norm. In addition to satisfying a mandatory minimum payment, the rules for the incentive auction require that revenues must satisfy a "final stage rule" before the auction can close. Perhaps most importantly, the Spectrum Act authorized only one auction for the 600 MHz band, and licenses that are unsold will not be available through the incentive auction mechanism defined by Congress for the benefit of broadcasters.

The FCC typically bases its mandatory minimum payment on the past revenues that similar spectrum has raised in previous auctions. The FCC has not yet determined the methodology it will use to establish the mandatory minimum payment for the incentive auction, although it has noted that it hopes to enable both high spectrum clearing and ensure that revenue benchmarks established by law are satisfied.¹⁹

The calculation of the mandatory minimum payment is complicated by the FCC's decision to adopt a final stage rule "to assure that the forward auction raises enough proceeds to satisfy the minimum

¹⁵ See Paul Milgrom, *Putting Auction Theory to Work: The Simultaneous Ascending Auction*, 108 J. of Political Econ. 245, 247-48 (2000) ("Putting Auction Theory to Work").

¹⁶ See *Incentive Auction Report and Order* ¶ 494.

¹⁷ See *id.*; *Putting Auction Theory to Work* at 247-48.

¹⁸ 47 C.F.R. § 1.2106(d).

¹⁹ See *Incentive Auction Report and Order* ¶ 342 (explaining that the use of a reserve price "will allow the incentive auction to determine the best balance of spectrum cleared and spectrum license prices attained through competition, while ensuring that the auction meets the statutory requirements").

proceeds requirements that we establish” and to “advance[] [the] goal of allowing market forces to determine the highest and best use of spectrum.”²⁰ The final stage rule is a mandatory minimum payment with two components, both of which must be satisfied before the auction can close.²¹ The first component is a price per MHz-POP²² mandatory minimum payment that requires proceeds to satisfy either (1) a fixed price benchmark, such as a price per MHz-POP; or (2) a variable price benchmark based on spectrum clearing, such as the product of a price benchmark, a spectrum clearing benchmark, and the total POPs for those licenses.²³ Under the latter alternative, the auction can close if the incentive auction repurposes a relatively large amount of spectrum for wireless uses, even if the price per MHz-POP is less than the benchmark price.²⁴ The second component requires that the forward auction cover all mandatory expenses established in the Spectrum Act, such as compensation for participating broadcasters, relocation costs, and relevant administrative costs of the auction,²⁵ as well as any remaining amounts necessary in connection with FirstNet.²⁶

In light of the significant risk of foreclosure by the dominant wireless service providers, the Commission created a spectrum reserve for the incentive auction to ensure that all bidders have an opportunity to bid on and obtain low-band spectrum licenses.²⁷ The Commission limited access to this spectrum reserve to non-nationwide carriers and carriers that do not currently possess significant low-band holdings (45 MHz or more) in a Partial Economic Area (“PEA”).²⁸ Until forward auction revenues satisfy the final stage rule, carriers will not have access to the reserved spectrum.²⁹ The Commission opted to link access to the reserved spectrum to satisfaction of the final stage rule.³⁰ Thus, the mandatory minimum payment has an important role in either discouraging or enabling foreclosure of competitive carriers from access to reserved spectrum by dominant bidders. The final amount of reserved spectrum available in each market will be determined based on the maximum amount of reserved spectrum in the stage immediately prior to the final stage, or the amount that the reserve-eligible bidders demanded at the time the final stage rule is met, whichever is smaller.³¹ Consequently, the actual amount of reserved spectrum available

²⁰ See *id.* ¶¶ 10, 342.

²¹ *Id.* ¶ 26; *MSH Report and Order* ¶ 151.

²² “MHz-POP” is the product derived from multiplying the number of megahertz associated with a license by the population of the license’s service area.

²³ *Incentive Auction Report and Order* ¶ 340; see also *MSH Report and Order* ¶ 151.

²⁴ *Incentive Auction Report and Order* ¶ 26.

²⁵ Spectrum Act § 6403(c)(2).

²⁶ See *MSH Report and Order* ¶ 151; *Incentive Auction Report and Order* ¶¶ 26, 344.

²⁷ *MSH Report and Order* ¶ 153.

²⁸ *Id.* ¶ 181.

²⁹ *Id.*

³⁰ See *id.* ¶ 187.

³¹ *Id.* Under the rules as adopted, no more than 30 MHz of spectrum will be “reserved.” Specifically, different amounts of reserved spectrum will be available in each of the following clearing scenarios: when 70 or more MHz of spectrum is

to bidders will be based on the quantity those bidders demand in each individual market at the point when the forward auction revenues satisfy the final stage rule.³²

III. PRICING MECHANISMS SHOULD ALLOW BROAD BASED PARTICIPATION IN THE AUCTION

Setting minimum prices at levels in excess of the levels required by statute or adopting upfront payment and minimum opening bid amounts that fail to take into account the lower price per unit of population that rural licenses command each increases the risk of auction failure, threatens to reduce auction revenue, and will likely produce greater concentration of critical input resources in the wireless broadband market.

A. Setting mandatory minimum payments too high could threaten the success of the incentive auction.

A mandatory minimum payment that is set above the statutory sums set forth in the Spectrum Act will serve as a barrier to entry to smaller and rural carriers and will discourage them from participating in the forward auction. This outcome could damage auction revenues by weakening competitive bidding, clearing less spectrum even though there is sufficient revenue to fully satisfy exit costs, relocation expenses and other statutory obligations, and harming competition by limiting bidding to the largest, most highly capitalized bidders, which already hold the largest share of low-band spectrum resources.

Under the Commission's auction rules, no bidder can win any licenses until the total bidding meets or exceeds the minimum payment requirement.³³ Historically, the Commission has set mandatory minimum payment obligations at low levels to allow broad-based participation, stimulate more competitive bidding, and ultimately generate more revenue for the U.S. Treasury. On those occasions where the Commission has established more than nominal mandatory minimum payment obligations, the Commission has cited extraordinary circumstances for the departure, including limited interest in the spectrum (the PCS H Block auction);³⁴ the effects of untested and potentially costly regulatory obligations (the Upper 700 MHz C Block auction);³⁵ and the need to cover the cost of federally mandated clearing expenses (the AWS-3 auction).³⁶ The chart below expresses mandatory minimum payments (and in some cases minimum upfront payments that functioned as

cleared, a maximum of 30 MHz will be reserved; if 60 MHz is cleared, a maximum of 20 MHz will be reserved; if 50 or 40 MHz is cleared, a maximum of 10 MHz will be reserved.

³² *Id.*

³³ *Incentive Auction Report and Order* ¶¶ 338-46.

³⁴ *See Auction of H Block Licenses in the 1915-1920 MHz and 1995-2000 MHz Bands Scheduled for January 14, 2014*, Public Notice, 28 FCC Rcd 13019 ¶¶ 168-77 (2013).

³⁵ *See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order, 22 FCC Rcd 15289 ¶¶ 297-317 (2007).

³⁶ *See Auction of Advanced Wireless Services (AWS-3) Licenses Scheduled for November 13, 2014*, Public Notice, 29 FCC Rcd 8386 ¶¶ 184-92 (2014).

mandatory minimum payments) of several of the larger, more recent auctions as prices per megahertz of population, or prices per MHz-POP.

| Auction | Reserve Type | Band | Block(s) | Reserve Price (\$K) | Reserve Price per MHz-POP | Gross Sale Price(\$K) | Gross Sale Price per MHz-POP | Gross Ratio |
|------------|----------------------------------|----------|----------|---------------------|---------------------------|-----------------------|------------------------------|-------------|
| Auction 73 | Reserve Price by Block | 700 MHz | Lower A | \$1,807,380 | \$0.53 | \$3,961,174 | \$1.16 | 46% |
| | | 700 MHz | Lower B | \$1,374,426 | \$0.40 | \$9,143,993 | \$2.68 | 15% |
| | | 700 MHz | Lower E | \$903,690 | \$0.53 | \$1,266,892 | \$0.74 | 71% |
| | | 700 MHz | Upper C | \$4,637,854 | \$0.74 | \$4,748,319 | \$0.76 | 98% |
| Auction 66 | Aggregate Reserve for all Blocks | AWS-1 | A-F | \$2,059,069 | \$0.08 | \$13,879,110 | \$0.54 | 15% |
| Auction 44 | Minimum Opening Bid | 700 MHz | Lower C | \$60,206 | \$0.025 | \$109,903 | \$0.046 | 55% |
| | | | Lower D | \$6,216 | \$0.025 | \$6,216 | \$0.025 | 100% |
| Auction 49 | Minimum Opening Bid | 700 MHz | Lower C | \$6,645 | \$0.01 | \$24,947 | \$0.038 | 27% |
| | | | Lower D | \$14,222 | \$0.01 | \$38,036 | \$0.027 | 37% |
| Auction 92 | Minimum Opening Bid | 700 MHz | Lower A | \$253 | \$0.03 | \$2,342 | \$0.28 | 11% |
| | | | Lower B | \$1,171 | \$0.04 | \$18,060 | \$0.67 | 6% |
| Auction 96 | Reserve | 1900 MHz | H | \$1,564,000 | \$0.50 | \$1,564,000 | \$0.50 | 100% |

Notably, some of the most successful auctions, such as AWS-1 (Auction 66) and the Lower 700 MHz A and B Block (Auction 92), had some of the lowest mandatory minimum prices per MHz-POP and achieved prices per MHz-POP many times the mandatory minimum. Meanwhile, auctions such as the Upper 700 MHz C Block (Auction 73) and the PCS H block (Auction 96) featured some of the highest mandatory minimum prices of the auctions studied and achieved little, if anything, beyond the requisite minimum price per MHz-POP. While many factors figure into the ultimate outcome of an auction, the notable correlation between low mandatory minimum prices and high net revenues across many different types of auctions supports the desirability of maintaining relatively low mandatory minimum prices as a way of, if nothing else, stimulating broader participation and generating more revenue.

In the *Incentive Auction Order*, however, the Commission seeks to raise mandatory minimum payment obligations above nominal levels and, indeed, above the level necessary to pay for clearing expenses and other federally-mandated obligations without any compelling justification for the departure. Specifically, the incentive auction’s mandatory minimum payment mechanism incorporates two prongs. The uncontroversial first prong – the expense prong – covers federally mandated clearing and repacking expenses and numerous other financial obligations, such as funding for the First Responder Network Authority (“FirstNet”). The amount required under this prong could readily exceed \$10 billion, a level outstripping any other auction in Commission history, but this prong is not controversial because the expenses must be paid to clear the band and fulfill other federal obligations. The second prong – the profit prong – is controversial because it seeks to identify a surrogate “market” price for spectrum and extract it from bidders. The minimum payment necessary to satisfy this prong, which would be in addition to the first, remains unclear but would rely on an *ex ante* government estimation of a fair market price.

The economic intervention contemplated by the second prong threatens the success of the incentive auction. If the profit prong of the mandatory minimum payment mechanism were maintained at a

low level, it would be unproblematic. But in practical application, the profit prong would be redundant to the expense prong if its target were not in excess of the already considerably high level of mandatory expenses that the incentive auction must meet before the auction can close. As a result, the profit prong of the mandatory minimum pricing mechanism appears intended to serve as a government-arbitrated price floor for resources in a dynamic market in the midst of rapid technological change.

Putting aside whether such an intervention in the market is warranted here, the specific mechanism adopted in the *Incentive Auction Order* generates at least two economic problems of consequence for the incentive auction and its participants. First, the minimum payment price may be set so high as a result of the government's profit prong that the reserve blocks will not come into existence before non-dominant bidders are forced to reduce the amount of their bidding eligibility, which, by rule, will shrink (and possibly eliminate) the reserve blocks that are intended to redress the economic imbalance between carriers with high concentrations of low-band spectrum and those that lack access to these resources. Second, the minimum bidding requirement may be set so high as a result of the government profit prong that, even though the auction generates enough money to pay all the broadcasters and cover all congressionally-mandated expenses, the Commission will either have to lower its spectrum-clearing target (and sell less spectrum) or declare the entire auction a failure.

For example, if the FCC persists in using a minimum revenue requirement and forward auction bids clear the mandatory statutorily-required minimum but fail to meet the arbitrary, government-identified revenue target, then the broadcasters would not receive the value they have placed on their spectrum, the reserve blocks designed to protect competitive carriers against anti-competitive foreclosure would not come into existence, the FCC would convert less, if any, spectrum to mobile wireless use, and the auction would not deposit additional funds into the U.S. Treasury. Instead, the FCC would have to lower its clearing target, which would reduce broadcast clearing expenses but incidentally might *increase* broadcast repackaging expenses. If things go well, the reduction in spectrum clearing may allow the FCC to achieve higher per unit prices needed to pay broadcasters, create the reserve blocks of spectrum, and close the auction, but only after suffering the considerable loss of consumer welfare associated with making less broadband spectrum available to consumers. If things go poorly (for instance because revenues are reduced as a result of having fewer licenses available to sell), however, then the FCC will have to decrease the amount of spectrum sold even further and try again to meet the profit prong of the mandatory minimum payment requirement with the outcome equally uncertain. If the FCC continues trying and failing to meet the arbitrary revenue target at lower and lower levels of clearing, then eventually no spectrum is cleared and the auction is declared a failure.

Ultimately, the auction will not be a success if willing sellers and willing buyers cannot achieve a spectrum transfer because the FCC has established an arbitrarily high revenue goal that proves impossible to meet even though the revenues from buyers greatly exceed the payments necessary to sellers. The primary goal of the spectrum auction is to repurpose the spectrum in the 600 MHz band for its most efficient use and to promote competition in the mobile marketplace, while meeting all congressionally-mandated expense obligations and satisfying any remaining funding requirements

for FirstNet.³⁷ Lower mandatory minimum payments will encourage bidding from a wide range of carriers and create broad upward pricing pressure, benefitting all participants in the auction while promoting consumer welfare and other public interest goals of the Communications Act. By contrast, attempting to raise arbitrarily predetermined amounts of revenue through a one-time auction would risk clearing less spectrum, raising less revenue, and damaging the competitiveness of the mobile broadband marketplace. To promote competition, prevent consumer harm, and increase taxpayer revenues, the Commission should establish mandatory minimum payments commensurate with federally mandated expenses.

B. The reserve blocks should exist independently of the mandatory minimum payment obligation.

The final stage rule should not be tied to the minimum payment requirement and, if it is tied to the minimum payment requirement, it should not be tied to the requirement's profit prong. Tying the reserve blocks to an arbitrary revenue goal will only serve to depress competition by increasing the likelihood that the reserve spectrum will not exist or that competitive bidders will not be able to access it.

The possibility for foreclosure exists in every auction in which there is a disparity in buying power. Foreclosure can be pre-emptive, when a bidder with deep pockets makes public its intent to outbid all other participants in an auction and thus causes prospective bidders to avoid the auction altogether. As noted economist Paul Klemperer explained in *Auctions: Theory and Practice*, “[i]n an ascending auction a stronger bidder can always top any bid that a weaker bidder makes, and knowing this the weaker bidder may not enter the auction in the first place—which may then allow the stronger bidder to win at a very low price.”³⁸ Foreclosure can also take place during an auction, when a dominant bidder uses its resources to block a smaller participant's access to the auctioned spectrum by driving up prices. Even though the FCC has sought to combat the risk of foreclosure by reserving a pool of spectrum for providers with access to less than one-third of the available low-band spectrum and non-nationwide carriers, if the price to trigger this reserve is set too high, the dominant carriers can and likely will seek to foreclose non-dominant competitors from the market.

During the auction, in the period after the Spectrum Act expense targets are met but before the release of the reserved spectrum is triggered by the satisfaction of the final stage rule, bidding by the dominant providers could shut out the smaller bidders and cause them to drop out of the auction or lower their eligibility. These competitive bidders, forced to reduce their eligibility before the spectrum reserve is triggered, would thus be disqualified from winning some or all of the reserved spectrum blocks. If the revenue prong were eliminated from the final stage rule, the Commission would increase the likelihood that small, competitive bidders can retain their eligibility and access reserved spectrum and in so doing make Congressional revenue more likely to be met by ensuring a more competitive wireless auction.

³⁷ See *Incentive Auction Report and Order* ¶¶ 2, 5.

³⁸ Paul Klemperer, *Using and Abusing Auction Theory*, in *Auctions: Theory and Practice* 132 (2004).

Should the Commission nonetheless retain the connection between the final stage rule and the minimum payment requirement, the price should be low enough to avoid precluding economically efficient market transactions between buyers and sellers of spectrum. Identifying anything approaching the point at which the market price for input resources is mostly captured but not exceeded would require the Commission to make extensive assumptions about how much spectrum the FCC will sell, the market conditions prevalent at the time of sale, the demand for broadband services, and the ability of service providers to manage demand through pricing and terms of service. The *Incentive Auctions Order*, however, offers no discussion or rationale for how the FCC will settle upon the “right” profit level it hopes to achieve. And the FCC’s task is made no easier as a result of the unique circumstances of the incentive auction, which prevent the Commission from knowing in advance how much spectrum will be available, how the available spectrum will be configured, or the degree of encumbrances that might prevail. In the incentive auction, moreover, the consequences of the FCC “getting it wrong” on price are especially serious. Congress authorized only one voluntary broadcast television reverse auction: spectrum that is not repurposed in the voluntary incentive auction may not be available to be repurposed voluntarily again.³⁹ In these circumstances, the public interest in timely, efficient and cost-effective broadband deployment is far better served by severing the link between the reserve blocks and the mandatory minimum payment or, at the very least, keeping the mandatory minimum payment low enough to err on the side of caution and reduce the risk of auction failure.

In sum, foreclosure can occur at any point up to the minimum payment price. The profit prong of the minimum payment mechanism the Commission envisions for the auction is especially troubling because it suggests a high minimum payment obligation that will increase the period of time where competitive carriers have no access to the reserve blocks as well as the likelihood that competitive bidders will lose eligibility and be forced to accept the reduction or elimination of the limited amount of reserve spectrum available. The Commission can promote competition and diversity while still achieving sizeable revenues by eliminating the profit prong of the minimum payment price, or, at the very least, announcing some rational basis for establishing a price for the profit prong and then keeping that price as low as feasible.

³⁹ Spectrum Act § 6403(e); *Incentive Auction Report and Order* ¶ 3; see also *id.*, Statement of Chairman Tom Wheeler (“The Incentive Auction is a once-in-a-lifetime opportunity to expand the benefits of mobile wireless coverage and competition to consumers across the Nation, offering more choices of wireless providers, lower prices, and higher quality mobile services.”). The relocation of incumbent operators is also highly inter-related: a failure to clear spectrum in one market may result in limitations on the ability to clear spectrum in other markets.

C. Minimum opening bids and minimum upfront payments should not serve as barriers to entry.

1. License-specific minimum opening bids and minimum upfront payments should reflect the historic price differential between urban and rural markets.

In addition to setting mandatory minimum payments at a level that will encourage broad participation, including among smaller and rural carriers, the minimum opening bids and minimum upfront payments for each license should reflect historical differences between urban and rural markets either by applying minimums on a nationwide average basis or, if license-specific prices are used, making adjustments to account for deviations from the average.

Empirical data from past auctions for similar spectrum exhibits price differentiation between markets based on population. The most populated geographic areas as well as those with the highest population density have generally generated a disproportionate share of revenue in past spectrum auctions administered by the Commission, and there is no reason to believe that the incentive auction will deviate from past auction trends.

The FCC's practice of applying an unadjusted, constant entry price per MHz-POP to all markets nationwide has had a detrimental effect on rural America. In the late summer of 2002, for example, the Commission offered 734 Lower 700 MHz C Block and 6 Lower 700 MHz D Block licenses for sale in Auction 44. The Bureau set minimum opening bids based on a formula that utilized a constant price per MHz-POP of 2.5 cents.⁴⁰ When the auction completed, 251 C Block licenses had not received opening bids and thus had not sold. These unsold licenses represented more than a third of the C Block licenses offered and they covered roughly 20 percent of the population.⁴¹ Of these 251 licenses, 227 – or more than 90 percent – were in CMAs in which the total population was less than the average CMA population. That is, the licenses that did not sell were largely the most rural and least populous CMAs in the country. While the opening price per MHz-POP was reasonable for the vast majority of the more populous markets, it was grossly inappropriate for the most rural CMAs. This point was further proven eight months later in May 2003 when the same licenses were offered for sale again in Auction 49. This time the Bureau lowered the opening price by 60 percent - from 2.5 cents to 1 cent per MHz-POP.⁴² Learning from its past mistake, the FCC established an opening price more closely tailored to the size and value of these rural markets. In Auction 49, all but five of the 251 re-auctioned C Block licenses were successfully sold.⁴³

⁴⁰ See Auction of Licenses in the 698-746 MHz Band Scheduled for June 19, 2002, *Public Notice*, DA 02-563 at p. 33 (rel. Mar. 20, 2002), available at <http://wireless.fcc.gov/auctions/44/releases/da020563.pdf>.

⁴¹ This is remarkably consistent with the results of criteria to distinguish urban markets from rural markets. The methodology and precise results for the various market geographies are explained later in this white paper, but all determine that rural markets cover roughly 18-34 percent of the U.S. population.

⁴² See Auction of Licenses in the Lower 700 MHz Band Scheduled for May 28, 2003, *Public Notice*, DA 03-567 at p. 34 (rel. Mar. 4, 2003), available at https://apps.fcc.gov/edocs_public/attachmatch/DA-03-567A1.pdf.

⁴³ All five unsold licenses were in Puerto Rico and were later sold in Auction 60.

Although the U.S. Census Bureau has no standard methodology for determining which areas in the United States are “urban” versus which are “rural,” typically population size and population density play a significant role in this determination.⁴⁴ Considering market geographies used by the FCC to auction spectrum licenses, those with the greatest total population and/or highest population density tend to be the most urban markets, and those with the lowest total population and/or lowest population density tend to be the most rural markets. A logical place to differentiate between urban and rural markets is at the average for the chosen criteria, and a basic analysis of market area statistics reveals that this is a reasonable assumption for most methodologies and market types.

If total population is considered as a metric, the average population of a CMA is about 391,800 POPs,⁴⁵ with a maximum population of over 16 million and a minimum of 1,868.⁴⁶ Nearly all Rural Statistical Areas (“RSAs”) fall below the average, and Metropolitan Service Areas (“MSAs”) that fall below the average tend to be smaller, tertiary markets. Although only 132 of 722 CMAs have populations above the national average, these CMAs cover about 66 percent of the U.S. population. The results are similar when looking at Economic Areas (“EAs”). Only 46 of 173 EAs have populations above the average EA population, but these 46 EAs cover 72 percent of the U.S. population. PEAs also conform to this pattern: 83 of 411 PEAs have populations higher than the average PEA population, but these PEAs cover 73 percent of the US population.⁴⁷

Although population density can also be used to differentiate between “urban” and “rural” markets, this metric becomes less reliable as the market size increases. Specifically, when measured by population density, EAs containing several major U.S. cities would be classified as “rural” due to their lower than average population density.⁴⁸ Classifying a city such as Denver, which has a greater than average population spread out over a large area, as “rural” has the obvious potential to give rise to inconsistent results. Since PEAs cover less than half the area of EAs on average, they are less

⁴⁴ See U.S. Census Bureau, *Differences between the Final 2010 Census Urban Area Criteria and the Census 2000 Urban Area Criteria*, available at http://www.census.gov/geo/reference/pdfs/ua/2000_2010uadif.pdf (last accessed Aug. 26, 2014).

⁴⁵ Calculated using 2000 population data because the two most recent major spectrum auctions took place in 2006 and 2008, prior to the 2010 Census. Considers only CMAs covering the U.S. and Puerto Rico.

⁴⁶ In this context, population is a serviceable, although not perfect, calculation for determining reserve prices based on past auction revenues. In contrast, there are numerous other proceedings before the Commission in which using population as a metric is inappropriate. For example, in the context of the Universal Service Fund, using POPs to determine universal service support levels would mask the continuing gaps in wireless broadband coverage in significant low-population portions of the United States, including some highways, many rural roads, and numerous logging routes and nature preserves. See, e.g., Comments of Competitive Carriers Association, Connect America Fund et al., WC Docket No. 10-90 et al. at 5 (filed Aug. 8, 2014) (arguing that premising the allocation of universal service support based on population leads to the false conclusion that virtually all U.S. households already have access to mobile broadband service, and masks the fact that many low-population areas lack access to critical services).

⁴⁷ Calculated using 2010 population data and considering markets covering the U.S. and Puerto Rico only. A map of the PEAs within the continental 48 United States (and the Gulf of Mexico) with a less than average whole number of POPs is attached as “Exhibit A.”

⁴⁸ For example, Denver, Minneapolis, Phoenix, Portland, Las Vegas, and Salt Lake City would all be classified as “rural” under this measurement.

prone to this issue.⁴⁹ However, virtually any metric can produce unexpected results when applied equally to different market geographies. So while either population density or population can be used, the simpler approach of using market population to distinguish between urban and rural markets likely provides the most effective basis for calculating minimum opening bids and minimum upfront payments for each license.

To test this theory, the analysis below sorts winning spectrum bids by both POPs and population density to create two groups of markets – those that are more urban and those that are more rural. The analysis is limited to blocks of licenses that were auctioned by CMA and by EA in the last two major spectrum auctions.⁵⁰ For purposes of determining how the “rural-ness” of a market “deflates” the price per MHz-POP, the table below provides a ratio of the revenue demanded to the population covered by markets that are more rural as determined by two metrics: population density and population. For the group of markets that are below the average (*i.e.*, “rural” markets), this ratio is always less than 100 percent and therefore represents a “deflation factor.” These factors may be used as a guideline to determine how much to discount the minimum opening bids for markets that fall below the average for the chosen criteria.

More "Rural" Markets

| Auction | Block | Mkt Type | Mkts with POPs Below Avg | | | | Mkts with DENSITY Below Avg | | | |
|------------|---------|----------|--------------------------|--------|-------------------|------------------|-----------------------------|--------|-------------------|------------------|
| | | | No. of Mkts | % Pops | % Auction Revenue | Deflation Factor | No. of Mkts | % Pops | % Auction Revenue | Deflation Factor |
| Auction 73 | Lower A | EA | 127 | 28% | 13% | 48% | 88 | 21% | 13% | 61% |
| | Lower B | CMA | 596 | 34% | 9% | 26% | 374 | 18% | 5% | 26% |
| | Lower E | EA | 127 | 28% | 8% | 27% | 88 | 21% | 13% | 62% |
| Auction 66 | A | CMA | 596 | 34% | 11% | 32% | 374 | 18% | 6% | 31% |
| | B | EA | 127 | 28% | 11% | 38% | 88 | 21% | 11% | 52% |
| | C | EA | 127 | 28% | 9% | 34% | 88 | 21% | 10% | 48% |

As depicted above, in Auction 73, the FCC made the 700 MHz B Block available by CMAs.⁵¹ Looking first at the data as filtered by population density, as a geographic unit, approximately 18

⁴⁹ A map of the PEAs within the continental 48 United States (and the Gulf of Mexico) with a less than average population density is attached as “Exhibit B.”

⁵⁰ Licenses auctioned as part of Regional Economic Area Groupings (“REAGs”) are too large for the density criteria to make sense. In addition, the extremely small sample size of REAG data is likely to lead to inconsistent and potentially misleading results.

⁵¹ The FCC has never previously auctioned spectrum by PEA; therefore there is no prior data on the relationship between POPs or population density and revenue per PEA. Because data showing the disproportionate value bidders place on more urban markets is very consistent for markets that are geographically larger than PEAs (EAs) as well as for

percent of the U.S. population lives in CMAs in which the CMA's population density is lower than the average U.S. population density. The auction results revealed that CMAs with a population density lower than the national average were responsible for only 5 percent of the B Block's auction revenue (*i.e.*, 5 percent of the total provisionally winning bids paid for B Block licenses). A similar, although slightly less pronounced, distinction between the prices commanded by high and low density geographic areas took place in the A Block, which was auctioned by EA. Although 21 percent of the U.S. population lives in EAs where the population density is lower than average, those EAs were responsible for only 13 percent of the auction revenue for the A Block. The results from the AWS-1 auction (Auction 66) were consistent with these results.

Sorting the data from the 700 MHz auction by POPs, rather than by population density, reveals an even stronger correlation between "rural-ness" and disproportionately low spectrum revenue. Thirty-four percent of Americans live in CMAs that have a population lower than the average CMA population, but these CMAs generated only nine percent of the revenue demanded by the B Block in Auction 73. The results for the A Block were similar: although 28 percent of Americans live in EAs where the population is lower than the average EA population, these EAs generated only 13 percent of the A Block's auction revenue. Thus, results from auctions for comparable spectrum support establishing an adjusted reserve price for rural markets between 26-48 percent of the average price when calculated by POPs, or between 26-62 percent when calculated by population density.

If applied on a per license basis, setting minimum prices strictly based on a single price per MHz-POP applied nationwide would grossly overstate the value of rural markets because data from past auctions clearly show that the price per MHz-POP scales with market population and with market population density. As indicated in the above table, minimum prices should account for differences in value between urban and rural areas. This could be done by either applying minimum prices on a nationwide average basis or, if license-specific prices are used, making adjustments to account for the reduced value of spectrum in rural areas. In the case of license-specific pricing, for example, minimum opening bids and upfront payments could be adjusted based on a deflation factor value for rural markets to reflect these markets' historically lower sales prices, based on whether the market is above or below the average national population.

Total POPs provides a straightforward way of generating reasonable prices that reflect historical spectrum revenue data for each PEA. Using total population as the basis for the calculation of the price is preferable to using population density, as it is likely to yield a larger revenue-to-population ratio, and less likely to falsely classify low-density, high population PEAs as rural. Likewise, it is less likely to classify small, high-density, low-population PEAs as urban. Longstanding differences in revenue derived from urban and rural markets support differentiation in the minimum opening bids and minimum upfront payments for each license. Setting lower minimum opening bids and minimum upfront payments for smaller markets that are likely to be attractive to rural and

markets that are geographically smaller (CMAs), however, the FCC can feel comfortable making assumptions regarding PEAs based on previous data sets.

competitive bidders rather than relying on a straight-line fee per unit of population will encourage an auction that promotes greater opportunity for broadband deployment in both rural and urban areas of the United States.

2. Minimum opening bids and minimum upfront payments should be kept low and will need to account for variable levels of spectrum clearing.

License-specific minimum opening bids and upfront payments should be set sufficiently low to avoid establishing an unnecessary barrier for entrepreneurs, rural operators, and small businesses. Excessive upfront payments have the potential to exacerbate the already considerable uncertainty associated with the incentive auction and, especially in high clearing scenarios, prevent bidders – especially non-nationwide bidders – from taking advantage of unexpected opportunity during the auction, driving down auction revenue and broadband clearing.

With the notable exception of auctions employing installment payment mechanisms not intended for use in the incentive auction, there have been few, if any, indications that insincere bidding is a real risk. In addition, the FCC has enforcement mechanisms in place to deter frivolous or wholly speculative bidding.⁵² Thus, although upfront payments have been used in previous auctions to discourage spoilers and speculators, the need for upfront payments to act as a gatekeeper in the incentive auction is limited.

Relatively low license-specific minimum opening bids and upfront payments will also prove especially useful in the context of the incentive auction. Standard upfront payment mechanisms require forward-auction bidders to determine in advance the number of markets in which they will remain active at any one time. The incentive auction, however, will not allow bidders to know the amount of spectrum available and, therefore, will make calculating the total number of licenses across which non-nationwide bidders want to remain active very difficult to perform in advance of the auction.⁵³

A bidder anticipating only a limited supply of spectrum becoming available, for example, might wish to concentrate all of his budget only on licenses in one or more “core” markets because competitive bidding for the limited number of licenses would presumably yield fairly high prices. If the bidder’s expectations are not realized and more spectrum than anticipated is auctioned, however, an

⁵² Parties who are found to have violated the FCC’s rules, including antitrust rules, in the auction process may be subject to forfeiture of their upfront payment. See *Incentive Auction Report and Order* ¶ 494. In addition, the FCC has imposed stringent build-out requirements, *id.* ¶¶ 764-65, and restrictions on the ability to sell reserved spectrum, which prevents entities that acquired reserved spectrum from assigning or transferring those licenses (or entering into long-term leases) with non-reserve eligible entities for a period of six years. See *MSH Report and Order* ¶ 197.

⁵³ Depending on prices in the reverse auction, the feasibility of repacking those broadcasters that remain, and other factors intrinsic to the incentive auction process, including the number of licenses available for sale in the forward auction as well as the degrees of impairment of each of those licenses, the number of licenses available will vary considerably. This variability in the number of licenses available will, in turn, complicate bidders’ decision-making about the proper level of upfront payment they should submit to ensure they can remain active on the licenses that they desire.

excessively high minimum opening bid and upfront payment may have left the bidder with insufficient eligibility to take advantage of the opportunities that higher-than-anticipated clearing may present. At the same time, a bidder anticipating an ample supply of spectrum becoming available during the auction might rationally make a larger upfront payment to ensure eligibility across more markets since doing so would allow the bidder to opportunistically acquire spectrum over many different markets at once. If these expectations were not realized and only a limited amount of spectrum were recovered, however, an upfront payment in excess of the amount needed to cover the bidder's core markets would result in the bidder providing the FCC with a potentially substantial payment – money that would often need to be borrowed or diverted from other uses – for the duration of the auction. No rational bidder would pursue such a strategy.

The uncertainties of calculating precisely how much spectrum the incentive auction will make available for broadband use makes establishing relatively low license-specific minimum opening bids and upfront payments especially useful during the incentive auction.

IV. CONCLUSION

In crafting pricing rules for the incentive auction, the FCC's primary motivation, beyond achieving statutory directives, should be "allocating spectrum efficiently and creating post-auction competition in the wireless services market."⁵⁴ Unlike most spectrum auctions, which can always be re-run if there is an auction failure, the voluntary incentive auction is a once-in-a-lifetime opportunity to repurpose uniquely valuable spectrum for use by mobile broadband providers, in support of goals shared by Congress and the FCC.⁵⁵

Ensuring a successful auction that attracts diverse participants with fair and robust bidding is crucial not only for small and rural providers seeking to expand their spectrum holdings, but for the nation as a whole. The wireless marketplace has "large and persistent positive spillovers" to the entire economy, and additionally offers substantial consumer welfare benefits resulting from both static and dynamic competition.⁵⁶ The future of both the wireless industry and the U.S. economy as a whole will be powerfully affected by the decisions made by the FCC regarding pricing rules for the 2015 incentive auction.

⁵⁴ Peter Cramton, Evan Kwerel, Gregory Rosston & Andrzej Skrzypacz, *Using Spectrum Auctions to Enhance Competition in Wireless Services*, 54 J. L. & Econ. S167, S170 (2011) ("Using Spectrum Auctions to Enhance Competition").

⁵⁵ "[T]he forward auction component of the Incentive Auction represents the last opportunity in the foreseeable future for providers to obtain licenses for below-1-GHz spectrum at auction." *MSH Report and Order* ¶ 153.

⁵⁶ *Using Spectrum Auctions to Enhance Competition* at S170. An analysis from 2011 found that the U.S. wireless industry directly or indirectly provides 3.8 million jobs, or 2.6 percent of all U.S. employment, and was valued at \$195.5 billion. Roger Entner, *The Wireless Industry: Essential Engine of US Economic Growth*, Recon Analytics 1 (May 2012), available at <http://bit.ly/Msb2Le> (last accessed Aug. 14, 2014).