

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Comment Sought on 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”) submits these comments in response to the Public Notice (“*Auction Comment PN*”) in the above-captioned dockets.<sup>1</sup> In that Public Notice, the Federal Communications Commission (“FCC” or “Commission”) seeks comment on procedures necessary to carry out the 600 MHz incentive auction, such as bidding procedures for the reverse and forward auctions and the final frequency assignment process for licenses won in the forward auction.<sup>2</sup>

**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 also represents almost 200 associate members who include vendors and suppliers that provide products and services throughout the mobile communications supply chain.

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<sup>1</sup> *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, Public Notice, 29 FCC Rcd 15750 (2014) (“*Auction Comment PN*”).

<sup>2</sup> *Id.* ¶¶ 1, 5.

CCA welcomes this opportunity to comment on the auction procedures proposed in the Commission's *Auction Comment PN*. CCA's carrier members are keenly interested in the 600 MHz incentive auction and are hopeful about the competitive benefits that could result. The Commission's proposals are generally sound; however, key modifications are needed to help advance important goals such as ensuring that each market can accommodate a spectrum reserve and promoting interoperability and equipment availability.

For example, the Commission's proposed framework would make it impossible for the spectrum reserve to be available in partial economic areas ("PEAs") that lack blocks of spectrum that are 15 percent or less impaired. The reserve framework was designed to foster competition by providing reserve-eligible carriers with the least impaired spectrum in most markets but may wind up harming them instead. To remedy this problem, the Commission should eliminate the distinction between "categories" of licenses. All blocks of spectrum that are less than 50 percent impaired should be auctioned together and discounted using a 1:1 price adjustment mechanism. Blocks of spectrum that are more than 50 percent impaired should be auctioned at a later point in a single round, sealed-bid auction open only to reserve eligible carriers. If, however, the Commission continues to use "categories" of licenses, then other measures can help preserve the spectrum reserve such as allowing the reserve to include both Category 1 and Category 2 licenses.

The Commission's current framework also promises to optimize spectrum efficiency by creating contiguous blocks and assigning the same channels over proximate geographic areas. Although these objectives should be given weight, prioritizing inter-area contiguity should not result in the assignment of frequencies on a nationwide basis or across larger geographic areas. More importantly, these priorities should not be allowed to result in the uniform juxtaposition of

non-dominant carriers' blocks adjacent to broadcast impairments. As seen in the 2008 700 MHz auction, such spectrum concentration can create opportunities for discriminatory conduct in hardware design or software functions, or relegate non-national carriers to the least desirable channels. Similarly, assignment phase bids should be evaluated on a per-license basis to avoid creating an unfair advantage for the largest carriers which are likely to win the most licenses at auction.

In addition, a number of other features and changes can help ensure a successful 600 MHz incentive auction. The Commission should adopt the proposals to measure impairments in terms of weighted-pops and minimize them through clearing-target optimization rules. The Commission should also incorporate dynamic reserve pricing as proposed, but the activity rule and upfront payment amounts should both be lowered to avoid disadvantaging smaller carriers. Finally, the Commission also should eliminate the second, price per MHz-pop reserve trigger and amend its proposed bidding procedures to keep extended round bidding from influencing license prices in subsequent stages.

## DISCUSSION

### I. SETTING AN INITIAL TARGET AND DETERMINING IMPAIRMENTS

#### A. **Assigning Television Stations Using a Channel Stacking Plan Will Help Meet the Nation's Growing Appetite for Mobile Broadband.**

The Commission seeks comment on whether television stations that must be assigned to a channel in the 600 MHz band to meet a given clearing target should be assigned to the uplink or the downlink portion of the Band.<sup>3</sup> The Commission proposes to assign these stations based on its goal of minimizing the loss of value due to impairments.<sup>4</sup> As an alternative, the Commission

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<sup>3</sup> *Id.* ¶ 35.

<sup>4</sup> *Id.*

seeks comment on assigning stations to the downlink portion of the 600 MHz Band whenever feasible to do so.<sup>5</sup>

An ideal reconfiguration of the 600 MHz band would incorporate no broadcast impairments in any portion of the broadband spectrum. In a frequency-division duplex wireless broadband network, both uplink and downlink segments play a critical role in establishing the communications link. Especially for carriers with access to little or no other low-band spectrum, impairments in either uplink or downlink band segments are highly undesirable.

To the extent broadcast impairments of the broadband spectrum cannot be avoided entirely, television operations that cannot be relocated elsewhere generally should be placed in the uplink portion of the 600 MHz broadband band. Placing DTV stations in either the uplink or the downlink has advantages and disadvantages, and CCA recognizes that uplink capacity is a critical component for wireless operators, particularly for competitive carriers who currently do not hold licenses for low-band spectrum.<sup>6</sup> The competitive advantages that 600 MHz spectrum may ultimately confer will be jeopardized if a significant portion of the auctioned spectrum in each market cannot provide an uplink capability.<sup>7</sup> But the auction must also help meet the nation's "accelerating spectrum needs" by maximizing the amount of additional spectrum available for mobile broadband use.<sup>8</sup> In this regard, mobile broadband providers currently

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<sup>5</sup> *Id.* ¶ 36.

<sup>6</sup> Comments of Competitive Carriers Association, GN Docket No. 12-268, at 13 (filed Jan. 25, 2013). In those comments, however, CCA also noted that a consistent amount of downlink and varying amounts of uplink would "allow for the use of uniform mobile device filters and promote the efficient deployment of wireless services." *Id.* at 12-13.

<sup>7</sup> Supplemental Comments of Competitive Carriers Association Regarding the 600 MHz Band Plan, GN Docket No. 12-268, at 10-11 (filed June 14, 2013).

<sup>8</sup> *Expanding the Economic and Innovative Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6597, ¶ 1 (2014) ("*Incentive Auction R&O*").

require significantly more downlink than uplink spectrum to meet consumer demand.<sup>9</sup> To free up as much spectrum as possible for mobile broadband use, the Commission should prioritize placing any television stations assigned to the 600 MHz band in the uplink portion of that band, but not at the expense of eliminating all or a significant portion of the uplink channels ultimately offered.

Additionally, repacking television stations in the uplink portion of the 600 MHz band will likely impair fewer megahertz of spectrum and, in many cases, fewer MHz-pops. In particular, placing a television station in the uplink portion of the band will interfere with fewer channels than placing a television channel in the downlink portion. A television channel assigned to the band's uplink portion would overlap no more than two five-megahertz uplink blocks, whereas a television channel assigned to the downlink portion of the band could cause interference across the entire span of the duplexer (up to 25 megahertz of spectrum). Thus, assigning television stations to the uplink portion of the 600 MHz band not only helps meet consumers' demand for mobile broadband, but also furthers the Commission's goal of minimizing the loss of value due to impairments.<sup>10</sup>

While an uplink impairment generally will prove less damaging than a downlink impairment, the impairment of uplink channels should not continue to the point where *all* uplink channels are unavailable for use in a PEA. Many operators will rely upon the 600 MHz band as their first and only low-band spectrum deployment. Disabling all the uplink channels in a PEA would preclude stand-alone broadband data communications in the 600 MHz band. The

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<sup>9</sup> See, e.g., NOKIA, WHAT IS GOING ON IN MOBILE BROADBAND NETWORKS 5 (2014), available at [http://networks.nokia.com/system/files/document/nokia\\_smartphone\\_traffic\\_white\\_paper.pdf](http://networks.nokia.com/system/files/document/nokia_smartphone_traffic_white_paper.pdf) (explaining that “the volume of downlink data can be up to ten times greater than the uplink data volume”).

<sup>10</sup> See *Auction Comment PN* at ¶ 35.

availability of only downlink channels in a PEA would, in turn, either discourage forward auction bidders without alternative low-band uplink resources from participating in the auction, or require those who do participate to seek commercial arrangements with carriers, typically one of the two dominant providers, that already hold ample low-band uplink spectrum in that PEA. To keep auction participation high and to promote the competitive provision of broadband services, the Commission should apply a sensible limiting principle to 600 MHz uplink impairments.

In addition, different spectrum-clearing targets will present different opportunities for spectrum-efficient encumbrances in light of (i) available guard bands; (ii) the number of duplexers used in the channel plan; (iii) the channel position of the broadband plan relative to Channel 37, among other factors. Depending on the specific spectrum-clearing target, the size of the 600 MHz guard band may be as little as 7 megahertz to as much as 11 megahertz. Moreover, the number of duplexers can range from the minimum of one to as many as three.

A carefully crafted “channel stacking plan,” such as the one shown below, would take these factors into account and strategically place impairments in the 600 MHz band to maximize paired spectrum utility for broadband. Unlike the Commission’s proposal, a channel-stacking plan would not vary from market to market, depending on an assessment of potentially impaired MHz-POPs. Instead, a channel stacking plan would be known to all bidders prior to the auction and follow a fixed, unvarying arrangement, depending on the specific spectrum-clearing target the Commission is pursuing at any given stage of the auction.

Consistent with CCA’s recommendation, a channel stacking plan would ordinarily place impairments in the uplink band. However, once the uplink blocks supported exclusively by one duplexer have been fully impaired, the plan would impair the downlink blocks associated with

the same duplexer. The same basic pattern would then repeat for the next duplexer, if any, until all blocks were impaired. Additional DTV stations, if needed, may be added in any available channel using this pattern; however, Channel 51 should always be the last channel to be filled to prevent harmful interference to the 700 MHz band.

Key:

DL	UL	ALL
Impair	Impair	Impair

Number of Blocks	Amit of Spectrum (MHz)	# of Duplexers	DTV Chan to use	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	Duplexer Ranges	
				DTV Chan	DTV Chan																				
2	42	1	DTV Chan to use	45	50	Any																		1	A-B
			Resulting Impairments	A (DM)	All UL	ALL																			
3	48	1	DTV Chan to use	49	50	Any																		1	A-C
			Resulting Impairments	A	All UL	ALL																			
4	60	1	DTV Chan to use	48	42	49	50	Any																1	A-D
			Resulting Impairments	A	A	A-C	All UL	ALL																	
5	72	1	DTV Chan to use	40	47	48	49	50	Any															1	A-E
			Resulting Impairments	A (DM)	A	A,B	A-D	All UL	ALL																
6	78	2	DTV Chan to use	47	39	40	48	49	50	Any														1	A-E
			Resulting Impairments	A,B	A,B	A,B	A-C	A-E	All UL	ALL															
7	84	2	DTV Chan to use	46	38	47	39	48	49	50	Any													1	A-E
			Resulting Impairments	A,B	A,B	A-C	A-C	A-D	A-F	All UL	ALL														
8	108	3	DTV Chan to use	33	45	34	35	36	46	47	38	48	39	49	50	Any								1	A-B
			Resulting Impairments	A (DM)	A,B	A,B	A,B	A,B	A-C	A-D	A-D	A-E	A-E	A-G	All UL	ALL									
9	114	2	DTV Chan to use	44	45	46	32	33	34	35	36	47	48	49	50	Any								1	A-D
			Resulting Impairments	A,B	A-C	A-D	A-D	A-D	A-D	A-D	A-D	A-E	A-F	A-H	All UL	ALL									
10	126	3	DTV Chan to use	43	30	44	31	32	45	46	47	33	34	35	36	48	49	50	Any					1	A-E
			Resulting Impairments	A	A	A-C	A-C	A-C	A-D	A-E	A-F	A-F	A-F	A-F	A-F	A-G	A-I	All UL	ALL						
11	138	3	DTV Chan to use	28	42	43	44	29	30	31	45	46	47	48	32	33	34	35	36	49	50	Any		1	A-E
			Resulting Impairments	A (DM)	A	A,B	A-D	A-D	A-D	A-D	A-E	A-F	A-G	A-H	A-H	A-H	A-H	A-H	A-H	A-I	All UL	ALL			
12	144	3	DTV Chan to use	42	43	44	27	28	29	30	45	46	47	48	31	32	33	34	35	36	49	50	Any	1	A-E
			Resulting Impairments	A,B	A-C	A-E	A-E	A-E	A-E	A-E	A-F	A-G	A-H	A-I	A-J	A-K	All UL	ALL							
																								3	K-L

**Assumptions/Rules:**

- 1) Max duplexer pass band is 25 MHz
- 2) UL block is impaired if <3 MHz between DTV and UL block (impairment is de minimis otherwise)
- 3) First DL block is impaired by DTV OOBE if DTV is not within duplexer passband and <5 MHz between DTV and DL block (impairment is de minimis otherwise)
- 4) All DL blocks covered exclusively by a duplexer are impaired by Rx Overload if DTV is <3 MHz from edge of passband
- 5) All DL blocks covered exclusively by a duplexer are impaired if DTV is within passband of that duplexer

Once all blocks are impaired, there is no spectrum available to auction. The 12-channel clearing plan at the bottom of the chart demonstrates how the pattern would typically function. Reading from left to right, the impairments would begin in the uplink (orange) then move to the downlink (blue) and then repeat until all available channels were impaired.

For certain spectrum-clearing targets, however, an especially large guard band or an unusually favorable channel configuration could create an opportunity for additional efficiencies that, depending on the assumptions one makes about equipment performance and design, may be

worth employing. Based on some reasonable assumptions about 600 MHz LTE equipment, for instance, the 11-channel clearing scenario offers one such opportunity. As shown in the chart above, the 11-channel clearing scenario begins with a nominally downlink impairment that would take full advantage of the five extra megahertz of guard band that exists in this spectrum-clearing scenario compared to the 12-channel spectrum-clearing scenario. The extra-wide guard band in the 11-channel spectrum-clearing scenario would allow for strategic placement of a downlink channel in this spectrum that may offer the opportunity to permit operations in both the downlink and uplink basis with few meaningful performance constraints.

Adopting a channel-stacking plan, such as the one shown above, would leverage efficiencies while still providing clear rules of the road that all bidders could predict and understand prior to the auction. Within a stacking plan, impairing uplinks will generally cause less harm than impairing downlinks, but impairing *all* uplink channels in a band could frustrate bidding and thwart competition. Thus, reasonable limits should apply to preserve some uplink channels in every plan. Similarly, any stacking plan should take into account the peculiar efficiencies that any given spectrum-clearing target may offer. Using a carefully crafted channel-stacking plan promises greater predictability, efficiency, and fairness to all bidders than other alternatives.

**B. Impairments Should be Measured in Terms of Weighted-Pops and Minimized Through Clearing-Target Optimization Rules.**

The Commission proposes to measure the effect of potential impairments in terms of “weighted-pops,” which would weight the affected population in a license area by an index of area-specific prices from prior auctions.<sup>11</sup> Under this approach, the Commission would calculate the percentage of the population impaired in every PEA for each license using county level data

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<sup>11</sup> *Id.* ¶ 38.

and then multiply that percentage by the weighted-pops associated with the PEA to determine the impaired weighted-pops for a license.<sup>12</sup>

The Commission should, as proposed, measure the effect of potential impairments in terms of weighted-pops. Doing so would help simplify auction administration while, at the same time, taking market variation into account. In particular, using weighted-pops as a measure would make it easier to gauge the potential effects of inter-service interference.<sup>13</sup> Meanwhile, taking market variation into account will help ensure that broadcasters have the opportunity to participate in the reverse auction in markets where interest is high, while avoiding the need to restrict the licenses offered in the forward auction to the number available in the most constrained market.<sup>14</sup>

The Commission also should, as proposed, adopt clearing-target optimization rules that minimize the total impaired weighted-pops nationwide.<sup>15</sup> As the Commission notes, adopting such clearing-target optimization rules would minimize potential impairments to the 600 MHz band licenses.<sup>16</sup> This, in turn, will help competitive carriers take full advantage of the “once-in-a-lifetime opportunity” presented by the 600 MHz incentive auction by maximizing the amount of spectrum made available for mobile broadband use.<sup>17</sup>

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<sup>12</sup> *See id.*

<sup>13</sup> *See id.*

<sup>14</sup> *See id.* ¶ 37.

<sup>15</sup> *Id.* ¶ 43.

<sup>16</sup> *Id.*

<sup>17</sup> *See Incentive Auction R&O* at ¶ 3.

**C. An Additional Constraint on Impairment Levels Can Help Ensure that Low-Band Spectrum is Available in Major Markets.**

Limiting impairment levels permissible at a given spectrum-clearing target, such as limiting potential impairments to no more than 20 percent of the weighted-pops in at least five of the largest 10 PEAs, will allow for a more efficient and competitive wireless broadband market following the auction. First, the use of additional constraints on impairments will mitigate the possibility that the U.S. market will fall below the scale necessary to support a high level of investment and innovation. Second, and perhaps more important to competitive carriers, additional constraints will help promote a more competitive market by allowing all carriers – not just the dominant carriers that control 73 percent of the nation’s low-band spectrum – the ability to offer a more consistent user experience inside buildings and over large geographic areas.

The market for wireless broadband equipment and devices is global.<sup>18</sup> Wireless companies in the United States compete for the attention of a supply chain that operates on a global scale producing network gear and devices for a multinational base of consumers. Given the large population covered by a single interoperable spectrum segment and its relative wealth, the United States has historically proven an attractive market for the latest network equipment and most advanced end-user devices. The ability to produce a single product capable of serving

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<sup>18</sup> See Global Mobile Suppliers Association, *360 LTE Networks Commercially Launched in 124 Countries*, [http://www.gsacom.com/downloads/charts/LTE\\_global\\_map.php](http://www.gsacom.com/downloads/charts/LTE_global_map.php) (last visited Feb. 10, 2015); see also, e.g., Global Mobile Suppliers Association, *GSA Updates on the LTE Ecosystem, Confirms Smartphones Driving LTE Devices Growth*, GSA, [http://www.gsacom.com/news/gsa\\_417.php](http://www.gsacom.com/news/gsa_417.php) (Oct. 14, 2014). GSA identified 183 suppliers of some 2,200 LTE-capable devices globally. The single largest ecosystem for devices is the 1800 MHz Band (LTE1800/Band 3). Vendors are able to simultaneously focus on more than one band class; however, because the 3GPP standards body has already approved more than forty band classes, vendors tend to prioritize the more mature bands that support the largest addressable markets with the highest potential spending per user. Focusing on common markets increases return on investment. See Global Mobile Suppliers Association, *Fast Facts*, GSA, [http://www.gsacom.com/downloads/charts/Fast\\_Facts.php4](http://www.gsacom.com/downloads/charts/Fast_Facts.php4) (last visited Jan. 7, 2015).

hundreds of millions of U.S. consumers has shortened production cycles for the U.S. market while reducing equipment acquisitions costs – attributes that have played a major role in making the United States a world leader in wireless broadband deployment and innovation.<sup>19</sup>

Offering reasonably consistent access to low-band spectrum across a majority of the major markets also remains critical to providing a consistent end-user experience. Consumers value network reliability, and consumers reasonably expect to achieve similar levels of wireless broadband coverage and throughput regardless of their location within a carrier’s footprint.<sup>20</sup> Carriers strive to design systems to achieve similar levels of in-building penetration and wide-area coverage. Acquiring low-band spectrum in some markets, but not others within the footprint risks raising expectations for in-building and wide-area coverage in one geographic area, only to fail to meet them in another. Providing this type of inconsistent end-user experience from market to market runs the risk of higher customer acquisition and service expenses, negative brand image, and, ultimately, fewer customers or lower revenues per user, or both. To compete successfully, carriers that have little to no low-band spectrum or inconsistent amounts of low-band spectrum nationally will need access to spectrum in multiple major markets not only to benefit from the volume purchasing, reduced operating expenses, and increased

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<sup>19</sup> See Erik Bohlin, Kevin W. Caves, and Jeffrey A. Eisenach, GSM Association, *Mobile Wireless Performance in the EU & the US*, GSMA (2013), <http://bit.ly/1j4GSbY>. If carriers in the United States lack access to certain key markets, they may prove unable to realize the economies of scale and scope that U.S. industry has historically enjoyed. While not every carrier must access every market to achieve certain general scale economies, at least some carriers must access certain critical markets to ensure that an interoperable base of equipment and devices will become available at a cost that allows all firms in the mobile wireless ecosystem to enjoy the economies of scale and scope essential to accelerating network deployment, improving innovation, and offering greater value to consumers.

<sup>20</sup> See, e.g., Verizon-Cox Wireless Public Interest Statement, WT Docket 12-4, at 12 (2011) (“Verizon Wireless engineers its network not only to provide customers with connections, but also with speeds through those connections that are designed to achieve the goals set for data services.”), available at <http://bit.ly/1A0Ez6G>.

operational efficiency associated with carrier-specific economies of scale, but also to consistently meet consumer performance expectations for wireless broadband service.

To ensure that carriers have access to low-band spectrum in critical parts of the country, the Commission should adopt an additional constraint on impairment levels based on spectrum availability in the largest markets. Specifically, the Commission should allow a clearing target to be chosen only if it does not result in potential impairments to 20 percent or more of the total number in weighted-pops in at least five of the largest 10 PEAs. Although the Commission's proposed near-nationwide standard of less than 20 percent impairment will likely serve as an important safeguard, it considers impairment only in the aggregate and cannot identify when spectrum *in key major markets* necessary to generate sufficient scale economies will be useable. Consequently, an additional constraint on impairment levels that is tied to the nation's largest markets is necessary to ensure that carriers have access to the low-band resources needed to innovate, operate efficiently, and consistently meet or exceed consumer expectations.

## **II. AUCTION PROCEDURES**

### **A. Judicious Use of Dynamic Reserve Pricing Can Help Ensure a Successful Auction and Make More Spectrum Available for Mobile Broadband.**

The Commission's proposal to use dynamic reserve price ("DRP") procedures in the reverse auction will increase the likelihood of a successful auction by helping to balance the bid amount that broadcasters will receive with the actual amount that they would be willing to accept.<sup>21</sup> Under the proposal, in the first stage of the reverse auction, a broadcaster will continue to receive decreasing bids to relinquish its spectrum rights, even if that broadcaster cannot be reassigned into its original portion of the television band. This process will help the Commission

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<sup>21</sup> See *Auction Comment PN* at ¶¶ 106-10.

determine the actual amount that a broadcaster is willing to accept in return for relinquishing its spectrum rights.

Without DRP procedures, a broadcaster willing to relinquish its spectrum rights in a market with a limited number of open channels could receive the opening bid amount set by the Commission, regardless of that station's potential willingness to accept a lower amount.<sup>22</sup> If the opening prices remain high, too many broadcast bidders will be frozen in their high first-round bid, which would leave less capital available to the majority of broadcasters that remain subject to competitive pressures in the reverse auction. Rather than risk allowing some bidders in congested markets to take an excessively high price offered to them in an auction where there are effectively no competing bidders, the Commission would have no choice but to *lower* opening prices for many reverse auction bidders, which could discourage participation and prevent otherwise efficient transactions from occurring. DRP would allow the Commission to continue to offer high opening bids to reverse auction participants because it knows that markets with little reverse auction competition will not distort the overall outcome of the reverse auction.<sup>23</sup> Higher opening bids will increase broadcast participation and provide flexibility to conduct price discovery on broadcast supply curves that are, at best, poorly understood. Because the DRP procedures would allow for higher opening bids, judicious use of DRP will almost certainly spur interest in the auction and should therefore be adopted.

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<sup>22</sup> *Id.* ¶ 106.

<sup>23</sup> *See Auction Comment PN* at ¶ 106 (“DRP procedures make it possible to offer higher opening prices, thereby attracting greater broadcaster participation, than would otherwise be the case. Absent DRP, lower opening prices would be necessary.”).

Arguments that the use of a dynamic reserve pricing mechanism will somehow trick broadcasters are unfounded.<sup>24</sup> First, one of the foundational tenants of the reverse auction is that it is entirely voluntary, and no station will be forced to accept an amount less than it thinks is fair to relinquish its spectrum rights. Second, DRP will likely allow broadcasters more opportunities to participate because the opening round bids will generally be higher. Third, as explained above, the purpose of DRP is to prevent a select few broadcasters from reaping a windfall benefit based solely on external factors. Payment to a station that is frozen at the opening bid price will not be based on the amount that the station would have been willing to accept. This result would be a positive outcome for only a single party – the broadcast station. Finally, by failing to implement DRP, the Commission would risk having to proceed to multiple subsequent stages because the final stage rule thresholds could be set artificially high. The Commission’s clearing target is lowered in each subsequent stage, and therefore fewer broadcast stations would be paid to relinquish their rights and the amounts paid to them would be lower.

Despite its many benefits, the use of DRP involves substantial costs. The process will introduce more encumbered spectrum into the 600 MHz band than carriers might desire. The introduction of impairments may prove especially damaging to competitive carriers that have little or no access to low-band spectrum and can ill afford to experience impairments in either the forward or reverse path to the consumer. For this reason, limitations on DRP, such as discontinuing use of DRP if impairments would exceed 20 percent of all weighted MHz-POPs, will help strike the right balance between allowing sufficient flexibility to allow for high opening

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<sup>24</sup> See, e.g., Letter from Preston Padden, Executive Director, EOBC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, AU Docket No. 14-252, Exh. B at 1 (filed Jan. 12, 2015) (characterizing DRP as a “clever trick to lower prices to broadcasters through selective impairment”).

broadcast bids, on the one hand, and safeguarding the availability of unencumbered wireless broadband spectrum, on the other.

So long as the Commission judiciously employs DRP on a limited basis, the benefits of DRP both to reverse-auction participation and to overall spectrum clearing outweigh the costs of generating more broadband impairments in some markets.

**B. The Proposed Activity Rule Gives Nationwide Carriers Significant Advantages Over Smaller Carriers.**

In an effort to expedite the auction, the Commission has proposed an activity rule that requires bidders to “maintain a fixed, high level of activity in each round of the auction in order to maintain bidding eligibility.”<sup>25</sup> While the proposal may meet some of the auction’s goals, it also imposes a disadvantage on smaller carriers.

Under the proposed rule, bidders would be required to “be active on between 92 and 97 percent of the bidding eligibility in all regular clock rounds.”<sup>26</sup> Bidders failing to meet that requirement will have their eligibility reduced going forward.<sup>27</sup> That disincentive ensures that bidders will participate throughout the auction rather than waiting until the final rounds, a practice known as “bid sniping” that can create delay and prevent the auction from accurately reflecting the values bidders place on the available spectrum.

For nationwide carriers, these rules pose no obstacle to strategic bid switches. Because they seek national licenses, they are most likely to shift their bids between block categories within a particular PEA. The activity rule does not affect those changes because the same number of bidding units is required in each category.

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<sup>25</sup> *Auction Comment PN* at ¶ 186.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

The activity rule does, however, bar certain inter-region switching strategies, which smaller regional bidders are more likely to employ. Neighboring PEAs in a region will almost certainly represent different numbers of bidding units. A regional bidder hoping to switch its bid between rounds from one city to a neighboring city may find that the second bid does not require 92 percent or more of the bidding units that had been applied to the larger region.

To keep open the option of returning to the larger region, the smaller carrier would be forced to “park” bidding units by placing a bid for blocks they do not actually hope to win. That strategy is risky. Rules that limit withdrawal and the ability to switch once the market has cleared in a particular PEA could force the regional bidder to purchase an unwanted license. Moreover, “parking” may not even be an option where neighboring PEAs are the wrong size or too likely to be won.

A regional strategy centered on Pittsburgh and Cleveland illustrates this risk. Shifting an initial bid from Cleveland (PEA #14) to the neighboring but smaller Pittsburgh market (PEA #23) would leave a regional bidder with unused units that need be bid somewhere lest that eligibility be lost, putting Cleveland out of reach in later rounds. But the surrounding PEAs, including Altoona (PEA #121) and State College (PEA #194), are so much smaller that they may not require all the bidding units that would need to be used or parked. And those markets may have attracted so little interest that the smaller carrier faces too great a risk of actually being allocated a license well outside of its current network footprint.

While activity rules have proven effective in promoting a fast and efficient auction, they must be carefully designed to avoid unfairly harming smaller bidders. The proposed 92 percent to 97 percent threshold puts too great a restriction on price arbitrage between regions—a limitation that hurts smaller carriers but not nationwide bidders. The Commission could gain the

benefits of an activity rule by setting the initial required participation level at 80 percent, which proved effective during the AWS-3 auction.

**C. Flexible Upfront Payment Rules and Low Upfront Payment Amounts Can Encourage Smaller Carrier Participation.**

The Commission's proposed upfront payment rules will allow smaller applicants the flexibility they need to meaningfully compete with larger and better-funded carriers. By assigning bidding units to spectrum blocks based on historic prices rather than population covered, the Commission appropriately recognized that, on a per-pop basis, prices paid in urban markets are much higher than in rural markets. Therefore, assigning more bidding units to those blocks properly reflects market realities. Similarly, by allowing an applicant to make upfront payments based on the number of licenses it hopes to win rather than the number of licenses it bids on, the Commission will allow smaller carriers the flexibility they need to compete with larger incumbent carriers. However, the Commission's proposal to set upfront payments at approximately \$2,500 per bidding unit would be overly burdensome for smaller carriers and should be reduced.

Basing bidding units and, therefore, upfront payments on results from prior auctions appropriately recognizes the difference between rural and urban areas.<sup>28</sup> On a per-pop basis, licenses covering urban markets generally sell at auction for much higher prices. In fact, as CCA has explained, recent auction results demonstrate that setting minimum prices strictly based on a single per-pop function would grossly overstate the value of rural markets while understating urban markets.<sup>29</sup> By using auction history to assign bidding units to particular markets, the

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<sup>28</sup> See *id.* ¶¶ 160-63

<sup>29</sup> See *Pricing in the 600 MHz Incentive Auction*, at 11-15, attached to Letter from Steven K. Berry, President & CEO, CCA, to Marlene H. Dortch, Secretary, FCC, Docket Nos. 12-268, 12-269 (Sep. 15, 2014) ("CCA White Paper").

Commission will better align upfront payments with the prices ultimately paid in the forward auction.

The Commission also proposed that an applicant's upfront payment not be associated with any specific set of licenses, but rather that the payment establish the total bidding units an applicant can bid on in all markets.<sup>30</sup> Therefore, an applicant that hopes to win three licenses in any of five different rural markets (all assigned approximately the same number of bidding units) need not make upfront payments in all five markets. It would need only to make an upfront payment sufficient to cover the bidding units for three licenses, and could then bid on whichever markets make the most sense during the auction. This sort of flexibility will be essential for smaller carriers that will have to rely on selective and strategic bidding tactics to compete with the better funded large carriers that have historically won the majority of license.

While the Commission has structured the upfront payment mechanisms in a way that will promote competition, particularly in rural markets, its decision to impose a high upfront payment amount per bidding unit would be overly burdensome on smaller carriers without significant financial reserves to draw upon. The Commission explains that the proposed upfront payment requirement of \$2,500 per bidding unit will prevent "frivolous or insincere bidding."<sup>31</sup> But as CCA has explained, there have been few, if any, indications in previous auctions that insincere bidding is a real risk.<sup>32</sup> Furthermore, imposing high upfront payment requirements come with

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<sup>30</sup> *Auction Comment PN* at ¶ 166.

<sup>31</sup> *Id.* ¶ 164.

<sup>32</sup> CCA White Paper at 15 ("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. 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.").

the attendant risk that smaller carriers will be foreclosed from participating, or have insufficient eligibility to acquire licenses that they may have otherwise pursued. Therefore, the Commission should lower the per-bidding unit upfront payment requirement to an amount less likely to threaten smaller carrier participation, such as \$1,000 per bidding unit.

### **III. IMPAIRED SPECTRUM AND THE SPECTRUM RESERVE**

#### **A. Reducing the Number of Categories of Licenses Will Allow Competition Policy to Determine the Availability of the Spectrum Reserve Rather than Market-by-Market Impairments.**

The 600 MHz incentive auction and the spectrum reserve represent the last and best opportunity for competitive carriers to acquire critically important low-band spectrum in the foreseeable future.<sup>33</sup> Recognizing this reality, the Commission has proposed a method of determining reserved licenses that would ensure that the spectrum reserve in each area consists of that area's least encumbered licenses.<sup>34</sup> In crafting this proposal, the Commission stated that its goal was to "promote competition by ensuring that in the near future, more providers would hold a sufficient mix of spectrum to compete robustly."<sup>35</sup> Accordingly, it proposed reserving the auction's least impaired licenses for carriers that are "likely to be more reliant on 600 MHz band spectrum to expand coverage and to compete in the wireless marketplace."<sup>36</sup>

The Commission's current proposal has the potential to foreclose reserve eligible bidders from certain markets even though there may be more than 70 MHz of spectrum available for

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<sup>33</sup> See, e.g., *Mobile Spectrum Holdings R&O* at ¶ 48.

<sup>34</sup> See *Auction Comment PN* at ¶ 151 ("We propose that only Category 1 blocks will be designated for bidding by reserve-eligible entities.").

<sup>35</sup> See *id.* ¶ 153 (quoting *Mobile Spectrum Holdings R&O*, ¶ 159 (internal quotation marks omitted)).

<sup>36</sup> *Id.*

auction. In particular, a market with no Category 1 licenses would have no spectrum reserve.<sup>37</sup> For instance, a market with seven 10 MHz blocks each having identical impairments of 16 percent (therefore Category 2) would not have a spectrum reserve, and the largest carriers that hold the most low-band spectrum could outbid smaller competitive carriers with impunity. But a neighboring market with seven 10 MHz blocks each having only 15 percent impairment (therefore Category 1) would have a 30 MHz spectrum reserve upon which competitive carriers could bid without fear of foreclosure.

The Commission attempts to explain away this anomalous outcome by stating that most licenses will fall into Category 1 and, therefore, its proposal's unintended consequences would be limited to relatively few markets.<sup>38</sup> It also asserts that the primary benefit of limiting the reserve to Category 1 licenses to simplify the auction process.<sup>39</sup> However, auction simplicity would be cold comfort for smaller carriers foreclosed from acquiring low-band spectrum in certain markets because, no matter how many blocks of spectrum are available in those markets, the Commission's rules do not allow a spectrum reserve. Moreover, an alternative framework would allow the Commission to ensure that each PEA can support a spectrum reserve without increasing the auction's complexity or length.

The Commission should eliminate the distinction between different "categories" of licenses, which would allow an area's three least impaired licenses to comprise the spectrum reserve without creating a need for an additional auction clock. The Commission's current proposal already acknowledges that licenses are to a large degree fungible. For instance, a

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<sup>37</sup> See *id.* ¶ 151.

<sup>38</sup> *Id.* ¶ 152.

<sup>39</sup> *Id.* ¶ 154 ("It would significantly complicate the auction to create an additional generic bidding category to implement separate reserved categories for both Category 1 and Category 2 licenses.").

license with a 2 percent impairment and a license with a 14 percent impairment would both be Category 1 licenses. Similarly, a license with a 16 percent impairment and a license with a 43 percent impairment would both be Category 2 licenses. If a license with a 16 percent impairment and a license with a 43 percent impairment are fungible in light of applicable discounts, then a license with a 12 percent impairment and a license with a 19 percent impairment can be fungible too. As explained below,<sup>40</sup> a 1:1 price adjustment mechanism will sufficiently account for the differences between such licenses, just as it does under the Commission's current proposals. Meanwhile, this approach would avoid adding complexity to the auction by preserving the Commission's preferred framework under the CCA proposal: one clock for all licenses that are less than 50 percent impaired before the final stage rule is met, and a second after the final stage rule is met and the reserve comes into consideration.

**B. If the Commission Continues to Use Two License Categories Prior to the Final Stage Rule, Other Measures Can Help Preserve the Spectrum Reserve.**

**i. The Spectrum Reserve Should Consist of a Market's Three Least Impaired Licenses.**

As described above, the simplest and most efficient way to ensure that a full spectrum reserve is available in each market is to eliminate the distinction between categories of licenses prior to satisfaction of the final stage rule. If, however, the Commission continues to use categories of licenses prior to satisfaction of the final stage rule, then it should define the spectrum reserve more flexibly to ensure that at least some licenses are reserved in each PEA. In particular, the Commission should expand the spectrum reserve to include the three least impaired licenses in the PEA.

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<sup>40</sup> See Section III.C.

The Commission seeks comment on this proposal, asking whether it should include Category 2 blocks in the spectrum reserve in any PEA with fewer Category 1 blocks than the maximum reserve.<sup>41</sup> CCA supports this proposal. By adopting this alternative definition of spectrum reserve, the Commission would be able to maintain the idea that reserve spectrum should be relatively unimpaired without jeopardizing the primary mechanism for ensuring that smaller carriers can compete at the 600 MHz incentive auction. That is, this alternative proposal is entirely consistent with the Commission’s stated purpose of ensuring that multiple providers gain access to low-band spectrum and would help ensure that competitive carriers with the greatest need for low-band spectrum will not be stymied simply because a particular market has a particularly high number of impaired licenses.

**ii. Category 1 Licenses Should Not Be Limited to Spectrum that Will Not Be Subject to any Inter-Service Interference.**

The Commission’s alternative proposal to limit Category 1 licenses to those blocks with zero percent inter-service interference should be rejected. If the Commission were to implement such a system, the result would be very few Category 1 blocks, with the majority of licenses falling into Category 2. Such a division of spectrum blocks would exacerbate the risk of market foreclosure described above; if there are fewer Category 1 blocks available because of a new zero impairment definition, there is an increased risk that there would be insufficient blocks to populate the reserve spectrum.

The Commission states that this alternative proposal would enhance the “fungibility” of Category 1 licenses,<sup>42</sup> but this would be accomplished at a price—reducing fungibility of Category 2 blocks. While all licenses with zero impairment would be largely generic and

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<sup>41</sup> See *Auction Comment PN* at ¶ 151.

<sup>42</sup> *Id.* ¶ 145.

interchangeable, Category 2 licenses would range from 1 percent to 50 percent impairment. As indicated above, adjusting for impairments by granting discounts should make all blocks from zero percent to 50 percent impairment fungible. But if the Commission believes that two categories are necessary notwithstanding the discounts, a zero percent impairment category does not advance the Commission's ostensible goal of greater fungibility. Although winners of Category 1 licenses would "know what they are getting," the winners of Category 2 blocks could be faced with significant uncertainty, so much so that it could adversely impact auction revenues.

**iii. Demand for Both Categories of Licenses Should Determine the Spectrum Reserve's Size.**

Under the Commission's current proposal, the actual number of reserve spectrum blocks in a PEA will be based on demand for Category 1 blocks by reserve-eligible bidders at the time the auction reaches the reserve trigger.<sup>43</sup> However, this proposal fails to acknowledge that bidders may have a reason to prefer, and thus bid on, Category 2 blocks instead of Category 1 blocks.

Furthermore, the Commission's proposal is at odds with past auction history. A review of recent auctions shows that bidders tend to bid on larger markets in early rounds to maintain high eligibility.<sup>44</sup> However, these practices are not a good indicator of the *actual demand* of those bidders for small and mid-sized markets. But if the amount of reserve spectrum for each market is locked into place based solely on the number of Category 1 licenses reserve-eligible bidders are bidding on in a given round, this will change bidders' prior auction behavior of focusing primarily on the largest markets in early rounds. By forcing reserve-eligible applicants

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<sup>43</sup> *Id.* ¶ 151.

<sup>44</sup> *See, e.g.*, JEREMY BULOW, JONATHAN LEVIN, AND PAUL MILGROM, WINNING PLAY IN SPECTRUM AUCTIONS, at 4 (2009) *available at* <http://stanford.io/1yG7n25> (explaining that "bidding activity often starts on the larger licenses and then moves to the smaller licenses" and providing a detailed analysis of Auction No. 66's bidding history).

to express demand early and consistently for these smaller markets, the Commission would be disrupting what have been proven to be effective bidding strategies.

Instead of imposing strict activity requirements on reserve-eligible bidders, the Commission should use a more flexible framework for establishing the reserve. Specifically, the spectrum reserve's size should be based on all bidding by reserve-eligible participants in a given market, regardless of whether they have bid on Category 1 or Category 2 licenses. Such an approach would keep the size of the reserve from decreasing if reserve-eligible bidders opt to bid on Category 2 spectrum, which will afford those bidders more flexibility while ensuring that they remain active in the auction process.

The Commission should also refrain from evaluating reserve-eligible demand in a market based on the bidding in only a single round. Demand among markets will shift throughout the auction process, and the current expressed demand in any particular round does not provide a good indication of what actual demand in that market might be. To decide what the size of the spectrum reserve will be in a given market based on the demand for Category 1 blocks during the round that the Final Stage Rule happens to be met would be an arbitrary and unwise criterion. Rather, the Commission should base the establishment of the reserve on a period of activity, potentially the previous 10 rounds, which would be a better indicia of actual demand in the market.

**C. Discounting Based on Level of Impairment Will Simplify the Auction and Encourage Carrier Participation.**

The Commission's proposal to include a price adjustment mechanism for impaired licenses<sup>45</sup> will simplify the auction process while promoting participation in the forward auction and ultimately increasing competition in the wireless marketplace. The proposal uses a

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<sup>45</sup> *Auction Comment PN* at ¶ 147.

common-sense system to discount impaired licenses using a one-to-one price adjustment. Specifically, the Commission has explained that under the proposed system “a 10 percent discount would be applied to a license that is 10 percent impaired following the clock phase of the forward auction impairment.”<sup>46</sup>

This proposal goes a long way towards the Commission goal of simplifying the auction process. By using this straightforward discount mechanism, the Commission is not required to create numerous artificial categories with staggered or tiered pricing. The process allows blocks with varying degrees of impairment in a single market to remain relatively generic during the bidding process, and allows auction participants to bid confidently in that market knowing that it will be afforded a proportional discount for a license that is relatively impaired.

Furthermore, by ensuring that prices paid in the auction will generally reflect the degree of a license’s impairment, the Commission can promote broad participation in the forward auction. Given the value of the spectrum at issue here, it is likely that a number of participants in the auction, particularly rural carriers with limited resources, will be exploring a variety of bidding strategies to meet their spectrum needs within a constrained budget. Licenses with significant impairments (*e.g.*, 30-50 percent) may well be attractive to a carrier with limited resources if they come with a corresponding 30-50 percent discount. And by ensuring broad participation in the forward auction, the Commission can promote sorely needed competition in the wireless marketplace.

The proposed 1:1 price adjustment mechanism should also result in the clearing of additional spectrum, which will ultimately promote competition. If an auction participant is able to receive a 10 percent discount on one license, it would have additional funds to target other

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<sup>46</sup> *Id.*

licenses in different markets. Taken in the aggregate, when tens of billions of dollars are being committed to the auction, the proposed adjustment mechanisms would allow carriers to place bids more broadly and increase competitive bidding throughout the auction.

Finally, the proposed price adjustment mechanism supports competition, and any attempt to remove it would unfairly prejudice smaller carriers. If licenses with varying levels of impairment are sold for the same final bid price at the end of the clock phase of the auction and there was no corresponding price adjustment, these potentially very different licenses would be assigned to specific bidders through the assignment phase process. In a circumstance where competitive carriers are competing with large nationwide carriers, it is likely that they would be outbid in the assignment phase for the least impaired blocks. Such an outcome would fly in the face of the Commission's stated goal of promoting competition in the wireless market.

**D. Licenses that Are More than 50% Impaired Should Be Auctioned in a Follow-On Auction.**

Licenses that are more than 50 percent impaired will likely attract significant interest from carriers. The Commission does not plan to auction licenses that are more than 50 percent impaired during the 600 MHz incentive auction and has sought comment on what it should do with such licenses.<sup>47</sup> By auctioning those licenses at a later point, the Commission can bring more spectrum to auction and provide an opportunity to hold low-band spectrum that would not otherwise be available. Moreover, if the Commission were to auction those additional licenses in a single-round, sealed-bid auction that is limited to reserve eligible participants, it could also promote competition and increase auction revenues.

The nation's largest carriers, which already hold the most low-band spectrum, are likely to win the lion's share of licenses at the 600 MHz incentive auction. Consequently, offering

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<sup>47</sup> *Id.* ¶¶ 145-48.

heavily impaired licenses to bidders in the assignment round in conjunction with adjacent licenses in the same PEAs would benefit those larger carriers at the expense of competition. Any proposal to simply give away these licenses as a “bonus” to winners at the 600 MHz incentive auction would have the same effect.

Therefore, the Commission should offer these highly impaired licenses at some later point via a single round, sealed-bid auction and limit eligibility to participate in this later auction to those carriers that are reserve eligible. In doing so, the Commission can bring this additional spectrum to market while furthering its goal of allowing multiple carriers the opportunity to acquire scarce low-band spectrum.<sup>48</sup>

**E. Limiting Reserve-Eligible Bidders to Twenty Megahertz of Reserve Spectrum in All PEAs Would Enhance License Diversification.**

Capping the amount of reserve spectrum available to any one reserve-eligible bidder at 20 megahertz per PEA would maximize spectrum access for all reserve-eligible bidders during the forward auction. The Commission currently proposes that a maximum of 30 megahertz of reserve spectrum be offered in each PEA, and that this amount be capped at 20 megahertz when there is only one reserve-eligible bidder demanding spectrum.<sup>49</sup> The rationale for this rule is that, when there is only one reserve-eligible bidder, making the full 30 megahertz reserve available would not further enhance carrier competition or diversify low-band holdings.<sup>50</sup>

Twenty megahertz of reserve spectrum should be the maximum that any reserve-eligible bidder can purchase in a PEA, even when there are two or more reserve-eligible bidders demanding spectrum in a given PEA. This rule would ensure that, when there are multiple

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<sup>48</sup> Moreover, all carriers could benefit from such an auction because even AT&T and/or Verizon are reserve eligible in nearly half of the country.

<sup>49</sup> *See id.* ¶ 155.

<sup>50</sup> *See id.*

interested bidders and a full 30 megahertz offering, at least two reserve-eligible bidders can capture reserve spectrum and enter the market. Under the Commission’s current proposal, however, a single reserve-eligible bidder could capture the full 30 megahertz offering and prevent other interested bidders from accessing that PEA. This scenario would limit license diversification in the forward auction, especially since larger carriers are also reserve-eligible in a significant number of PEAs. A blanket 20 megahertz limit, on the other hand, would maximize the number of competitive providers and prevent spectrum concentration. Such a limitation would also provide the same efficiency benefits as the Commission’s current proposal in cases when there is only one interested reserve-eligible bidder, but without any discrepancy between competitive and non-competitive bidding scenarios. Finally, this rule would not unduly prejudice those reserve-eligible bidders seeking to capture the entire 30 megahertz reserve in a competitive bidding scenario under the Commission’s current proposal. The Commission has already observed that 20 megahertz of reserve spectrum is sufficient for a single reserve-eligible bidder to deploy next-generation networks,<sup>51</sup> and these bidders could still compete for additional non-reserved blocks after exhausting their reserve allotment. The remaining 5+5 MHz reserved license would be more efficiently utilized by a second reserve-eligible bidder to gain competitive entry.<sup>52</sup>

Additionally, expanding the spectrum reserve’s maximum size would let the Commission meet its statutory mandates to “avoid[] an excessive concentration of licenses” and

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<sup>51</sup> *See id.*

<sup>52</sup> Capping the amount of reserve spectrum available to any one bidder at 20 MHz is also prudent considering that reserve-eligible bidders can switch their bids to non-reserve spectrum even if bidding on the non-reserve spectrum in a particular EA has otherwise ceased. An inability to move bids between reserve and non-reserve segments could unduly constrain reserve-eligible bidders.

“disseminat[e] licenses among a wide variety of applicants.”<sup>53</sup> As T-Mobile has pointed out, the spectrum reserve’s current size is “inadequate to sustain a wireless market with four nationwide providers and robust rural and regional competition” because it would let AT&T and Verizon divide 40 MHz of unreserved spectrum evenly between themselves.<sup>54</sup> In other words, the two largest carriers which already hold the most low-band spectrum would be able to out-bid their competitors and, in doing so, foreclose them from the low-band resources they need to “expand coverage and to compete in the wireless marketplace.”<sup>55</sup> The recent AWS-3 auction confirms that this is the most likely scenario, with AT&T and Verizon again outspending all other carriers.<sup>56</sup> To help ensure that smaller carriers are not similarly foreclosed from their only opportunity to acquire low-band spectrum in the foreseeable future, the Commission should expand the spectrum reserve’s maximum size to 40 MHz per PEA.<sup>57</sup>

#### **F. Reliable Data Should Drive the Commission’s Categorization and Discounting of Impairments.**

When analyzing impairments, the Commission should base its categorization and discounting decisions on the best available data. Relying on only incomplete information or excessively general information about the nature of the product that is the subject of an auction threatens the integrity of the incentive auction.

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<sup>53</sup> See 47 U.S.C. § 309(j)(3).

<sup>54</sup> See T-Mobile, Petition for Reconsideration, WT Docket No. 12-269, at 7-12 (filed Aug. 11, 2014).

<sup>55</sup> *Auction Comment PN* at ¶ 153.

<sup>56</sup> See *AWS-3 Auction Results: AT&T leads with \$18.2B, Verizon at \$10.4B, Dish at \$10B and T-Mobile at \$1.8B*, FIERCEWIRELESS.COM (Jan. 30, 2015), available at <http://www.fiercewireless.com/story/aws-3-auction-results-att-leads-182b-verizon-104b-dish-10b-and-t-mobile-18b/2015-01-30>.

<sup>57</sup> An expanded reserve would lead to an even better result, allowing two reserve eligible bidders to capture 20 MHz of spectrum.

In its *Incentive Auction Second Report and Order*, the Commission adopted the F(50,50) statistical measure to predict the strength of digital television (“DTV”) signals for co-channel and adjacent channel wireless base stations and wireless user equipment in the 600 MHz band.<sup>58</sup> As Sprint has explained in its petition for reconsideration of the *Second Report and Order*, however, bidders could make more informed bidding decisions if they had access to the results of an F(50,10) statistical measure, which predicts potential interference based on a model that ensures the DTV signals that could cause interference to 600 MHz wireless operations would occur at 50 percent of the locations within a licensee’s service area no more than 10 percent of the time.

The currently applicable measurement of broadcast interference allows considerable latitude for interference to occur.<sup>59</sup> Indeed, depending on separation distances and other factors, a license that the Commission might auction as having little or no impairment using an F(50,50) method could well be considered more than 50 percent impaired and unavailable for auctioning under an F(50,10) method. The uncertain level of impairment undermines the Commission’s ability to properly categorize licenses as lightly, moderate, or heavily impaired for purposes of the auction. This uncertainty also frustrates the Commission’s ability to reliably discount licenses in proportion to the degree of the impairment. The resulting ambiguity, as Sprint aptly

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<sup>58</sup> *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software, Office of Engineering and Technology Seeks to Supplement the Incentive Auction Proceeding Record Regarding Potential Interference Between Broadcast Television and Wireless Services, Second Report and Order and Further Notice of Proposed Rulemaking*, 29 FCC Rcd 13071 (2014) (“*Second Report and Order*”).

<sup>59</sup> Sprint, Petition for Reconsideration, ET Docket Nos. 13-26, 14-14, GN Docket No. 12-268, at 8 (filed Jan. 22, 2015).

explained, “threatens bidder confidence about the utility of the licenses at auction,” which, in turn, may misallocate resources and suppress auction revenues.<sup>60</sup>

Offering limited information about the potential for broadcast interference into broadband licenses sold at auction threatens to result in poor licensing decisions. Where information is readily attainable, offering limited information can spur bidders to invest in developing the facts necessary to make more informed bidding decisions. But where, as here, the information is neither made available, nor readily capable of being discovered, denying useful information about the subject of the auction serves no apparent purpose and threatens to frustrate bidding and reduce revenues.<sup>61</sup> The Commission should provide forward-auction participants with access to the results of an F(50,10) method of interference analysis or, in the alternative, sufficient information for each bidder to calculate the results of an F(50,10) method for themselves. More informed bidders will lead to a more reliable and efficient auction results.

#### **IV. CLOCK PHASE AND BIDDING PROCEDURES**

##### **A. The Commission Should Eliminate or Limit the Second, Price Per MHz-Pop Reserve Trigger.**

The Commission proposes two triggers for the final stage rule: (1) one based on the revenue targets set out in the Spectrum Act and any amounts needed in connection with FirstNet;<sup>62</sup> and (2) one based on an average price per MHz-pop benchmark.<sup>63</sup> For the second reserve trigger, the Commission proposes an average price per MHz-pop benchmark of \$1.25 for

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<sup>60</sup> *Id.*

<sup>61</sup> *Id.* at 11 (“[T]he difference in the calculated levels of impairment is largely dependent on how far the PEA is from the DTV station,” but the *Comment Public Notice* offers forward auction bidders only “the predicted level of impairment in a block and not the actual source of the impairment and whether it is close or far away”).

<sup>62</sup> *See id.* ¶ 55.

<sup>63</sup> *See id.* ¶¶ 46-47.

spectrum offered in the largest 40 PEAs, which it states will “assur[e] that prices for licenses in the forward auction reflect the competitive values without reducing the amount of spectrum repurposed for new, flexible-use licenses.”<sup>64</sup> The Commission also proposes to base the second reserve trigger on gross bids rather than bids net of individual bidders’ bidding credits or any adjustments for impairments.<sup>65</sup>

As explained in CCA’s Petition for Reconsideration, using a second, price per MHz-pop reserve trigger is arbitrary and capricious and risks auction failure.<sup>66</sup> The final stage rule’s first reserve trigger will ensure that auction revenues are sufficient to compensate and relocate broadcasters, administer the auction, and satisfy any remaining FirstNet obligations.<sup>67</sup>

Meanwhile, reserve prices in excess of statutory minimums risk decreasing auction revenue and spectrum clearing where robust bidding competition is expected and information about spectrum valuation is uncertain, as is the case in the 600 MHz incentive auction.<sup>68</sup> As Professor Peter Cramton explains, “an attempt by the seller to extract additional revenues . . . discourages participation, which ultimately reduces revenues.”<sup>69</sup> Moreover, that risk is heightened due to the one-time nature of the 600 MHz incentive auction.<sup>70</sup> Normally, the Commission can re-auction spectrum if it “guesses wrong” about its intrinsic value and sets reserve prices that are too high

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<sup>64</sup> *Id.* ¶¶ 47, 49 (internal quotation marks omitted).

<sup>65</sup> *Id.* ¶ 54.

<sup>66</sup> *See* Competitive Carriers Association, Petition for Reconsideration, GN Docket No. 12-268, at 4-12 (filed Sept. 15, 2014) (“CCA Petition for Reconsideration”).

<sup>67</sup> *See id.* at 4.

<sup>68</sup> *Id.* at 6.

<sup>69</sup> Peter Cramton, *Ascending Auctions*, 42 EURO. ECON. REV. 745 (1998), available at <http://bit.ly/WC6wiP>

<sup>70</sup> CCA Petition for Reconsideration at 6-7.

and suppress auction participation.<sup>71</sup> But Congress has provided the Commission with only one chance to conduct the 600 MHz incentive auction, which means that spectrum that goes unsold will not be cleared of incumbent broadcasters or become available to meet exploding mobile wireless demand.<sup>72</sup>

If, however, the Commission chooses to move forward with a second, price per MHz-pop reserve trigger, then it should use the \$1.25 average price per MHz-pop benchmark in only the largest markets and rely on gross bids as proposed. Setting the benchmark at no more than \$1.25 per MHz-pop, basing it on the largest 40 PEAs, and basing it on gross bids will help ensure that the second reserve trigger does not exceed a reasonable amount. In doing so, the Commission can help minimize the risks that using a second reserve trigger poses to the 600 MHz incentive auction.

**B. Extended Round Bidding Should Not Influence Prices in Subsequent Stages.**

The Commission will use extended bidding rounds to increase the likelihood that the forward auction will conclude at the end of a current stage.<sup>73</sup> Under the Commission's current proposal, the forward auction would be successful and close if the final stage rule is met during an extended round.<sup>74</sup> If the final stage rule is not satisfied at the conclusion of an extended round, however, the next stage of the auction would start at the price in the extended round at which the first bidder dropped out.<sup>75</sup>

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<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> *See Auction Comment PN* at ¶ 189.

<sup>74</sup> *See id.* ¶ 194.

<sup>75</sup> *See id.* at Appendix G § 8.

The Commission's current proposal for maintaining the prices of the prior stage in subsequent stages without lower spectrum clearing targets could harm the auction by artificially inflating prices in subsequent stages. For instance, consider the case where bidding climbs to \$3.50 per MHz-pop in an extended round but falls just short of the \$4.00 per MHz-pop needed to satisfy the final stage rule. In the stage that follows, fewer television stations would need to be acquired, so the amount needed to satisfy the final stage rule would likely decrease. Yet bidding would start at \$3.50 in that next stage, even though this amount may be: (1) significantly less than the amount needed to satisfy the new final stage rule; and (2) significantly more than the amount last bid in the previous stage (*i.e.*, before the extended round). As a result, basing prices in the next stage on extended round bidding could lead to inefficient bidding and price out bidders that could have met the next final stage rule but cannot afford to match the extended round's last bid.

Rather than incorporating extended round bidding, the forward auction should revert to the previous clock price after an extended round fails to trigger the final stage rule. Doing so would prevent the extended rounds from artificially inflating prices at the 600 MHz incentive auction, and also avoid prejudicing bidders that participate in extended rounds.

## **V. BIDDING PROCEDURES IN THE ASSIGNMENT PHASE**

### **A. Adjustments to the Proposed Assignment Phase Procedures Will Simplify the Auction and Promote Competition.**

Although the Commission adopted the spectrum reserve to limit the dominant carriers' ability to prevent other carriers from acquiring the low-band spectrum resources they need to compete, the Commission has proposed no similar competitive safeguard to prevent the dominant carriers from herding non-dominant carriers into the least desirable, most heavily

encumbered blocks available for licensing in the assignment round.<sup>76</sup> On the contrary, the only three objectives the Commission proposes to consider prior to the assignment round bidding uniformly favor multi-license or multi-market provisionally winning bidders.<sup>77</sup> Policies that reward multi-license or multi-market provisionally winning bidders with favorable frequency assignments harm national, regional, and local carriers that purchase only one license in a PEA.

Adding an additional optimization criterion to recognize the importance of establishing a less-impaired footprint for single-license or “singleton” provisionally winning bidders would protect the interest of smaller businesses in serving their entire market with the only license they may be able to acquire. Additional safeguards for single-license provisionally winning bidders, including random assignment and a limited number of draft-style picks of license assignments, will help ensure that regional and local operators have an opportunity to compete on a level playing field with dominant providers for the least impaired licenses in a market.<sup>78</sup>

**i. The Winning Bidder of a Single License in a Market Should Be Assigned the Least Impaired License Block Before Assignment Phase Bidding.**

The Commission has proposed implementing additional considerations prior to the assignment phase bidding to achieve an optimal assignment of frequencies. These include

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<sup>76</sup> See *Policies Regarding Mobile Spectrum Holdings, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6133 ¶¶ 153-171 (2014); *Incentive Auction R&O* at ¶¶ 513-518.

<sup>77</sup> See *Auction Comment PN* at ¶ 199.

<sup>78</sup> CCA supports the Commission’s conclusion not to incorporate combinatorial bidding. See *id.* at Appendix H § 1. As CCA has previously noted, combinatorial bidding introduces considerable uncertainty and complexity into the bidding process, and this is particularly true in light of the already-complex incentive auction procedures. See, e.g., CCA Comments, GN Docket No. 12-268, at 18 (filed Jan. 25, 2013); CCA Reply Comments, GN Docket No. 12-268, at 9-10 (filed Mar. 12, 2013). In addition, combinatorial bidding can foster an anticompetitive environment by allowing the largest carriers to acquire highly desirable licenses at a discount by packaging licenses together.

considering the benefits of (a) maximizing geographic contiguity of spectrum holdings in adjacent markets, (b) maximizing spectral contiguity within a single market, and (c) minimizing the number of isolated “singleton” licenses assigned to the winner of multiple licenses.<sup>79</sup> These objectives will simplify the assignment phase of the auction and generally promote the efficient use of the spectrum. However, none of these objectives help to ensure that the winner of a single license block, the entity most in need of unimpaired spectrum, receives spectrum that it can readily deploy to meet its business needs. The Commission should therefore implement an additional objective before the assignment phase bidding begins, namely the provisionally winning bidder of a single license should be assigned the least impaired block within the category on which they bid.

Implementing this additional objective before the assignment round bidding starts will further the Commission’s primary goal of maximizing the efficiency and utility of the auctioned spectrum. Carriers, especially regional and local operators, that win only one license in a PEA will not be indifferent to the degree of impairment that a license suffers. For locally focused small businesses, even small amounts of impairment could dramatically affect a carrier that depends on serving an entire local community, not just 85 percent of it.<sup>80</sup> Assigning the least impaired available license to a provisionally winning bidder that has secured only one license to serve an entire PEA will avoid frustrating business plans of regional and local operators. Smaller carriers that until now may not have had meaningful access to low-band spectrum and urgently

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<sup>79</sup> See *id.* at ¶ 207-208; see also *id.* Appendix H.

<sup>80</sup> While these businesses can mitigate this risk of insufficient coverage by bidding on a Category 1 license (should the Commission retain separate Categories), Category 1 licenses may not always be available and, as noted above, even a 15 percent impairment may prove too much for a small provider’s locally focused business offering.

need the spectrum it wins to provide service to the license area will have a strong incentive to deploy its network promptly to meet customer needs.

Furthermore, assigning the least impaired license to the winner of a single license will promote competition by allowing that carrier access to relatively unimpaired spectrum that can be used to regionally compete with the nation's largest providers. Without such a mechanism, the smaller competitive carriers in the auction will either be shunted aside during the pre-auction optimization process due to the focus on contiguity, or outbid for the most desirable spectrum blocks during the assignment phase due to the incentive and ability of dominant carriers to foreclose competition by denying resources to carriers that need them to compete. Either way, non-dominant carriers may find themselves left with impaired spectrum that may or may not be useful as a stand-alone spectrum holding. The provision of a discount that corresponds to the impairment percentage for the license may be of little consolation to a regional carrier that cannot use the spectrum it wins to support its business plan. By adding an additional objective that would assign the least impaired license to the winner of single spectrum block, the Commission will promote the efficient and rapid use of spectrum while ensuring that the pro-competitive steps taken during the clock phase of the auction are not negated.

**ii. The Commission Should Consider Randomly Assigning Spectrum Licenses During the Assignment Phase.**

By randomly assigning licenses among provisionally winning bidders within a given market during the assignment phase, the Commission would significantly simplify the assignment process. The optimization process will maximize frequency and geography contiguity, and adding an additional objective will protect singleton winners from suffering

excessive impairment.<sup>81</sup> Once these objectives are satisfied, however, little is to be gained from a formal assignment round, which is likely to be complex and time consuming and could limit forward-auction revenues because participants would necessarily hold back capital to secure preferred spectrum blocks in the assignment round. Random assignment following the application of optimization criteria would not only accelerate and simplify the process, but also limit the potential for anti-competitive foreclosure during the assignment phase by limiting the ability of dominant carriers to secure the most desirable spectrum blocks.

**iii. Every Carrier Should Receive a Total of Ten Primary Selection Awards Available for Use in Any PEA or PEA Grouping.**

If the Commission elects to move forward with some form of competitive bidding in the assignment rounds, despite the harms identified above, adding an element of selective prioritization to the assignment round would promote competition and reduce the risk that competitive carriers will uniformly fall into the least desirable 600 MHz blocks.<sup>82</sup> Specifically, the Commission should establish a limited number of primary selection awards available to all carriers with provisionally winning bids: in essence, each carrier would receive ten or some other limited number of “draft picks” to use on particular spectrum assignments. Establishing a draft process would allow carriers to focus resources on the forward auction and better compete for preferred spectrum positions in their region.

Using an “entry draft” system during the assignment round similar in some respects to the National Football League draft would help limit the potential for any one or two bidders to

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<sup>81</sup> This proposal would not remove the Commission’s mechanisms to maximize contiguous spectrum and minimize the “stranded” blocks held by a single licensee (or for that matter the proposed additional singleton license-preservation objective). These objectives would occur first prior to random assignment.

<sup>82</sup> See *Auction Comment PN* at ¶¶ 199-208.

acquire all of the best blocks and make the market for wireless broadband less competitive.<sup>83</sup> Under this proposal, all provisionally winning bidders would receive ten assignment auction preferences for use in the PEAs or PEA groupings where they have submitted a provisionally winning bid. A carrier could exercise one of their “draft picks” to choose a preferred block in a given PEA without having to submit a bid to secure this license. If the carrier is the only provisionally winning bidder to have selected this block with a “draft pick,” the block would be withdrawn from the subsequent assignment auction and awarded to the provisionally winning bidder. If two or more carriers exercise one of their preferences for the same block in the same PEA, however, the Commission would proceed with a single-round sealed bid auction for the license to settle the mutual exclusivity.<sup>84</sup> This procedure would not require much more time or complexity than proceeding straight to an assignment round, but would assist in both (i) driving

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<sup>83</sup> For example, AT&T acquired nearly all the lower 700 MHz band Blocks B spectrum in Auction 73 and already owned most of the adjacent C Block from previous transactions, and then established a new 3rd Generation Partnership Project (“3GPP”) Band Class 17 that covered only AT&T’s spectrum. *See* 700 MHz Block A Good Faith Purchaser Alliance, Petition for Rulemaking Regarding the Need for 700 MHz Mobile Equipment to be Capable of Operating on All Paired Commercial 700 MHz Frequency Blocks, RM-11592 (filed Sept. 29, 2009); *Promoting Interoperability in the 700 MHz Commercial Spectrum, Requests for Waiver and Extension of Lower 700 MHz Band Interim Construction Benchmark Deadlines*, Notice of Proposed Rulemaking, 27 FCC Rcd 3521 (2012); *Promoting Interoperability in the 700 MHz Commercial Spectrum, Requests for Waiver and Extension of Lower 700 MHz Band Interim Construction Benchmark Deadlines*, Report and Order and Order of Proposed Modification, 28 FCC Rcd 15122 (2013). By excluding the A Block spectrum and not supporting existing Band Class 12, which covers the A, B, and C Blocks, AT&T effectively prevented licensees of the A Block spectrum from using the same standards, chip sets and devices developed for Band Class 17. The resulting lack of interoperability among systems slowed the deployment of wireless broadband services and impeded competition by artificially raising equipment costs of competitors. *See, e.g.*, Comments of RCA—The Competitive Carriers Association, WT Docket No. 12-69, RM-11592 (June 1, 2012) (observing that lack of interoperability in the lower 700 MHz band hindered facilities deployment, competition, and innovation).

<sup>84</sup> Alternatively, the Commission could randomly assign the license to one of the carriers that selected the same license in the assignment round “draft.”

revenue out of the assignment round and into the forward auction, where it could increase the amount of broadband spectrum available; and (ii) making smaller carriers less likely to be shunted to the least desirable blocks in the band.

**B. Channel Assignments Should Optimize Spectrum Efficiency by Creating Contiguous Channel Blocks and by Assigning the Same Channels over a Proximate Geographic Area.**

The assignment phase should consider the frequency preferences of forward auction winners alongside system-level efficiency objectives, which should include both the assignment of contiguous channels within a PEA and the assignment of consistent channels for carriers operating across adjacent PEAs.

During the assignment phase, carriers may bid on preferred frequencies consistent with the generic licenses they won during the clock phase. The Commission’s proposed assignment rules would then prioritize the creation of contiguous spectrum blocks for forward auction winners within each PEA in making final assignments. This approach would employ a three-step optimization algorithm to fairly and efficiently make channel assignments when fully contiguous blocks are not available for all bidders.<sup>85</sup> Contiguous spectrum blocks will allow networks to carry more data more efficiently. Wider bandwidth networks are also cheaper to deploy, maintain, and develop, and can accommodate preferred technologies more flexibly than non-contiguous systems.

Assigning carriers the same channels over adjacent PEAs should also be an efficiency objective during the assignment phase. Inter-area contiguity obviates the need for coordination

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<sup>85</sup> The algorithm would sequentially attempt to (1) maximize the number of bidders assigned two or more contiguous blocks; (2) minimize the number of non-contiguous, “stranded” blocks for bidders that won multiple blocks; and (3) maximize the number of bidders who are assigned only contiguous blocks. *See Auction Comment PN* at ¶ 207-208; *see also id.* Appendix H.

between co-channel licensees and the attendant need to limit signal strength and wireless coverage in border zones. Travel across license boundaries also becomes simpler, and network handoffs more reliable, when channels are geographically contiguous.

However, prioritizing inter-area contiguity should not result in the assignment of frequencies on a nationwide basis or across larger geographic areas. Spectrum concentration at this scale can create opportunities for discriminatory conduct in hardware design or software functions similar to those witnessed in the Lower 700 MHz band.<sup>86</sup> Ensuring a degree of carrier-level channel diversity will create structural, market-based incentives to deploy interoperable devices, a design feature that will complement and reinforce the Commission’s proposed interoperability rule for the 600 MHz band.<sup>87</sup> It can also keep carriers without national footprints from being relegated to the least desirable channels that are adjacent to broadcast television stations.

## CONCLUSION

The 600 MHz incentive auction presents a “once-in-a-lifetime opportunity” to repurpose large swaths of critical low-band spectrum for mobile broadband use. The auction framework proposed by the Commission is fundamentally sound, but key modifications are needed to help advance important goals such as ensuring that each market can accommodate a spectrum reserve and promoting interoperability.

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<sup>86</sup> See *supra* note 81.

<sup>87</sup> See *Incentive Auction R&O* at ¶¶ 731-37.

Respectfully submitted,

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