



# PUBLIC NOTICE

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## AUCTION OF FLEXIBLE-USE SERVICE LICENSES IN THE 2.5 GHz BAND FOR NEXT-GENERATION WIRELESS SERVICES

### COMMENT SOUGHT ON COMPETITIVE BIDDING PROCEDURES FOR AUCTION 108

AU Docket No. 20-429

**Comment Date: 60 days after publication in the Federal Register**  
**Reply Comment Date: 75 days after publication in the Federal Register**

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## I. INTRODUCTION

1. By this Public Notice, we seek comment on the procedures to be used for Auction 108, the auction of approximately 8,300 geographic overlay licenses in the 2.5 GHz band. We seek comment on whether to use a single-round auction format with user-defined package bidding, or, in the alternative, a simultaneous multiple-round (SMR) auction format. By initiating the pre-auction process for assigning licenses in Auction 108, we take another important step towards releasing critical mid-band spectrum to the market and furthering the deployment of fifth-generation (5G) wireless and other advanced spectrum-based services across the country, including rural and Tribal areas. This Public Notice seeks comment on proposed auction procedures for bidding to acquire licenses in Auction 108.

## II. LICENSES TO BE OFFERED IN AUCTION 108

2. Auction 108 will offer geographic overlay licenses for unassigned spectrum in the 2.5 GHz (2496–2690 MHz) band.<sup>1</sup> We will offer up to three blocks of spectrum—49.5 megahertz, 50.5 megahertz, and 16.5 megahertz blocks, respectively—licensed on a county basis.<sup>2</sup> Specifically, the first license block will include channels A1–A3, B1–B3, C1–C3 (49.5 megahertz); the second license block will include channels D1–D3, the J channels, and channels A4–G4 (50.5 megahertz); and the third license block will include channels G1–G3 and the relevant K channels (16.5 megahertz of contiguous spectrum and 1 megahertz of the K channels associated with the G channel group).<sup>3</sup> New overlay licenses in the Educational Broadband Service (EBS) portion of the 2.5 GHz band will be issued for 10-year, renewable license terms.<sup>4</sup> A licensee in this band may provide any services permitted under terrestrial fixed or mobile allocations, as set forth in the non-Federal Government column of the Table of Frequency Allocations in section 2.106 of the Commission’s rules.<sup>5</sup>

3. The specific inventory of overlay licenses available in Auction 108 will be determined by the results of the Rural Tribal Priority Window, as described in the *Rural Tribal Window Procedures Public Notice*.<sup>6</sup> During the Rural Tribal Priority Window, federally recognized Tribes were given the

<sup>1</sup> With overlay licenses, licensees obtain the rights to geographic area licenses “overlaid” on top of the existing incumbent licenses. *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Report and Order, 34 FCC Rcd 5446, 5473, para. 77 (2019) (modified by Erratum, 34 FCC Rcd 10386 (WTB 2019)) (*2.5 GHz Report and Order*). As with an ordinary flexible-use license, the overlay licensee may operate anywhere within its geographic area, subject to protecting the licensed areas (i.e., circular Geographic Service Areas with a 35-mile radius) of incumbent licensees. *Id.* If an incumbent licensee in a county cancels or terminates its license, then the overlay licensee obtains the rights to operate in the geographic area and on the channel of the cancelled license. *Id.* An overlay licensee may clear its geographic area by purchasing the incumbent licenses, but it does not have the exclusive right to negotiate with the incumbent licensee for its spectrum rights or to purchase an incumbent license in the geographic area in which it has the overlay rights. *Id.*

<sup>2</sup> *Id.* at 5480, 5481, paras. 93, 96.

<sup>3</sup> *Id.* at 5481, para. 96.

<sup>4</sup> *See id.* at 5486-87, paras. 109-10.

<sup>5</sup> *See* 47 CFR § 2.106.

<sup>6</sup> *See Wireless Telecommunications Bureau Announces Procedures for 2.5 GHz Rural Tribal Priority Window*, WT Docket No. 18-120, Public Notice, 35 FCC Rcd 308 (WTB 2020) (establishing filing procedures and deadlines for the Rural Tribal Priority Window) (*Rural Tribal Window Procedures Public Notice*).

opportunity to submit applications to acquire new 2.5 GHz licenses for currently unassigned white space spectrum to provide broadband service on rural Tribal lands before the remaining unassigned spectrum is made generally available through competitive bidding.<sup>7</sup> The Rural Tribal Priority Window opened on February 2, 2020, and the original deadline was extended by 30 days to close on September 2, 2020.<sup>8</sup> The Commission received over 400 applications through the Rural Tribal Priority Window and the Wireless Telecommunications Bureau (WTB) has already granted over 150 of these applications.<sup>9</sup> Based on review of applications received in the Rural Tribal Priority Window, the Office of Economics and Analytics (OEA), in conjunction with WTB, will release a public notice announcing the final inventory of 2.5 GHz band overlay licenses to be offered in Auction 108.<sup>10</sup> This public notice will be released in advance of the deadline for the submission of short-form applications to bid in Auction 108 so that potential applicants can make informed decisions about whether to apply in light of information as to existing incumbents and potential Tribal licensees.

4. Concurrent with the release of this Public Notice, OEA and WTB have made available a file listing all county and frequency block combinations potentially available for Auction 108, subject to the results of the ongoing review of applications submitted during the Rural Tribal Priority Window. This file is listed as an “Attachment A” file on the Auction 108 website at [www.fcc.gov/auction/108](http://www.fcc.gov/auction/108).<sup>11</sup>

5. OEA and WTB will also make available resources to assist applicants in conducting due diligence research regarding potential encumbrances in the band prior to the release of the public notice announcing the final auction inventory.<sup>12</sup> These resources will include a mapping tool to help identify and view existing licenses and Rural Tribal Priority Window applications in the Commission’s Universal Licensing System (ULS) database.<sup>13</sup> The mapping tool will be updated to reflect changes due to the grant or dismissal of any pending Tribal applications prior to the auction. Potential applicants are reminded, however, that this tool will not represent complete licensing information; all information should be confirmed in ULS for any specific license or area.

6. Notwithstanding Commission resources described in this Public Notice, **each potential bidder is solely responsible for investigating and evaluating all technical and marketplace factors that may have a bearing on the potential uses of a license that it may seek in Auction 108, including the availability of unassigned white space in any particular market.** In addition to the typical due

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<sup>7</sup> See *id.* at 308-09, para. 2; *2.5 GHz Report and Order*, 34 FCC Rcd at 5450, 5467, paras. 13, 60.

<sup>8</sup> See *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Memorandum Opinion and Order, 35 FCC Rcd 8112, 8113, para. 3 (WTB 2020) (extending the Rural Tribal Priority Window by 30 days).

<sup>9</sup> News Release, FCC Grants First Licenses in 2.5 GHz Rural Tribal Priority Window (Oct. 23, 2020), <https://docs.fcc.gov/public/attachments/DOC-367726A1.pdf>. FCC staff continues to review and process all applications filed in the priority window.

<sup>10</sup> Commission staff aims to process all pending Rural Tribal Priority Window applications prior to announcing the final auction inventory; however, there may be Tribal applications that remain pending at the time the auction inventory is announced. As discussed in this Public Notice, potential bidders in Auction 108 should continue to investigate all factors that may affect each license on which they seek to bid throughout the auction process, including potential encumbrances that may result from pending Tribal applications.

<sup>11</sup> The file listing available county and frequency block combinations does not include blocks or counties that are fully encumbered by existing licenses.

<sup>12</sup> In addition to existing incumbents in the band, the pending Rural Tribal Priority Window applications represent the maximum potential additional encumbrances that may affect the licenses available in the auction. See *2.5 GHz Report and Order*, 34 FCC Rcd at 5450-72, paras. 13-74.

<sup>13</sup> More information about Rural Tribal Priority Window applications, including a current mapping tool to help identify the location of pending, accepted for filing, and granted applications, is available at [www.fcc.gov/rural-tribal-window-updates](http://www.fcc.gov/rural-tribal-window-updates). The licensing information provided on this webpage does not represent complete licensing information. All information should be confirmed in ULS for any specific license or area.

diligence considerations that we encourage of bidders in all auctions,<sup>14</sup> we call particular attention in Auction 108 to potential encumbrances due to existing licenses and the Rural Tribal Priority Window issues described above, which may impact the licenses available in Auction 108. Each applicant should closely follow releases from the Commission concerning these issues and consider carefully the technical and economic implications for commercial use of the 2.5 GHz band. **The Commission makes no representations or warranties about the use of this spectrum for particular services, or about the information in Commission databases that is furnished by outside parties. Each applicant should be aware that a Commission auction represents an opportunity to become a Commission licensee, subject to certain conditions and regulations. This includes the established authority of the Commission to alter the terms of existing licenses by rulemaking, which is equally applicable to licenses awarded by auction.**<sup>15</sup> A Commission auction does not constitute an endorsement by the Commission of any particular service, technology, or product, nor does a Commission license constitute a guarantee of business success.

### III. IMPLEMENTATION OF PART 1 COMPETITIVE BIDDING RULES AND REQUIREMENTS

7. In the *2.5 GHz Report and Order*, the Commission decided to conduct any auction of new 2.5 GHz band licenses in conformity with the amended Part 1 rules.<sup>16</sup> The Commission's Part 1 rules require each applicant seeking to bid to acquire licenses in a spectrum auction to provide certain information in a short-form application (FCC Form 175), including ownership details and numerous certifications.<sup>17</sup> Part 1, Subpart Q's competitive bidding rules also contain a framework for the implementation of a competitive bidding design, application and certification procedures, reporting requirements, and the prohibition of certain communications.<sup>18</sup> The rules and requirements proposed in this section would apply in either a single bidding round auction or an SMR auction, unless clearly indicated otherwise.

#### A. Certification of Notice of Auction 108 Requirements and Procedures

8. In addition to the certifications already required under section 1.2105, we propose to require any applicant seeking to participate in Auction 108 to certify in its short-form application, under penalty of perjury, that it has read the public notice adopting procedures for Auction 108 that will be released in advance of the short-form deadline, and that it has familiarized itself with those procedures and the requirements for obtaining a license and operating facilities in the 2.5 GHz band. We believe that this requirement would help ensure that the applicant has reviewed the procedures for participation in the auction process and has investigated and evaluated those technical and marketplace factors that may have a bearing on its potential use of any licenses won at auction. Consequently, this requirement will promote an applicant's successful participation and will minimize its risk of defaulting on its auction obligations. As with other required certifications, an auction applicant's failure to make the required certification in its short-form application by the applicable filing deadline would render its application unacceptable for filing, and its application would be dismissed with prejudice.<sup>19</sup> We seek comment on this proposal. We

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<sup>14</sup> See, e.g., *Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services; Comment Sought on Competitive Bidding Procedures for Auctions 101 (28 GHz) and 102 (24 GHz); Bidding in Auction 101 Scheduled to Begin November 14, 2018*, AU Docket 18-85, Public Notice, 33 FCC Rcd 4103, 4116-17, paras. 36-41 (2018) (*Auctions 101 and 102 Comment Public Notice*).

<sup>15</sup> See, e.g., *Cellco P'ship v. FCC*, 700 F.3d 534, 542 (D.C. Cir. 2012); *Celtronix Telemetry, Inc. v. FCC*, 272 F.3d 585, 589 (D.C. Cir. 2001) (citing 47 U.S.C. § 309(j)(6)(D)).

<sup>16</sup> *2.5 GHz Report and Order*, 34 FCC Rcd at 5477, para. 87.

<sup>17</sup> See generally 47 CFR § 1.2105.

<sup>18</sup> See generally *id.* §§ 1.2101-1.2114.

<sup>19</sup> See *id.* § 1.2105(b)(1).

also seek comment on whether there are additional steps the Commission should take with respect to the filing of short-form applications to further ensure and promote auction integrity.

### B. Bidding Credit Caps

9. Consistent with the Commission's decisions in the *Updating Part 1 Report and Order*,<sup>20</sup> we seek comment on establishing reasonable caps on the total bidding credit amount that an eligible small business, very small business, or rural service provider may be awarded for Auction 108. We administer our bidding credit programs to promote small business and rural service provider participation in auctions and in the provision of spectrum-based services.<sup>21</sup>

10. Eligibility for the small business bidding credit is determined according to a tiered schedule of small business size definitions that are based on an applicant's average annual gross revenues for the relevant preceding period, and which determine the size of the bidding credit discount.<sup>22</sup> In the *Updating Part 1 Report and Order*, the Commission revised the gross revenue thresholds that define the eligibility tiers for the small business bidding credit,<sup>23</sup> and it adopted a rural service provider bidding credit program.<sup>24</sup> In the *2.5 GHz Report and Order*, the Commission determined that eligibility for the small business bidding credit in auctions of new licenses in the 2.5 GHz band would be defined using two of the thresholds of the standardized schedule of small business sizes.<sup>25</sup> Specifically, the Commission determined that an entity with average annual gross revenues for the preceding five years not exceeding \$55 million would be designated as a "small business" eligible for a 15% bidding credit, and that an entity with average annual gross revenues for the preceding five years not exceeding \$20 million would be designated as a "very small business" eligible for a 25% bidding credit.<sup>26</sup> The Commission further

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<sup>20</sup> See generally *Updating Part 1 Competitive Bidding Rules et al.*, WT Docket No. 14-170 et al., Report and Order, Order on Reconsideration of the First Report and Order, Third Order on Reconsideration of the Second Report and Order, Third Report and Order, 30 FCC Rcd 7493, 7539-46, paras. 109-30 (2015) (modified by Erratum, 30 FCC Rcd 8518 (2015)) (*Updating Part 1 Report and Order*).

<sup>21</sup> 47 U.S.C. § 309(j)(4)(D); see also *id.* § 309(j)(3)(A)-(B).

<sup>22</sup> See 47 CFR § 1.2110(f)(2).

<sup>23</sup> *Updating Part 1 Report and Order*, 30 FCC Rcd at 7524-25, paras. 73-74. The Commission retained the existing 15%, 25%, and 35% tiers of the small business bidding credit program but revised the gross revenue thresholds that define eligibility for each tier. *Id.* at 7523-25, paras. 72-74.

<sup>24</sup> *Id.* at 7530-31, para. 88; see also 47 CFR § 1.2110(f)(4).

<sup>25</sup> *2.5 GHz Report and Order*, 34 FCC Rcd at 5478-79, para. 89; see also 47 CFR § 1.2110(f)(2)(i). The Commission defines the small business size standards on a service-by-service basis, after evaluating the associated characteristics and capital requirements of each service. 47 CFR § 1.2110(c)(1); see also *id.* § 1.2110(b)(1)(i); *Updating Part 1 Report and Order*, 30 FCC Rcd at 7529, para. 85.

<sup>26</sup> *2.5 GHz Report and Order*, 34 FCC Rcd at 5478-79, para. 89 ("[W]e believe that this two-tiered approach has been successful in the past, and will once again use it."); see also 47 CFR § 27.1219(a)-(b). The standardized schedule of bidding credits provided in section 1.2110(f)(2)(i) defines small businesses based on average gross revenues for the preceding three years. In December 2018, Congress revised the standard set out in the Small Business Act for categorizing a business concern as a "small business concern" by providing as a general matter that a Federal agency cannot propose to categorize a business concern as a "small business concern" for Small Business Act purposes unless the size of the concern is based on its annual average gross receipts "over a period of not less than 5 years." 15 U.S.C. § 632(a)(2)(C)(ii)(II), amended by Small Business Runway Extension Act of 2018, Pub. L. 115-324, 132 Stat. 4444 (2018). In December 2019, the SBA adopted new rules implementing the requirements of the Small Business Runway Extension Act and modifying its method for calculation of average annual receipts used to prescribe size standards for small businesses from a three-year to a five-year average period. Small Business Administration, *Small Business Size Standards: Calculation of Annual Average Receipts*, 84 Fed. Reg. 66561 (Dec. 5, 2019). Accordingly, consistent with this statutory requirement and the SBA's new rules, average annual gross revenues for purposes of small business bidding credits in this band will be based on the preceding five years. *2.5 GHz Report and Order*, 34 FCC Rcd at 5478-79, para. 89 n.256.

determined that entities providing commercial communication services to a customer base of fewer than 250,000 combined wireless, wireline, broadband, and cable subscribers in primarily rural areas would be eligible for the 15% rural service provider bidding credit.<sup>27</sup>

11. To protect the integrity of the bidding credit program and to mitigate the incentives for abuse, the Commission, in the *Updating Part 1 Report and Order*, established a process to implement a reasonable cap on the total bidding credit amount that an eligible small business or rural service provider may be awarded in any auction, based on an evaluation of the expected capital requirements presented by the particular service and inventory of licenses being auctioned.<sup>28</sup> The Commission determined that bidding credit caps would be implemented on an auction-by-auction basis, but resolved that, for any particular auction, the total amount of the bidding credit cap for small businesses would not be less than \$25 million, and the bidding credit cap for rural service providers would not be less than \$10 million.<sup>29</sup> For Auctions 101–103, 105, and 107, the Commission adopted a \$25 million cap on the total bidding credit amount that may be awarded to an eligible small business in each auction and a \$10 million cap on rural service provider bidding credits in each auction.<sup>30</sup>

12. We propose to adopt the same bidding credit caps for Auction 108. As we did for our recent auctions of spectrum for next-generation wireless services, we believe that the range of potential use cases suitable for spectrum in the 2.5 GHz band, combined with the relatively small geographic areas for new flexible-use overlay licenses of white space, may permit deployment of smaller-scale networks with lower total costs.<sup>31</sup> Moreover, past auction data suggest that the proposed caps will allow the substantial majority of eligible businesses in the auction to take advantage of the bidding credit program.<sup>32</sup>

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<sup>27</sup> *2.5 GHz Report and Order*, 34 FCC Rcd at 5479, para. 90; *see also* 47 CFR § 27.1219(c). The Commission determines eligibility for bidding credits, including the rural service provider bidding credit, on a service-by-service basis. *See* 47 CFR § 1.2110(f)(1); *see also* *Updating Part 1 Report and Order*, 30 FCC Rcd at 7529, para. 85. The Commission defined “rural area” as a county with a population density of 100 persons or fewer per square mile. *Updating Part 1 Report and Order*, 30 FCC Rcd at 7536-37, para. 104 & n.340.

<sup>28</sup> *See* *Updating Part 1 Report and Order*, 30 FCC Rcd at 7541, 7544, paras. 114, 119.

<sup>29</sup> *Id.* at 7541, para. 114; *see also* 47 CFR § 1.2110(f)(2)(ii), (4)(ii).

<sup>30</sup> *See* *Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auctions 101 (28 GHz) and 102 (24 GHz); Bidding in Auction 101 Scheduled to Begin November 14, 2018*, AU Docket No. 18-85, Public Notice, 33 FCC Rcd 7575, 7609-10, para. 93 (2018) (*Auctions 101 and 102 Procedures Public Notice*); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 103; Bidding in Auction 103 Scheduled to Begin December 10, 2019*, AU Docket No. 19-59, GN Docket No. 14-177, Public Notice, 34 FCC Rcd 5532, 5558-59, para. 79 (2019) (*Auction 103 Procedures Public Notice*); *Auction of Priority Access Licenses for the 3550–3650 MHz Band; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 105; Bidding in Auction 105 Scheduled to Begin June 25, 2020*, AU Docket No. 19-244, Public Notice, 35 FCC Rcd 2165, para. 77 (2020) (*Auction 105 Procedures Public Notice*); *Auction of Flexible-Use Service Licenses in the 3.7–3.98 GHz Band for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 107; Bidding in Auction 107 Scheduled to Begin December 8, 2020*, AU Docket No. 20-25, Public Notice, 35 FCC Rcd 8404, 8428-29, para. 76 (2020) (*Auction 107 Procedures Public Notice*).

<sup>31</sup> *See, e.g., 2.5 GHz Report and Order*, 34 FCC Rcd at 5480, para. 93 (citing NTCA Comments at 6) (“We find that a county-based license will afford overlay licensees the flexibility to develop localized services, allow for targeted deployments based on market forces and customer demand, and facilitate access by both smaller and larger providers.”).

<sup>32</sup> No bidder seeking a small business bidding credit exceeded the \$25 million cap in Auction 101, Auction 102, Auction 103, or Auction 105. *See generally* *Winning Bidders Announced for Auction of 28 GHz Upper Microwave Flexible Use Service Licenses (Auction 101)*, AU Docket No. 18-85, Public Notice, 34 FCC Rcd 4279, 4283-85,

(continued....)

We therefore believe that our proposed caps will promote the statutory goals of providing meaningful opportunities for *bona fide* small businesses to participate in the auction and in the provision of spectrum-based services,<sup>33</sup> without compromising our responsibility to prevent unjust enrichment and ensure efficient and intensive use of spectrum.<sup>34</sup>

13. Similarly, we propose to adopt a \$10 million cap on the total bidding credit amount that may be awarded to an eligible rural service provider in Auction 108.<sup>35</sup> Based on our experience with other spectrum auctions, we anticipate that a \$10 million cap on rural service provider bidding credits will not constrain the ability of any rural service provider to participate fully and fairly in Auction 108.<sup>36</sup> In addition, to create parity in Auction 108 among eligible small businesses and rural service providers competing against each other in smaller markets, we propose a \$10 million cap on the overall bidding credit amount that any winning small business bidder may apply to licenses won in counties located within any partial economic area (PEA) with a population of 500,000 or less.<sup>37</sup>

14. We seek comment on these proposed caps. Specifically, do the expected capital requirements associated with operating in the 2.5 GHz band, the potential number and value of new overlay licenses, past auction data, or any other considerations justify a higher cap for either type of bidding credit? Moreover, are there convincing reasons for not maintaining parity with the bidding credit caps adopted in previous auctions of spectrum suitable for 5G? Commenters are encouraged to identify unique circumstances and characteristics of this mid-band auction that should guide us in establishing bidding credit caps, and to provide specific, data-driven arguments in support of their proposals.

15. We remind applicants applying for designated entity bidding credits that they should take due account of the requirements of the Commission's rules and implementing orders regarding *de jure* and *de facto* control of such applicants.<sup>38</sup> These rules include a prohibition, which applies to all applicants (whether or not they are seeking bidding credits) starting at the short-form application filing deadline, against changes in ownership of the applicant that would constitute an assignment or transfer of

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Attach. A (OEA/WTB 2019) (*Auction 101 Closing Public Notice*); *Auction of 24 GHz Upper Microwave Flexible Use Service Licenses Closes; Winning Bidders Announced for Auction 102*, AU Docket No. 18-85, Public Notice, 34 FCC Rcd 4294, 4306-08, Attach. A (OEA/WTB 2019) (*Auction 102 Closing Public Notice*); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services Closes; Winning Bidders Announced for Auction 103*, AU Docket No. 19-59, Public Notice, 35 FCC Rcd 2015, 2032-34, Attach. B (OEA/WTB 2020) (*Auction 103 Closing Public Notice*); *Auction of Priority Access Licenses in the 3550-3650 MHz Band Closes; Winning Bidders Announced for Auction 105*, AU Docket No. 19-244, Public Notice, 35 FCC Rcd 9287, Attach. A (OEA/WTB 2020) (*Auction 105 Closing Public Notice*).

<sup>33</sup> See 47 U.S.C. § 309(j)(4)(D); see also *id.* § 309(j)(3)(A)-(B).

<sup>34</sup> See *id.* § 309(j)(3)(C)-(D).

<sup>35</sup> An entity is not eligible for a rural service provider bidding credit if it has already claimed a small business bidding credit. 47 CFR § 1.2110(f)(4)(i).

<sup>36</sup> No rural service provider exceeded the \$10 million cap in the Broadcast Incentive Auction, Auction 101, Auction 102, Auction 103, or Auction 105. See generally *Incentive Auction Closing and Channel Reassignment Public Notice; the Broadcast Television Incentive Auction Closes; Reverse Auction and Forward Auction Results Announced; Final Television Band Channel Assignments Announced; Post-Auction Deadlines Announced*, AU Docket No. 14-252 et al., Public Notice, 32 FCC Rcd 2786, Attach. B (WTB/MB 2017); *Auction 101 Closing Public Notice*, 34 FCC Rcd at 4283-85, Attach. A; *Auction 102 Closing Public Notice*, 34 FCC Rcd at 4306-08, Attach. A; *Auction 103 Closing Public Notice*, 35 FCC Rcd at 2032-34, Attach. B; *Auction 105 Closing Public Notice*, 35 FCC Rcd at 9287, Attach. A.

<sup>37</sup> This proposal is consistent with the approach adopted by the Commission in Auctions 101–103, 105, and 107. See, e.g., *Auction 105 Procedures Public Notice*, 35 FCC Rcd at 2165, para. 77.

<sup>38</sup> See, e.g., 47 CFR §§ 1.2110-1.2111.

control.<sup>39</sup> Applicants should not expect to receive any opportunities to revise their ownership structure after the filing of their short- and long-form applications, including making revisions to their agreements or other arrangements with interest holders, lenders, or others in order to address potential concerns relating to compliance with the designated entity bidding credit requirements. This policy will help to ensure compliance with the Commission's rules applicable to the award of bidding credits prior to the start of bidding in this auction, which will involve competing bids from those who do and do not seek bidding credits, and thus preserves the integrity of the auction process.<sup>40</sup> We also believe that this will meet our objectives in awarding licenses through the competitive bidding process.<sup>41</sup>

### C. Prohibition of Certain Communications

16. Section 1.2105(c)(1) of the Commission's rules provides that, subject to specified exceptions, "[a]fter the short-form application filing deadline, all applicants are prohibited from cooperating or collaborating with respect to, communicating with or disclosing, to each other or any nationwide provider [of communications services] that is not an applicant, or, if the applicant is a nationwide provider, any non-nationwide provider that is not an applicant, in any manner the substance of their own, or each other's, or any other applicants' bids or bidding strategies (including post-auction market structure), or discussing or negotiating settlement agreements, until after the down payment deadline[.]"<sup>42</sup>

17. *Nationwide Providers Subject to the Prohibition of Certain Communications.* The operation of the rule prohibiting certain communications requires that the Commission identify each "nationwide provider" for purposes of section 1.2105(c)(1) in connection with each auction.<sup>43</sup> Accordingly, consistent with the procedures adopted for prior auctions of flexible-use licenses for advanced wireless services, we propose to identify AT&T, T-Mobile, and Verizon as "nationwide providers" for the purpose of implementing our competitive bidding rules in Auction 108, including section 1.2105(c), the rule prohibiting certain communications.<sup>44</sup> We seek comment on this proposal.

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<sup>39</sup> *Id.* § 1.2105(b)(2). Under section 1.2107(c), the winning bidder must be the entity that files the post-auction long-form application. 47 CFR § 1.2107(c). Pursuant to section 1.929(a)(2), any substantial change in ownership or control of an applicant is classified as a major amendment. *Id.* § 1.929(a)(2); *see also id.* § 1.927(a)-(b), (h).

<sup>40</sup> In furtherance of this policy, applicants will not be permitted to change their bidding credit type selection (i.e., from small business to rural service provider, or vice versa) after the short-form deadline. *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7538, para. 108 ("[A]n applicant must choose between one bidding credit and the other.").

<sup>41</sup> The Commission's objectives when awarding licenses through competitive bidding include "the development and rapid deployment of new technologies, products, and services for the benefit of the public . . . without administrative or judicial delays" and "promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses." 47 U.S.C. § 309(j).

<sup>42</sup> 47 CFR § 1.2105(c)(1). Section 1.2105(c)(5)(i) defines "applicant" as including all officers and directors of the entity submitting a short-form application to participate in the auction, all controlling interests of that entity, as well as all holders of partnership and other ownership interests and any stock interest amounting to 10% or more of the entity, or outstanding stock, or outstanding voting stock of the entity submitting a short-form application. *Id.* § 1.2105(c)(5)(i).

<sup>43</sup> *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7571, para. 182 n.596.

<sup>44</sup> *See, e.g., Auction 107 Procedures Public Notice*, 35 FCC Rcd at 8413, 8418, paras. 27 & n.51, 43; *Auction 105 Procedures Public Notice*, 35 FCC Rcd at 2150, 2155, paras. 28, 44; *Auction 103 Procedures Public Notice*, 34 FCC Rcd at 5542, 5547, paras. 27, 43. This is also consistent with the Commission's identification of nationwide providers in the *2020 Communications Marketplace Report. 2020 Communications Marketplace Report*, GN Docket No. 20-60, Report, FCC 20-188, at 5, para. 9 (Dec. 31, 2020).



**D. Information Procedures During the Auction Process**

18. As an additional safeguard to further prevent the sharing of information about applicants' bids and bidding strategies and to discourage unproductive and anti-competitive strategic behavior, we propose to limit information available in Auction 108 in order to prevent the identification of bidders placing particular bids until after the bidding has closed.<sup>45</sup> While we generally make available to the public information provided in each applicant's FCC Form 175 following an initial review by Commission staff, we propose to not make public until after bidding has closed: (1) the licenses that an applicant selects for bidding in its short-form application (FCC Form 175), (2) the amount of any upfront payment made by or on behalf of an applicant for Auction 108, (3) any applicant's bidding eligibility, and (4) any other bidding-related information that might reveal the identity of the bidder placing a bid.

19. As in past Commission auctions, we will not make public during a bidding round any real-time information on bidding activity. Bidders would have access both during and after a round to information related to their own bidding activity and eligibility. For example, bidders would be able to view their own levels of eligibility and submitted activity through the FCC auction bidding system.

20. After the close of bidding, bidders' license selections, upfront payment amounts, bidding eligibility, bids, and other bidding-related information would be made publicly available.

21. We seek comment on the above details of our proposal for implementing limited information procedures, or anonymous bidding, in Auction 108. Commenters opposing the use of limited information procedures in Auction 108 should explain their reasoning and propose alternative information rules.

**E. Upfront Payments and Bidding Eligibility**

22. In keeping with the Commission's usual practice in spectrum license auctions, we propose that applicants be required to submit upfront payments as a prerequisite to becoming qualified to bid.<sup>46</sup> As described below, the upfront payment is a refundable deposit made by an applicant to establish its eligibility to bid on licenses. Upfront payments protect against frivolous or insincere bidding and provide the Commission with a source of funds from which to collect payments owed at the close of bidding.<sup>47</sup> With these considerations in mind, the Commission proposes upfront payments based on \$0.003 per MHz-pop, with a minimum of \$500 per license. Given the uncertain total amount of available white space spectrum in each 2.5 GHz band license pending resolution of Rural Tribal Priority Window applications and other factors, we propose to base upfront payments on the total potential MHz-pops of each license offered in the auction, rather than on available white space in each block. For the 49.5-megahertz and 50.5-megahertz blocks, we propose to base the calculation on 50 megahertz. Additionally, when calculating upfront payment amounts, we propose to round the results of calculations as follows: results below \$1,000 will be rounded down to the nearest \$100; results between \$1,000 and \$10,000 will be rounded down to the nearest \$1,000; results between \$10,000 and \$100,000 will be rounded down to the nearest \$10,000; and results above \$100,000 will be rounded down to the nearest \$100,000. The proposed rounding procedures would lessen the differences between upfront payment

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<sup>45</sup> The Commission has instituted limited information procedures in most recent spectrum auctions. *See, e.g., Auction 107 Procedures Public Notice*, 35 FCC Rcd at 8417, paras. 35-36; *Auction 105 Procedures Public Notice*, 35 FCC Rcd at 2153, paras. 36-37; *Auction 103 Procedures Public Notice*, 34 FCC Rcd at 5546, paras. 35-36; *see also* 47 CFR § 1.2104(h).

<sup>46</sup> *See* 47 CFR § 1.2106.

<sup>47</sup> *See Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, PP Docket No. 93-253, Second Report and Order, 9 FCC Rcd 2348, 2377-79, paras. 169-76 (1994) (*Competitive Bidding Second Report and Order*). We note that the Commission's rules require that "[a]ny auction applicant that, pursuant to § 1.2105(a)(2)(xii), certifies that it is a former defaulter must submit an upfront payment equal to 50% more than the amount that otherwise would be required." 47 CFR § 1.2106(a).

amounts for licenses in counties with similar population instead of reflecting relatively small differences in total potential MHz-pops that are not necessarily representative of the available white space.

23. We seek comment on these upfront payment amounts, which are specified in the Attachment A file on the Auction 108 website at [www.fcc.gov/auction/108](http://www.fcc.gov/auction/108). If commenters believe that these upfront payment amounts are not reasonable amounts, they should explain their reasoning and suggest an alternative approach.

24. We further propose that the amount of the upfront payment submitted by a bidder would determine its bidding eligibility in bidding units, which are a measure of bidder eligibility and bidding activity.<sup>48</sup> We propose to assign each license that is available to be assigned a specific number of bidding units, equal to one bidding unit per \$100 of the upfront payment listed in the Attachment A file. The number of bidding units for a given license is fixed and does not change during the auction.

25. *Calculating Upfront Payments in the Single-Round Format.* To the extent that a bidder wishes to bid on multiple licenses simultaneously, it would need to ensure that its upfront payment provides enough eligibility to cover the total bidding units associated with the licenses that the bidder can win given the bids it intends to submit. Under the single-round approach, a bidder's upfront payment would not be attributed to specific licenses. A bidder may place bids on multiple licenses consistent with its selections in its FCC Form 175, provided that the maximum number of bidding units associated with the licenses that the bidder can win does not exceed its bidding eligibility. Thus, in calculating its upfront payment amount, and hence its bidding eligibility, an applicant must determine the maximum number of bidding units needed to cover licenses that it may wish to win in the auction and submit an upfront payment amount covering that total number of bidding units. We seek comment on these procedures.

26. *Calculating Upfront Payments in the SMR Format.* If we adopt the SMR auction format discussed below, a bidder that wishes to bid on multiple licenses simultaneously similarly would need to ensure that its upfront payment provides enough eligibility. A bidder would be able to place bids on multiple licenses, provided that the total number of bidding units associated with those licenses does not exceed its current eligibility. Thus, in calculating its upfront payment amount and hence its initial bidding eligibility under this approach, an applicant must determine the maximum number of bidding units on which it may wish to bid (or hold provisionally winning bids) in any single round, and submit an upfront payment amount covering that total number of bidding units. We seek comment on this approach to upfront payments under an SMR auction format.

<b>Example: Upfront Payments and Bidding Eligibility Under SMR Format</b>					
<b>County</b>	<b>State</b>	<b>Channel</b>	<b>Bandwidth</b>	<b>Bidding Units</b>	<b>Upfront Payment</b>
Lake	IN	2	50.5 MHz	200	\$20,000
Porter	IN	2	50.5 MHz	80	\$8,000
Under the SMR format, if a bidder wishes to bid on a license in both of the above counties in a round, it must have selected both on its FCC Form 175 and purchased at least 280 bidding units (200 + 80) of bidding eligibility. If a bidder only wishes to bid on one, but not both, purchasing 200 bidding units would meet the eligibility requirement for a license in either county. The bidder would be able to bid on a license in either county, but not both at the same time. If the bidder purchased only 80 bidding units, the bidder would have enough eligibility to bid for a license in Porter County but not for one in Lake County.					

<sup>48</sup> The upfront payment does not limit the dollar amounts of the bids that a bidder may submit.

**F. Auction Delay, Suspension, or Cancellation**

27. For Auction 108, we propose that, at any time before or during the bidding process, OEA, in conjunction with WTB, may delay, suspend, or cancel bidding in Auction 108 in the event of a natural disaster, technical obstacle, network interruption, administrative or weather necessity, evidence of an auction security breach or unlawful bidding activity, or for any other reason that affects the fair and efficient conduct of competitive bidding.<sup>49</sup> In such a case, OEA would notify participants of any such delay, suspension, or cancellation by public notice and/or through the FCC auction bidding system's announcement function. If the bidding is delayed or suspended, OEA, in its sole discretion, may elect to resume the auction starting from the beginning of the round, or it may cancel the auction in its entirety (subject to the scheduling in due course of another auction for this spectrum). We emphasize that OEA and WTB would exercise the authority to delay, suspend, or cancel bidding in Auction 108 solely at their discretion. We seek comment on this proposal.

**G. Additional Default Payment Percentage**

28. Any winning bidder that defaults or is disqualified after the close of an auction (i.e., fails to remit the required down payment by the specified deadline, fails to submit a timely long-form application, fails to make full and timely final payment, or is otherwise disqualified) is liable for a default payment under section 1.2104(g)(2) of the rules.<sup>50</sup> This payment consists of a deficiency payment, equal to the difference between the amount of the bidder's winning bid and the amount of the winning bid the next time a license covering the same spectrum is won in an auction, plus an additional payment equal to a percentage of the defaulter's bid or of the subsequent winning bid, whichever is less.

29. The Commission's rules provide that, in advance of each auction, it will establish a percentage between 3% and 20% of the applicable winning bid to be assessed as an additional default payment.<sup>51</sup> As the Commission has indicated, the level of this additional payment in each auction will be based on the nature of the service and the licenses being offered.<sup>52</sup>

30. For Auction 108, we propose to establish an additional default payment of 15%, which is consistent with that adopted for prior auctions of spectrum suitable for 5G and other advanced wireless services.<sup>53</sup> As noted in the *CSEA/Part 1 Report and Order*, defaults weaken the integrity of the auction process and may impede the deployment of service to the public, and an additional default payment of up to 20% will be more effective in deterring defaults than the 3% used in some earlier auctions.<sup>54</sup> At the same time, we do not believe the detrimental effects of any defaults in Auction 108 are likely to be unusually great. In light of these considerations, we propose for Auction 108 an additional default payment of 15% of the relevant bid. We seek comment on this proposal.

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<sup>49</sup> See 47 CFR § 1.2104(i).

<sup>50</sup> *Id.* § 1.2104(g)(2).

<sup>51</sup> *Id.* § 1.2104(g)(2)(ii).

<sup>52</sup> *Implementation of the Commercial Spectrum Enhancement Act and Modernization of the Commission's Competitive Bidding Rules and Procedures*, WT Docket No. 05-211, Report and Order, 21 FCC Rcd 891, 903-04, para. 31 (2006) (*CSEA/Part 1 Report and Order*).

<sup>53</sup> See, e.g., *Auction 107 Procedures Public Notice*, 35 FCC Rcd at 8470, para. 237; *Auction 103 Procedures Public Notice*, 34 FCC Rcd at 5601, para. 248; *Auctions 101 and 102 Procedures Public Notice*, 33 FCC Rcd at 7660, para. 295.

<sup>54</sup> *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 902-03, para. 29.

#### IV. PROPOSED BIDDING PROCEDURES

31. We propose to conduct Auction 108 using either a single bidding round, after which the auction system will process the bids to determine winning bidders,<sup>55</sup> or a simultaneous multiple-round ascending (SMR) auction format.<sup>56</sup> Under the single-round format, winning bidders would pay the amounts of their winning bids for the licenses they are awarded (less any applicable bidding credit discount). The SMR auction format would offer every license for bid at the same time and consist of successive bidding rounds in which bidders may place bids on individual licenses. Under this format, bidding would remain open on all licenses until bidding stops on every license.

32. The procedures we propose for the single-round format and on which we seek comment differ from FCC spectrum auctions the Commission has held in the past because the circumstances for Auction 108 differ in many respects from more typical spectrum auction scenarios. However, we also outline and seek comment on SMR procedures that may be more familiar to potential auction participants.

33. We note the delegated authority of OEA to develop auctions jointly with WTB and expect that OEA and WTB will release a technical guide shortly supplementing the information in this Public Notice and including the mathematical details and algorithms of the single-round auction design.<sup>57</sup> The corresponding technical information for an SMR auction is contained within this Public Notice.<sup>58</sup>

##### A. Single Bidding Round Auction Design

34. We seek comment on use of a single bidding round that would remain open long enough to give bidders ample time to submit, review and potentially resubmit, and confirm their bids. Bids submitted during the round would need to meet the activity rule. After the round closes, the submitted bids would be processed by the bidding system to determine the winning bids.

35. While this format departs from the multiple-round procedures that the Commission typically has used in auctioning spectrum licenses, the inventory of licenses available in Auction 108 will be very large (approximately 8,300 licenses) and, as a result, a multiple-round auction could require a number of months to complete.<sup>59</sup> Although a clock auction of generic blocks with an assignment phase to

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<sup>55</sup> See, e.g., Letter from Paul J. Sinderbrand, Chief Strategy and Regulatory Affairs Officer, SoniqWave, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 3 (filed Oct. 28, 2020) (“[T]he unique circumstances presented by [the] 2.5 GHz band suggest . . . a single round, sealed bid approach.”) (SoniqWave *Ex Parte*); Letter from Robert Finch, President, Select Spectrum, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 1-3 (filed Nov. 24, 2020) (Select Spectrum *Ex Parte*); Letter from Louis Peraertz, Vice President of Policy, WISPA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 3-5 (filed Nov. 23, 2020) (WISPA Nov. 23 *Ex Parte*); Letter from Stephen Coran, Counsel, WISPA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 1 (filed Dec. 31, 2020).

<sup>56</sup> See, e.g., Letter from Alexi Maltas, Senior Vice President and General Counsel, CCA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 2 (filed Sept. 10, 2020) (urging the Commission to consider whether a “simultaneous multiple-round (SMR) auction could be feasible for the band”) (CCA *Ex Parte*); Letter from Steve B. Sharkey, Vice President, Government Affairs, T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 5-6 (filed Sept. 16, 2020) (T-Mobile Sept. 16 *Ex Parte*); Letter from Steve B. Sharkey, Vice President, Government Affairs, T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 4-6 (filed Nov. 17, 2020) (T-Mobile Nov. 17 *Ex Parte*); Letter from Steve B. Sharkey, Vice President, Government Affairs, T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 1-2 (filed Jan. 7, 2021); Letter from Kara Graves, Assistant Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 1-3 (filed Oct. 19, 2020) (encouraging the Commission to adopt an SMR format) (CTIA *Ex Parte*).

<sup>57</sup> See 47 CFR §§ 0.271, 0.21(m).

<sup>58</sup> See Section IV.B.6 (Bid Amounts), below, and Attachment B.

<sup>59</sup> For example, the 2008 Canadian AWS auction (with 292 licenses) extended 331 rounds and took two months. The 2014-15 U.S. AWS-3 auction (Auction 97, with 1,614 licenses) extended 341 rounds and took two and a half months.

assign frequency-specific licenses can shorten the duration of a multiple-round auction relative to the Commission's SMR auction format, a clock auction format would not be appropriate here because each overlay license being offered is unique. Within a county, each block has a different amount of bandwidth—though not all frequency blocks are available in all counties—and even where a given frequency block is available in a county, white space may not be available throughout the county due to existing incumbent licensee operations.<sup>60</sup> An SMR auction could last for months, which would require participating bidders to monitor the auction consistently, a resource commitment that is demanding for all bidders, but particularly for smaller entities, many of which we expect will compete in Auction 108.<sup>61</sup> In addition, a longer auction entails a longer prohibited communications quiet period, in which all applicants—including but not limited to all officers and directors of the entity submitting an application and all controlling interests of that entity—are subject to the rule prohibiting certain discussions of bids or bidding strategies. Moreover, smaller entities that are seeking only a limited number of relatively low value licenses may consider such a resource commitment to be too onerous and may choose not to participate in this auction.<sup>62</sup> In contrast, we anticipate that, based on estimated processing time, a single bidding round giving bidders ample time to submit their bids and bid processing could be completed within a week.

36. In addition, a single-round auction format may help overcome some of the inherent advantages of incumbent rights holders in the band and increase overall competition in the auction.<sup>63</sup> Specifically, we seek comment on using a single-round auction format in the context of the existing licensing and leasing landscape of the 2.5 GHz band where a single entity holds a large share of the spectrum rights.<sup>64</sup> A multiple-round auction will always give a bidder an opportunity to outbid its competitors, and given that the majority license-holder in this band is a nationwide service provider and is likely to be better funded than many other entities that are potentially interested in Auction 108, these other, smaller entities may feel as though they have little chance of winning when competing against the larger license-holder. Moreover, given that the larger entity's interests are geographically broad while the smaller entities tend to have more localized interests, the larger entity would be able to “cost-average” by paying more for some licenses than its stand-alone valuation would otherwise indicate because it would be able to leverage savings from other licenses that it wins at less than its valuation.<sup>65</sup> Other bidders, recognizing these advantages, consequently are likely to be deterred from participating in an auction where they expect that they would have little opportunity to win. Absent the participation of the smaller entities, the advantages to the majority license-holding entity would be even stronger. As a result of the

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<sup>60</sup> See *CCA Ex Parte* at 1; *CTIA Ex Parte* at 2; *SoniqWave Ex Parte* at 2; *WISPA Nov. 23 Ex Parte* at 3-5. In Auction 105, by contrast, the blocks offered in each county were identical and so a clock format was appropriate. As a result, bidding could be conducted for approximately 3,000 counties, without differentiating among the seven, 10-megahertz blocks available in each county. In Auction 108, bidding by county for up to three frequency blocks in each county would require bidding for up to approximately 8,300 separate licenses. Auction 105 lasted for a month; the increase in duration for Auction 108 would likely be more than proportional as bidders switch back and forth across substitutable licenses.

<sup>61</sup> See *WISPA Nov. 23 Ex Parte* at 5. *But see, e.g., T-Mobile Nov. 17 Ex Parte* at 4-5 (arguing that an SMR auction could be completed quickly).

<sup>62</sup> See *WISPA Nov. 23 Ex Parte* at 5.

<sup>63</sup> See *Select Spectrum Ex Parte* at 1.

<sup>64</sup> See *2.5 GHz Report and Order*, 34 FCC Rcd at 5474, para. 79 (noting that one entity holds the majority of EBS leases); see also *SoniqWave Ex Parte* at 2-3; *Select Spectrum Ex Parte* at 1-3; *WISPA Nov. 23 Ex Parte* at 5.

<sup>65</sup> See *Select Spectrum Ex Parte* at 3 (“We believe that a single round, sealed bid approach will not only be the most reasonable and fair way to issue licenses to auction participants, but it is also the best structure to ensure the spectrum will have the ‘highest and best use’ in rural areas through small operators having a fair shot at spectrum access. A single round, sealed bid approach will provide this opportunity by eliminating T-Mobile’s opportunity to use dollar cost averaging to pay above its own valuation and beat out smaller operators in those markets where there is competition.”).

diminished competition in the auction, prices may likely be lower than they would have been had the smaller entities participated.<sup>66</sup> Conversely, in a single-round, pay-as-bid auction, the weak bidder has a better opportunity to win, it is more likely to participate in the auction, and prices can therefore be expected to be closer to the winning bidder's valuation.<sup>67</sup> We ask commenters to consider whether a single-round format would encourage greater participation in this auction than would an SMR auction. Would a smaller entity be more likely to participate if other, possibly larger entities did not always have an opportunity to place a higher bid, as is the case in a multiple-round ascending auction format?

37. We recognize that a single-round auction precludes the price discovery across licenses that is possible in a multiple-round auction.<sup>68</sup> Price discovery is intended to help inform a bidder's decision to shift its resources across areas as relative prices change over the course of the auction, which is particularly helpful for a bidder with multiple alternative business plans but without sufficient resources to pursue all of them.<sup>69</sup> The single-round auction on which we seek comment considers the potential losses in efficiency from the price discovery process and, on balance, finds that any losses are likely to be less consequential in this auction than is generally true for spectrum auctions. Based on input in the proceeding and the characteristics of the licenses offered in Auction 108—county-based, with non-uniform and occasionally significant encumbrances across areas, making them less suitable for larger-scale operations—it is our understanding that the majority of potential bidders in Auction 108 likely will be entities with specific local or regional interests, and therefore, they will not be hampered significantly by a lack of price discovery over multiple rounds for alternative areas.<sup>70</sup> To determine their bid amounts, bidders can incorporate information from significant secondary market activity in the 2.5 GHz band, including through auction or auction-like processes that have been used by incumbents to find interested parties and set prices, as well as data in the Commission's Universal Licensing System, and spectrum values from recent mid-band spectrum auctions, such as the recently-concluded Commission auction of Priority Access Licenses in the 3550-3650 MHz Band.<sup>71</sup> Moreover, it has been suggested that smaller

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<sup>66</sup> This logic would lead the “strong” bidder to prefer a multiple-round auction to a single-round auction. See Eric Maskin & John Riley, *Asymmetric Auctions*, 67 Rev. of Econ. Stud. 414 (2000) (“We also show quite generally that ‘strong’ buyers prefer the open auction, whereas ‘weak’ buyers prefer the high-bid auction.”). We note the strong preference T-Mobile has expressed in the record for a multiple-round auction. See, e.g., T-Mobile Sept. 16 *Ex Parte* at 5; T-Mobile Nov. 17 *Ex Parte* at 4-6.

<sup>67</sup> The academic auctions literature has long recognized that, in situations where one entity is “strong” relative to other bidders, a single-round auction can offer the “weaker” entities a greater chance of winning, and thereby encourage participation. See, e.g., Maskin & Riley, *supra* note 66, at 413-38; Paul Klemperer, *Auctions with Almost Common Values: The ‘Wallet Game’ and its Applications*, 42 Eur. Econ. Rev. 757-69 (1998). The existing competitive landscape in the 2.5 GHz band appears to fit the model described in the literature.

<sup>68</sup> See CTIA *Ex Parte* at 3; T-Mobile Sept. 16 *Ex Parte* at 5.

<sup>69</sup> See CCA *Ex Parte* at 2; CTIA *Ex Parte* at 2; T-Mobile Sept. 16 *Ex Parte* at 5; T-Mobile Nov. 17 *Ex Parte* at 5-6. T-Mobile also notes that price discovery may be especially helpful in Auction 108 “because of the unique licensing structure of overlaying licenses on existing licenses and spectrum leases, all subject to performance and interference prevention requirements.” T-Mobile Sept. 16 *Ex Parte* at 5.

<sup>70</sup> For example, WCAI notes that it is addressing issues raised in the 2.5 GHz NPRM “with a particular focus on the perspective of the smaller broadband service providers” and indicates its support for competitive bidding for the unassigned portions of the 2.5 GHz band. WCAI 2.5 GHz NPRM Comments at 7. WCAI further emphasizes the interest of its members in the 2.5 GHz band by noting that “today over 60 of these smaller operators are providing service to communities through EBS spectrum leases.” *Id.* Similarly, WISPA supports an auction of 2.5 GHz licenses on behalf of its members. WISPA 2.5 GHz NPRM Comments at 22. WISPA comments that “small, rural providers” are most likely to fill the void in affordable residential broadband service in areas that lack FTTP and cable service, and asserts that “the rural areas where broadband is most lacking are the same rural areas where there is likely to be unassigned EBS spectrum.” *Id.* at 11; see also Select Spectrum *Ex Parte* at 1-3; WISPA Nov. 23 *Ex Parte* at 5.

<sup>71</sup> See SoniqWave *Ex Parte* at 2.

operators may have better knowledge of the local landscape and may be able to price their bids more accurately than larger entities without ties to such local rural areas.<sup>72</sup>

38. The bidding procedures we propose for the single-round format include several mechanisms for ensuring that many important benefits of a multiple-round auction can be accommodated under the single-round format. Importantly, we seek comment on procedures to ensure that certain potentially critical aggregations of licenses can be bid on with an either/or indicator so that a bidder can indicate that it wishes to be assigned only one of a group of substitutable licenses. This procedure offers a useful advantage that is not feasible in a multiple-round auction where a large number of items precludes flexible package bidding. With these mechanisms, we are confident that bidders can simply and effectively represent their bidding interests in a single-round format.

39. We seek comment on any specific aspects of this single-round auction with which commenters agree or disagree. In particular, do potential bidders see the time savings of a single-round auction as valuable relative to the SMR auction that could last for several months? Do commenters believe that the single-round format would disproportionately favor one group of bidders or another? Is there any reason to conclude that our understanding of the type of entities likely to participate in Auction 108 is inaccurate or unsupported by the record in the *Transforming the 2.5 GHz Band* proceeding?

40. Prior to the start of Auction 108, we would make available to bidders various educational materials.

#### 1. Pay-As-Bid Pricing Rule

41. Under the single-round auction format, each winning bidder would pay the sum of its winning bid amounts for the licenses it is awarded, less any applicable bidding credit discount. Accordingly, a bidder with bidding credits should bid an undiscounted (full-price) amount for the licenses it wishes to win.

42. We would use a pay-as-bid payment rule to give bidders more certainty about the cost of their winning bids than would a “second price” payment rule, in which the winning bidder would pay a price corresponding to the next best bid or set of bids.<sup>73</sup> A pay-as-bid rule may also be useful in discouraging undesirable strategic behavior. In a second-price auction where the highest bidder would win but pay only the amount of the second-highest bid, a dominant entity may overbid on a large group of licenses if it anticipates that competing bids for most of those licenses would be considerably lower, so that expected gains would outweigh any losses. In contrast, with a pay-as-bid rule, each bidder would have to pay the amount of its high bid for each license it wins, discouraging such aggressive strategies by entities with interests in a large number of areas. Moreover, given the very large inventory of licenses offered in Auction 108, the computation of “second prices” (or Vickrey prices) would be exceedingly complex and potentially intractable within a reasonable amount of processing time.<sup>74</sup>

43. Might a resource-constrained smaller bidder be more inclined to compete at auction because it has more certainty over the amount it might pay? Or might a small entity be more likely to

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<sup>72</sup> See *Select Spectrum Ex Parte* at 1-4.

<sup>73</sup> In the simple case of an individual item and no package bids, the “second price” would be the second-highest bid. In the context of a combinatorial winner determination process such as we propose here, the bidding system would compare the revenue of the winning combination of bids with the highest revenue possible absent the winning bidder’s bid, and subtract the difference from the winning bidder’s bid to determine the second, or Vickrey, price.

<sup>74</sup> The determination of a single Vickrey price involves solving an additional combinatorial optimization problem, which could take a significant amount of time to solve. The Commission has computed Vickrey prices during the assignment phase of several recent spectrum clock auctions where, in each assignment phase market, the number of licenses being assigned was less by orders of magnitude and only a relatively small number of bidders were being assigned licenses. See, e.g., Auction 103 Assignment Phase Technical Guide. *But see* T-Mobile Sept. 16 *Ex Parte* at 5 n.24 (arguing that a pay-as-bid pricing rule rather than a second-price rule would overly complicate bidding, which could decrease auction participation).

participate because a dominant entity will have less incentive to strategically overbid than in a second-price auction? We seek comment on the use of a pay-as-bid payment rule.

## 2. Bidding Activity and Eligibility

44. Consistent with our proposal to determine bidding eligibility in bidding units based on the amount of a bidder's upfront payment, we propose to determine bidding activity in terms of bidding units, as well. Each license will be assigned a certain number of bidding units.<sup>75</sup> For the single round of bidding, we would limit a bidder's total bidding activity such that the maximum number of bidding units associated with the licenses that the bidder can win does not exceed its total eligibility in bidding units.<sup>76</sup>

45. To implement this procedure, when a bidder uploads a set of bids via the Internet to the FCC auction bidding system, the system would calculate the maximum bid amount and the maximum number of bidding units associated with the bids. If the bids do not exceed the bidder's eligibility and otherwise are valid bids, the bidding system would accept the bid submission.<sup>77</sup> In addition, during the bidding round, the bidding system would inform the bidder of a running total of its activity in terms of bidding units and the total value of all of its submitted bids. We ask for comment on these procedures.

## 3. Minimum Bids and Reserve Prices

46. As part of the pre-bidding process for each auction, section 309(j) of the Communications Act of 1934, as amended, mandates that we prescribe methods for establishing reasonable minimum bid amounts for licenses subject to auction unless such bid amounts are not in the public interest. Accordingly, we propose to establish minimum bid amounts for Auction 108.<sup>78</sup>

47. Given the potential lack of accurate information on available white space in the 2.5 GHz band, we propose to establish the minimum bid amounts in Auction 108 using the total potential MHz-pops of each license offered in the auction, rather than on available white space in each block. We propose to base these calculations on \$0.006 per MHz-pop, with a minimum of \$500 per license. For the 49.5-megahertz and 50.5-megahertz blocks, we propose to base the calculation on 50 megahertz. Additionally, when calculating minimum bid amounts, we propose to round the results of calculations as follows: results below \$1,000 will be rounded down to the nearest \$100; results between \$1,000 and \$10,000 will be rounded down to the nearest \$1,000; results between \$10,000 and \$100,000 will be rounded down to the nearest \$10,000; and results above \$100,000 will be rounded down to the nearest \$100,000. The proposed rounding procedures would lessen the differences between minimum bid amounts for licenses in counties with similar population instead of reflecting relatively small differences in total potential MHz-pops that are not necessarily representative of the available white space. We seek comment on these minimum bid amounts, which are specified in the Attachment A file on the Auction 108 website at [www.fcc.gov/auction/108](http://www.fcc.gov/auction/108). If commenters believe that these minimum bid amounts would result in unsold licenses or are not reasonable amounts, they should explain their reasoning and propose an alternative approach. Commenters should support their claims with valuation analyses and suggested amounts or formulas for minimum bids. We do not propose a separate aggregate reserve price, below which the auction would not conclude, and we seek comment on that proposal. We are not aware at this time of circumstances that require establishment of an aggregate reserve price in the public interest for this auction of overlay licenses in the 2.5 GHz band and propose only the minimum bids that we discuss here.

<sup>75</sup> See Section III.E (Upfront Payments and Bidding Eligibility), above.

<sup>76</sup> See Section IV.A (Single Bidding Round Auction Design), above.

<sup>77</sup> If the submitted bids exceed the bidder's eligibility, the bids would be rejected and new bids could be submitted before the close of the round.

<sup>78</sup> See 47 U.S.C. § 309(j)(4)(F).



#### 4. Package Bidding

48. For the single-round format, we propose a flexible form of package bidding, which would allow bidders to submit bids for packages of multiple licenses within the same county or for multiple geographic area licenses, i.e., licenses covering multiple metropolitan counties within a specified geographic region.

49. *Packages of Multiple Blocks within a County.* For the single-round format, we propose to allow a bidder to submit package bids for two or three licenses in a single county, in order to give the bidder more control in this single-round auction over the number and combination of licenses that it may win.<sup>79</sup> This would enable a bidder to ensure that if it won any licenses in a county, it would win sufficient licenses to facilitate high-bandwidth services and applications. A package bid would consist of a group of licenses and a single price that would apply to the entire group. The bidding system would determine the winning combination of licenses taking into account that all or none of the licenses in a package bid are to be assigned to the bidder.

50. For example, if a bidder is interested in winning any two license blocks in a county, but not a single license or all three licenses, it could submit three package bids for each of the two-license block combinations in the county. The bidder would be ensured of winning two licenses if it wins any of them.

51. *Packages of Multiple Metropolitan Counties.* In addition to procedures providing for package bids for two or three licenses within a county, we propose procedures to permit certain package bids that include licenses in multiple metropolitan counties, as long as the counties in a bid are within a given geographic region or area. We propose to define “metropolitan” for this purpose as those counties that are not subject to the small-market bidding credit cap. Counties located within any PEA with a population of 500,000 or less are subject to the small-market bidding credit cap.<sup>80</sup> Thus, metropolitan counties are those located within any PEA with a population greater than 500,000.

52. For the single-round format, we propose to limit an individual package bid further to include licenses only in metropolitan counties that lie within the same Major Economic Area (MEA).<sup>81</sup> This limitation would enable packaging across the interdependent counties in a metropolitan market, would prevent the submission of overly broad packages, and recognizes the need to maintain bidding and computational manageability. There are 51 MEAs nationwide<sup>82</sup>; MEAs are intermediate in size between Economic Areas (EAs) and Regional Economic Area Groupings (REAGs). Therefore, a single package bid could include licenses in two or more metropolitan counties in a given MEA; the non-metropolitan counties in the MEA could be bid for only as single counties (but potentially as packages of two or three licenses in a single county). Finally, for computational reasons, we propose that the total number of package and/or individual bids that a bidder may submit involving metropolitan counties in an MEA is

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<sup>79</sup> By contrast, in a multiple-round auction, a bidder has greater ability to shape the combination of licenses that it is assigned. We propose these limited package bidding procedures for the single-round format to address a bidder’s need to win at least two or three blocks in a county if it wins any blocks. *But see* T-Mobile Sept. 16 *Ex Parte* at 6 (arguing against package bidding in a single-round auction format).

<sup>80</sup> *See* Section III.B (Bidding Credit Caps), above.

<sup>81</sup> *But see* T-Mobile Sept. 16 *Ex Parte* at 6 (arguing for PEAs as the basis for package bidding).

<sup>82</sup> *See* 62 Fed. Reg. 9636 (Mar. 3, 1997). In addition, the Commission will license Guam and the Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands, and American Samoa, which have been assigned Commission-created MEA numbers 49–51, respectively. *See* FCC Areas | Federal Communications Commission, <https://www.fcc.gov/oet/maps/areas> (providing a list of MEAs and corresponding list of counties and county-equivalents included in each MEA).

limited to 250.<sup>83</sup> We do not propose a limit on individual county-level bids, package or otherwise, that do not involve metropolitan counties.

53. Under this procedure, a package bid would consist of a set of licenses in a set of counties and a single price applicable to the entire set of licenses in those counties. Within the proposed limits we set forth here, a bidder could include any combination of counties in a package—i.e., packages would not be pre-defined.

54. In proposing these procedures for package bidding for the single-round format, we aim to balance the needs of smaller entities with very localized interests with the requirements of entities that wish to create larger networks. Permitting packages of the licenses within a county provides a simple mechanism for a bidder to guard against winning an undesirable combination or number of licenses in a single county, which is likely to be useful to all bidders. Allowing multiple-county packages of licenses only for metropolitan areas addresses the needs of entities with larger networks to ensure that they do not win an undesired patchwork of more heavily populated areas. In such areas, counties of smaller and greater competitiveness may make winning such patchworks potentially more likely. At the same time, limiting the scope of multiple-county packages to metropolitan counties within a single MEA reduces the potential for a bidder to leverage a highly-valued aggregation in one area in order to win licenses in other areas where bidders for individual counties may be the more efficient users of those licenses.<sup>84</sup> Moreover, limits on package bids help reduce complexity for the bidder and enhance computational feasibility.

55. We seek comment on these procedures to allow bidding for packages of multiple licenses within a single county and for packages of bids for multiple metropolitan counties within an MEA. We ask commenters to consider how changes they suggest to these procedures might impact the different needs of the wide variety of potential bidders that may be interested in Auction 108. In particular, we seek comment on the use of MEAs as the relevant “region” for limiting the metropolitan counties that can be included in a single package bid. Would a smaller aggregation, such as EAs, be more appropriate? Alternatively, would larger areas, such as REAGs be preferable? We also ask commenters to address the proposed definition of “metropolitan.” Would an alternative definition of more heavily populated counties be simple to implement and consistent with other definitions used in this and other recent Commission spectrum auctions?

## 5. Either/Or Indicator

56. Because a single-round auction does not give a bidder an opportunity to move its bids from one area to another as prices change, or from one block to another within an area, as does a multiple-round auction, we propose to allow a bidder to indicate that two or more of its bids are to be treated as mutually exclusive by the bidding system when assigning winning bids.<sup>85</sup> In other words, a bidder can indicate that it wants to win only one of the bids in a group of bids it specifies. For example, if a bidder is interested in winning one of the three licenses available in a county, it could submit separate bids for each of the three licenses and indicate that it wishes to win only one of them.<sup>86</sup>

57. We propose that a bidder may indicate that it wants the bidding system to consider the bids in a specified group as mutually exclusive as long as *either* all the bids in the group involve the same non-metropolitan county *or* all the bids in the group involve only metropolitan counties in the same MEA.

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<sup>83</sup> In the event that the number of individual licenses available in the metropolitan counties in a single MEA exceeds 250, an exception to the limit would permit a bidder to submit a bid for each individual license.

<sup>84</sup> See *CCA Ex Parte* at 2 (recommending that, “if the Commission implements package bidding, it do so in a manner that will ensure robust participation and competition in the auction”).

<sup>85</sup> See *WISPA Nov. 23 Ex Parte* at 6.

<sup>86</sup> A bidder’s upfront payment amount and its activity and eligibility calculations would be based on the largest set of bids that the bidder can win taking into account that some bids may be mutually exclusive.

We further seek comment on allowing each bid to be included in at most one mutually exclusive group of bids.<sup>87</sup> A group of mutually exclusive bids can include individual and/or package bids.

58. We ask commenters to consider whether these procedures to allow a bidder to use an either/or indicator to instruct the bidding system to assign only one of a specified group of bids would be helpful in managing the bidder's potential winnings if this single-round auction format is adopted.

#### **6. Bid Processing and Winning Bids**

59. To determine winning bids in the single-round format, we propose that after the single bidding round, the bidding system would use optimization software to determine the value-maximizing combination of (package and individual) bids, taking into account each bidder's mutually exclusive either/or bids.<sup>88</sup> A bid of a bidder with a bidding credit would be considered in the optimization at its undiscounted bid price.<sup>89</sup>

60. We also seek comment on assigning each individual or package bid a pseudo-random number upon submission, such that, if there are ties among the value-maximizing combinations of bids, the bidding system would determine the winning bids by finding the set that maximizes the sum of pseudo-random numbers.

61. Further, because there is a very small but positive probability that the optimization software would be unable to provide an exact solution to the problem of determining the value-maximizing combination of bids within a reasonable amount of time, we seek comment on use of an "escape clause." Under the escape clause, if the optimization software does not yield an exact solution within 48 hours, then the winning set of bids would be determined by the best solution identified to that point. Winning bidders would pay the amounts of their winning bids, consistent with the pay-as-bid pricing rule.

62. We seek comment on these bid processing procedures for this novel single-round auction with package bidding, including the tie-breaking mechanism, the escape clause generally, and the 48-hour computational period.

#### **B. Simultaneous Multiple-Round Auction Design**

63. We also seek comment on using the Commission's SMR auction format for this auction.<sup>90</sup> This type of auction offers every license for bid at the same time and consists of successive bidding rounds in which bidders may place bids on individual licenses.<sup>91</sup> Typically, bidding remains open on all licenses until bidding stops on every license. This format would not provide for package bidding because of the significant complexity that this would present, for both bidders and the bidding system, given that the 2.5 GHz band plan has a potential inventory of approximately 8,300 licenses.<sup>92</sup>

64. The Commission has predominantly used an SMR format for spectrum auctions, and therefore this format is familiar to potential bidders that have participated in past Commission spectrum

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<sup>87</sup> We propose these limits on either/or bids to ensure that the combinatorial optimization winner determination problem is feasible, given the extremely large number of potential combinations of bids that must be considered.

<sup>88</sup> See the Auction 108 Technical Guide for more details on the winner determination optimization procedures.

<sup>89</sup> In contrast, for payment purposes, the bidding credit discount for a bidder with a bidding credit will be subtracted from the bidder's total winning bids, applying any bidding credit caps, to determine its net winning bids.

<sup>90</sup> See, e.g., *CCA Ex Parte* at 2. But see, e.g., *SoniqWave Ex Parte* at 3. See generally *Competitive Bidding Second Report and Order*, 9 FCC Rcd 2348, for a general discussion of competitive bidding design.

<sup>91</sup> The SMR procedures on which we seek comment below are consistent with those adopted in prior Commission SMR auctions. See, e.g., *Auctions 101 and 102 Procedures Public Notice*, 33 FCC Rcd at 7632-58, paras. 169-282.

<sup>92</sup> See *CCA Ex Parte* at 2 (raising concerns about package bidding generally).

auctions.<sup>93</sup> An SMR format allows price discovery, so that a bidder may observe how prices differ across areas or frequency blocks, and to modify its bidding strategies accordingly. In addition, multiple rounds of bidding may give a bidder more confidence in its bid amounts in cases where there is a significant “common” value element to the licenses being auctioned beyond the particular value to the bidder in its business plan.

65. We seek comment on whether using an auction design that is familiar to bidders is important in helping potential participants feel more comfortable with participating in Auction 108. We also ask whether allowing price discovery through a multiple round auction format is particularly important in this auction, and whether such benefits would warrant the additional time required to conduct an SMR auction relative to a single-round. Would such benefits outweigh the potential advantages of a single-round format to smaller entities discussed above?

### 1. Bidding Rounds

66. Under the SMR format, Auction 108 would consist of sequential bidding rounds, each of which would be followed by the release of round results. The initial bidding schedule would be announced in a public notice to be released at least one week before the start of bidding. Details on viewing round results, including the location and format of downloadable results files for each round would be included in the same public notice.

67. Under this auction format, the Commission would conduct Auction 108 over the Internet using the FCC auction bidding system. Bidders would have the option of placing bids online or by telephone through a dedicated auction bidder line.

68. OEA would retain the discretion to change the bidding schedule in order to foster an auction pace that reasonably balances speed with the bidders’ need to study round results and adjust their bidding strategies. This would allow OEA to change the amount of time for bidding rounds, the amount of time between rounds, or the number of rounds per day, depending upon bidding activity and other factors. The large number of licenses available in the 2.5 GHz band implies that the SMR format could involve a large number of bidding rounds, potentially lasting several months.<sup>94</sup> We seek comment on this approach. Commenters on this issue should address the role of the bidding schedule in managing the pace of the auction, specifically discussing the tradeoffs in managing auction pace by bidding schedule changes, by changing the activity requirements or bid amount parameters, or by using other means.

### 2. Stopping Rule

69. The Commission has discretion to establish stopping rules before or during multiple-round auctions in order to complete the auction within a reasonable time.<sup>95</sup> Under this SMR auction format, we would employ a simultaneous stopping rule approach, which means all licenses remain available for bidding until bidding stops on every license. Specifically, bidding would close on all licenses after the first round in which no bidder submits any new bids, applies a proactive waiver, or withdraws any provisionally winning bids (if bid withdrawals are permitted).<sup>96</sup> Under this simultaneous

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<sup>93</sup> Prior to the Broadcast Incentive Auction (Auction 1000), nearly every Commission auction of spectrum licenses has been conducted using an SMR format. Most recently, Auction 101, an auction of 3,072 licenses in the 28 GHz band that concluded on January 24, 2019, utilized an SMR format. *See generally Auctions 101 and 102 Procedures Public Notice*, 33 FCC Rcd 7575.

<sup>94</sup> For comparison, Auction 97 offered 1,614 licenses in the SMR format and concluded after 341 rounds and 45 bidding days.

<sup>95</sup> 47 CFR § 1.2104(e).

<sup>96</sup> Provisionally winning bids are bids that would become final winning bids if the auction were to close in that given round. They are discussed in Section IV.B.7 (Provisionally Winning Bids), below. Proactive waivers are described in Section IV.B.4 (Activity Rule Waivers and Reducing Eligibility), and bid withdrawals are described in Section IV.B.8 (Bid Removal and Bid Withdrawal), below.

stopping rule, bidding would remain open on all licenses until bidding stops on every license. Consequently, under this approach, it is not possible to determine in advance precisely how long the bidding in Auction 108 would last.

70. Further, OEA would retain the discretion to exercise any of the following stopping options during Auction 108:

Option 1. The auction would close for all licenses after the first round in which no bidder applies a waiver, no bidder withdraws a provisionally winning bid (if withdrawals are permitted in Auction 108), or no bidder places any new bid on a license for which it is not the provisionally winning bidder. Thus, absent any other bidding activity, a bidder placing a new bid on a license for which it is the provisionally winning bidder would not keep the auction open under this modified stopping rule.

Option 2. The auction would close for all licenses after the first round in which no bidder applies a waiver, no bidder withdraws a provisionally winning bid (if withdrawals are permitted in Auction 108), or no bidder places any new bid on a license *that already has a provisionally winning bid*. Thus, absent any other bidding activity, a bidder placing a new bid on an FCC-held license (a license that does not have a provisionally winning bid) would not keep the auction open under this modified stopping rule.

Option 3. The auction would close using a modified version of the simultaneous stopping rule that combines Option 1 and Option 2 above.

Option 4. The auction would close after a specified number of additional rounds (special stopping rule) to be announced by OEA. If OEA invokes this special stopping rule, it would accept bids in the specified final round(s), after which the auction would close.

Option 5. The auction would remain open even if no bidder places any new bid, applies a waiver, or withdraws any provisionally winning bids (if withdrawals are permitted in Auction 108). In this event, the effect would be the same as if a bidder had applied a waiver. The activity rule would apply as usual, and a bidder with insufficient activity would lose bidding eligibility or use a waiver.

71. Under the SMR format, OEA would exercise these options only in certain circumstances, for example, where the auction is proceeding unusually slowly or quickly, there is minimal overall bidding activity, or it appears likely that the auction will not close within a reasonable period of time or will close prematurely. Before exercising these options, OEA would likely attempt to change the pace of Auction 108. For example, OEA could adjust the pace of bidding by changing the number of bidding rounds per day and/or the minimum acceptable bids. Under this approach, OEA would retain continuing discretion to exercise any of these options with or without prior announcement by OEA during the auction. We seek comment on these procedures.

### 3. Activity Rule

72. In order to avoid unduly prolonging the length of the auction, an activity rule requires bidders to bid actively throughout the auction, rather than wait until late in the auction before participating. The bidding system calculates a bidder's activity in a round as the sum of the bidding units associated with any licenses upon which it places bids during the current round and the bidding units associated with any licenses for which it holds provisionally winning bids. Bidders are required to be active on a specific percentage of their current bidding eligibility during each round of the auction. Failure to maintain the requisite activity level will result in the use of an activity rule waiver, if any

remain, or a reduction in the bidder's eligibility, possibly curtailing or eliminating the bidder's ability to place additional bids in the auction.<sup>97</sup>

73. Under an SMR auction format, we would consider dividing the auction into at least two stages, each characterized by a different activity requirement.<sup>98</sup> For example, in a first stage, bidders could be required to be active on 80% of their bidding units, while in a later stage, they could be required to be active on 95% of their bidding units. The Commission would also consider conducting the auction in a single stage, potentially with a 100% activity requirement.<sup>99</sup> If we do not conduct a single stage, the auction would start in Stage One. OEA would then have the discretion to advance the auction to another stage by announcement during the auction.<sup>100</sup> In exercising this discretion, we anticipate that OEA would consider a variety of measures of auction activity, including but not limited to, the length of the auction, the percentage of bidding units associated with licenses on which there are new bids,<sup>101</sup> the number of new bids, and the increase in revenue. We seek comment on these procedures for activity requirements.

#### 4. Activity Rule Waivers and Reducing Eligibility

74. For the SMR auction format, when a bidder's activity in the current round is below the required minimum level, it could preserve its current level of eligibility through an activity rule waiver, if available. An activity rule waiver applies to an entire round of bidding, not to a particular license. Activity rule waivers can be either proactive or automatic. Activity rule waivers are primarily a mechanism for a bidder to avoid the loss of bidding eligibility in the event that exigent circumstances prevent it from bidding in a particular round.

75. Under an SMR auction format, each bidder in Auction 108 would be provided with three activity rule waivers that could be used as set forth at the bidder's discretion during the course of the auction. The FCC auction bidding system would assume that a bidder that does not meet the activity requirement would prefer to use an activity rule waiver (if available) rather than lose bidding eligibility. Therefore, the system would automatically apply a waiver at the end of any bidding round in which a bidder's activity level is below the minimum required unless: (1) the bidder has no activity rule waivers remaining; or (2) the bidder overrides the automatic application of a waiver by reducing eligibility, thereby meeting the activity requirement. If a bidder has no waivers remaining and does not satisfy the required activity level, the bidder's current eligibility would be permanently reduced, possibly curtailing or eliminating the ability to place additional bids in the auction.

76. A bidder with insufficient activity might wish to reduce its bidding eligibility rather than use an activity rule waiver. If so, then the bidder affirmatively would have to override the automatic waiver mechanism during the bidding round by using the *reduce eligibility* function in the FCC auction bidding system. In this case, the bidder's eligibility would be permanently reduced to bring it into compliance with the activity rule described above. Reducing eligibility is an irreversible action; once eligibility has been reduced, a bidder could not regain its lost bidding eligibility.

77. Under the simultaneous stopping rule for this auction format, a bidder would be permitted to apply an activity rule waiver proactively as a means to keep the auction open without placing a bid. If a bidder proactively were to apply an activity rule waiver (using the *proactive waiver* function in the FCC auction bidding system) during a bidding round in which no bids are placed or withdrawn (if bid

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<sup>97</sup> See Section IV.B.4 (Activity Rule Waivers and Reducing Eligibility), below.

<sup>98</sup> See 47 CFR § 1.2104(f).

<sup>99</sup> See *id.* § 1.2104(f).

<sup>100</sup> See T-Mobile Sept. 16 *Ex Parte* at 5-6.

<sup>101</sup> For example, when monitoring activity for determining when to change stages, OEA could consider the percentage of bidding units of the licenses receiving new provisionally winning bids, excluding any FCC-held licenses. In past auctions, OEA has generally—but not always—changed stages when this measure was approximately 20% or below for three consecutive rounds of bidding.

withdrawals are permitted in Auction 108), the auction would remain open and the bidder's eligibility would be preserved. An automatic waiver applied by the FCC auction bidding system in a round in which there is no new bid, no bid withdrawal (if bid withdrawals are permitted in Auction 108), or no proactive waiver would not keep the auction open. We seek comment on this approach.

### 5. Reserve Price or Minimum Opening Bids

78. If we were to adopt an SMR auction format, then we would also establish minimum opening bid amounts.<sup>102</sup> The bidding system would not accept bids lower than these amounts.

79. We would calculate minimum opening bid amounts on a license-by-license basis using the same calculations outlined for the single bidding round auction design based on \$0.006 per MHz-pop.<sup>103</sup> We seek comment on these minimum opening bid amounts, which are specified in the Attachment A file. If commenters believe that these minimum opening bid amounts would result in unsold licenses or are not reasonable amounts under an SMR format, they should explain why this is so. Commenters should support their claims with valuation analyses and suggested amounts or formulas for minimum opening bids for this auction design.

80. In establishing minimum opening bid amounts under the SMR format, we particularly seek comment on factors that reasonably could have an impact on bidders' valuation of the spectrum, including the type of service offered, market size, population covered by the proposed facility, and any other relevant factors.

81. Commenters may also wish to address the general role of minimum opening bids in managing the pace of the auction. For example, commenters could compare using minimum opening bids—e.g., by setting higher minimum opening bids to reduce the number of rounds it takes licenses to reach their final prices—to other means of controlling auction pace, such as changes to bidding schedules or activity requirements.

82. We would not establish any aggregate reserve price for licenses offered through an SMR auction format. We are not aware at this time of circumstances that require establishment of an aggregate reserve price in the public interest for this auction of overlay licenses in the 2.5 GHz band and seek comment only on the per license minimum opening bids that we discuss here. We seek comment on this issue. If commenters believe we should establish an aggregate reserve price, they should explain why and support their claims with valuation analyses and suggested amounts or formulas for reserve prices.

### 6. Bid Amounts

83. Under an SMR auction format, an eligible bidder, in each round, would be able to place a bid on a given license in any of up to nine different amounts—the minimum acceptable bid amounts and additional bid amounts discussed below.<sup>104</sup> Under this approach, the FCC auction bidding system would list the acceptable bid amounts for each license.

84. *Minimum Acceptable Bid Amounts.* The first of the acceptable bid amounts is called the minimum acceptable bid amount. The minimum acceptable bid amount for a license would be equal to its minimum opening bid amount until there is a provisionally winning bid on the license. Once there is a provisionally winning bid for a license, the minimum acceptable bid amount for that license would be equal to the amount of the provisionally winning bid plus a percentage of that bid amount calculated using the activity-based formula described below. In general, the percentage would be higher for a license receiving many bids than for a license receiving few bids. In the case of a license for which the

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<sup>102</sup> See 47 U.S.C. § 309(j)(4)(F); see also 47 CFR § 1.2104(d).

<sup>103</sup> See Section IV.A.3 (Minimum Bids and Reserve Prices), above.

<sup>104</sup> Bidders would have to have sufficient eligibility to place a bid on the particular license. See Section III.E (Upfront Payments and Bidding Eligibility), above.

provisionally winning bid has been withdrawn (if withdrawals are allowed in Auction 108), the minimum acceptable bid amount would equal the second highest bid received for the license.<sup>105</sup>

85. The percentage of the provisionally winning bid used to establish the minimum acceptable bid amount (the additional percentage) would be calculated based on an activity index at the end of each round. The activity index is a weighted average of (a) the number of distinct bidders placing a bid on the license in that round, and (b) the activity index from the prior round.<sup>106</sup> The additional percentage is determined as one plus the activity index times a minimum percentage amount, with the result not to exceed a given maximum. The additional percentage is then multiplied by the provisionally winning bid amount to obtain the minimum acceptable bid for the next round.<sup>107</sup> Under the SMR auction format, the weighting factor would be set initially at 0.5, the minimum percentage at 0.1 (10%), and the maximum percentage at 0.2 (20%). Hence, at these initial settings, the minimum acceptable bid for a license would be between 10% and 20% higher than the provisionally winning bid, depending upon the bidding activity for the license. Equations and examples are shown in Attachment B. We seek comment on whether to use this activity-based formula or a different approach for the SMR auction format. In particular, we ask whether we should set the maximum percentage at a higher amount, for example 30% or more, in light of concerns over the large number of rounds that may be required for this auction.

86. *Additional Bid Amounts.* The FCC auction bidding system would calculate any additional bid amounts using the minimum acceptable bid amount and an *additional bid increment percentage*.<sup>108</sup> The minimum acceptable bid amount would be multiplied by the additional bid increment percentage, and that result (rounded<sup>109</sup>) would be the *additional increment amount*. The first additional acceptable bid amount would equal the minimum acceptable bid amount plus the additional increment amount. The second additional acceptable bid amount would equal the minimum acceptable bid amount plus two times the additional increment amount; the third additional acceptable bid amount would be the minimum acceptable bid amount plus three times the additional increment amount; etc. We would set the additional bid increment percentage at 5% initially. Hence, the calculation of the additional increment amount would be (minimum acceptable bid amount) \* (0.05), rounded. We seek comment on this approach.

87. *Bid Amount Changes.* Under this auction format, OEA would retain the discretion to change the minimum acceptable bid amounts, the additional bid amounts, the number of acceptable bid amounts, and the parameters of the formulas used to calculate minimum acceptable bid amounts and additional bid amounts if OEA determines that circumstances so dictate. Further, OEA would retain the discretion to do so on a license-by-license basis. Commenters should address the size of changes in the bid amounts, in particular, the additional percentage. Should we increase the size of the minimum acceptable bid amounts in order to manage expeditiously the pace of an SMR auction with approximately 8,300 licenses? At what size do changes in bid amounts make it too difficult for bidders to align their bid amounts with their budgets and willingness to pay? OEA would also retain the discretion to limit (a) the amount by which a minimum acceptable bid for a license may increase compared with the corresponding provisionally winning bid, and (b) the amount by which an additional bid amount may increase compared with the immediately preceding acceptable bid amount. For example, OEA could set a limit on increases

<sup>105</sup> See Section IV.B.8 (Bid Removal and Bid Withdrawal), below.

<sup>106</sup> Specifically, the activity index is equal to a weighting factor times the number of bidders placing a bid covering the license in the most recent bidding round plus one minus the weighting factor times the activity index from the prior round. For Round 1 calculations, because there is no prior round (i.e., no round 0), the activity index from the prior round would be set at 0. See Attachment B.

<sup>107</sup> The result will be rounded using the Commission's standard rounding procedures for auctions: results above \$10,000 are rounded to the nearest \$1,000; results below \$10,000 but above \$1,000 are rounded to the nearest \$100; and results below \$1,000 are rounded to the nearest \$10.

<sup>108</sup> See T-Mobile Sept. 16 *Ex Parte* at 5.

<sup>109</sup> See note 107 (concerning rounding), above.



in minimum acceptable bid amounts over provisionally winning bids. Thus, if calculating a minimum acceptable bid using the activity-based formula results in a minimum acceptable bid amount that exceeds the provisionally winning bid on a license by more than the limit, the minimum acceptable bid amount would instead be capped at the provisionally winning bid plus the amount of the limit. We seek comment on the circumstances under which OEA should employ such a limit, factors OEA should consider when determining the dollar amount of the limit, and the tradeoffs in setting such a limit or changing other parameters—such as the minimum and maximum percentages of the activity-based formula. If OEA were to exercise this discretion, it would alert bidders by announcement in the FCC auction bidding system. We seek comment on these procedures.

88. We seek comment on the above procedures for the SMR auction format, including whether to use the activity-based formula to establish the additional percentage or a different approach. If commenters disagree with beginning the auction with nine acceptable bid amounts per license as described above, they should suggest an alternative number of acceptable bid amounts to use at the beginning of the auction and an alternative number to use later in the auction. Commenters may wish to address the role of the minimum acceptable bids and the number of acceptable bid amounts in managing the pace of the auction and the tradeoffs in managing auction pace by changing the bidding schedule, activity requirements, or bid amounts, or by using other means.

#### **7. Provisionally Winning Bids**

89. Under an SMR auction format, the FCC auction bidding system would determine provisionally winning bids consistent with practices in past auctions. At the end of each bidding round, the bidding system would determine a provisionally winning bid for each license based on the highest bid amount received for the license. A provisionally winning bid would remain the provisionally winning bid until there is a higher bid on the same license at the close of a subsequent round. Provisionally winning bids at the end of the auction would become the winning bids.

90. If identical high bid amounts were submitted on a license in any given round (i.e., tied bids), the FCC auction bidding system would use a pseudo-random number generator to select a single provisionally winning bid from among the tied bids.<sup>110</sup> The remaining bidders, as well as the provisionally winning bidder, would be permitted to submit higher bids in subsequent rounds. However, if the auction were to end with no other bids being placed, the winning bidder would be the one that placed the provisionally winning bid. If the license received any bids in a subsequent round, the provisionally winning bid again would be determined by the highest bid amount received for the license.

91. A provisionally winning bid would be retained until there is a higher bid on the license at the close of a subsequent round, unless the provisionally winning bid is withdrawn (if bid withdrawals are permitted in Auction 108). As a reminder, under the SMR auction design, provisionally winning bids would count toward activity for purposes of the activity rule.<sup>111</sup>

#### **8. Bid Removal and Bid Withdrawal**

92. The FCC auction bidding system would allow each bidder to remove any of the bids it placed in a round before the close of that round. By removing a bid placed within a round, a bidder would effectively “unsubmit” the bid. In contrast to the bid withdrawal provisions described below, a bidder removing a bid placed in the same round would not be subject to a withdrawal payment. Once a round closes, a bidder would no longer be permitted to remove a bid.

93. We seek comment on whether bid withdrawals should be permitted should we adopt an SMR auction format for Auction 108. When permitted in an auction, bid withdrawals provide a bidder with the option of withdrawing bids placed in prior rounds that have become provisionally winning bids.

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<sup>110</sup> The auction bidding system would assign a pseudo-random number to each bid when the bid is entered. The tied bid with the highest pseudo-random number would become the provisionally winning bid.

<sup>111</sup> See Section IV.B.3 (Activity Rule), above.

A bidder would be able to withdraw its provisionally winning bids using the *withdraw* function in the FCC auction bidding system.

94. The Commission has recognized that bid withdrawals may be a helpful tool for bidders seeking to efficiently aggregate licenses or implement backup strategies in certain auctions.<sup>112</sup> We have also acknowledged that allowing bid withdrawals may encourage insincere bidding or increase opportunities for undesirable strategic bidding in certain circumstances.<sup>113</sup>

95. Applying this reasoning to Auction 108, each bidder would be allowed to withdraw provisionally winning bids in no more than two rounds during the course of the auction. To permit a bidder to withdraw bids in more than two rounds may encourage insincere bidding or the use of withdrawals for undesirable strategic bidding purposes. The two rounds in which a bidder may withdraw provisionally winning bids would be at the bidder's discretion, and there would be no limit on the number of provisionally winning bids that a bidder may withdraw in either of the rounds in which it withdraws bids. Withdrawals must be in accordance with the Commission's rules, including the bid withdrawal payment provisions specified in section 1.2104(g).<sup>114</sup>

96. A bidder that withdraws its provisionally winning bid(s), if permitted, is subject to the bid withdrawal payment provisions of the Commission's rules.<sup>115</sup> The Commission proposes the interim bid withdrawal payment be set at 15% of the withdrawn bid for the purposes of an SMR auction. A bidder that withdraws a bid during an auction is subject to a withdrawal payment equal to the difference between the amount of the withdrawn bid and the amount of the winning bid in the same or a subsequent auction.<sup>116</sup> However, if a license for which a bid had been withdrawn does not receive a subsequent higher bid or winning bid in the same auction, the FCC cannot calculate the final withdrawal payment until that license receives a higher bid or winning bid in a subsequent auction. In such cases, when that final withdrawal payment cannot yet be calculated, the FCC imposes on the bidder responsible for the withdrawn bid an interim bid withdrawal payment, which will be applied toward any final bid withdrawal payment that is ultimately assessed.<sup>117</sup>

97. The amount of the interim bid withdrawal payment is established in advance of bidding in each auction and may range from 3% to 20% of the withdrawn bid amount.<sup>118</sup> The Commission has determined that the level of the interim withdrawal payment in a particular auction will be based on the nature of the service and the inventory of the licenses being offered.<sup>119</sup> The Commission noted specifically that a higher interim withdrawal payment percentage is warranted to deter the anti-competitive use of withdrawals when, for example, bidders will not need to aggregate the licenses being offered in the auction or when there are few synergies to be captured by combining licenses.<sup>120</sup> With respect to the flexible-use 2.5 GHz band licenses being offered in Auction 108, the service rules permit a

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<sup>112</sup> *Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures et al.*, WT Docket No. 97-82, ET Docket No. 94-32, Third Report and Order and Second Further Notice of Proposed Rulemaking, 13 FCC Rcd 374, 460, para. 150 (1997).

<sup>113</sup> *Id.* at 458, para. 148; *see also, e.g., CSEA/Part 1 Report and Order*, 21 FCC Rcd at 902-03, para. 29.

<sup>114</sup> 47 CFR § 1.2104(g); *see also id.* § 1.2109.

<sup>115</sup> *See id.* §§ 1.2104(g), 1.2109.

<sup>116</sup> *Id.* § 1.2104(g)(1). The withdrawal payment amount is deducted from any upfront payments or down payments that the withdrawing bidder has deposited with the Commission. *Id.* No withdrawal payment is assessed for a withdrawn bid if either the subsequent winning bid or any of the intervening subsequent withdrawn bids equals or exceeds that withdrawn bid. *Id.*

<sup>117</sup> *Id.*

<sup>118</sup> *Id.*, amended by *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 903-04, paras. 30-32.

<sup>119</sup> *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 903-04, para. 31.

<sup>120</sup> *Id.* at 904, para. 31 n.57.

variety of advanced spectrum-based services, some of which may best be offered by combining licenses on adjacent frequencies or in adjacent areas. Balancing the potential need for bidders to use withdrawals to avoid winning incomplete combinations of licenses with the Commission's interest in deterring undesirable strategic use of withdrawals, the Commission proposes to establish an interim bid withdrawal payment of 15% of the withdrawn bid for Auction 108, should it adopt an SMR auction format.<sup>121</sup>

98. We seek comment on allowing bid withdrawals and an interim bid withdrawal payment of 15% of the withdrawn bid under a potential SMR auction design. If commenters disagree, then we ask them to support their arguments by taking into account the licenses available, the impact on auction dynamics and the pricing mechanism, and the effects on the bidding strategies of other bidders.

## V. TUTORIALS AND ADDITIONAL INFORMATION FOR APPLICANTS

99. We intend to provide additional information on the bidding system and to offer demonstrations and other educational opportunities for applicants in Auction 108 to familiarize themselves with the FCC auction application system and the auction bidding system. For example, we intend to release online tutorials that will help applicants understand the procedures to be followed in the filing of their auction short-form applications (FCC Form 175) and on the bidding procedures for Auction 108.

100. In addition, as noted above, OEA and WTB will make available an interactive mapping tool to identify and assess potential encumbrances in the band, including as a result of pending Rural Tribal Priority Window applications.<sup>122</sup> Potential applicants are again reminded, however, that this tool will not represent complete licensing information; all information should be confirmed in ULS for any specific license or area.

## VI. PROCEDURAL MATTERS

### A. Supplemental Initial Regulatory Flexibility Analysis

101. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),<sup>123</sup> we have prepared this Supplemental Initial Regulatory Flexibility Analysis (Supplemental IRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this Public Notice to supplement the Commission's Initial and Final Regulatory Flexibility Analyses completed in the *2.5 GHz NPRM* and *2.5 GHz Report and Order*, and other Commission orders pursuant to which Auction 108 will be conducted.<sup>124</sup> Written public comments are requested on this Supplemental IRFA. Comments must be identified as responses to the Supplemental IRFA and must be filed by the same deadline for comments specified on the first page of this Public Notice. We will send a copy of this Public Notice, including this Supplemental IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).<sup>125</sup> In addition, this Public Notice and Supplemental IRFA (or summaries thereof) will be published in the *Federal Register*.<sup>126</sup>

102. *Need for, and Objectives of, the Proposed Rules.* This Public Notice sets forth the proposed auction procedures for those entities that seek to bid to acquire licenses in Auction 108. This

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<sup>121</sup> See, e.g., *Auctions 101 and 102 Procedures Public Notice*, 33 FCC Rcd at 7643-44, paras. 210-12 (adopting an interim bid withdrawal payment of 15% of the withdrawn bid).

<sup>122</sup> See Section II (Licenses to be Offered in Auction 108), above.

<sup>123</sup> 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, 110 Stat. 857 (1996).

<sup>124</sup> See, e.g., *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Notice of Proposed Rulemaking, Appx. B, 33 FCC Rcd 4687, 4710-17, paras. 1-32 (2018) (*2.5 GHz NPRM*); *2.5 GHz Report and Order*, Appx. B, 34 FCC Rcd at 5503-10, paras. 1-28.

<sup>125</sup> See 5 U.S.C. § 603(a).

<sup>126</sup> See *id.*

Public Notice seeks comment on proposed procedural rules to govern Auction 108, which will auction geographic overlay licenses of unlicensed spectrum in the 2.5 GHz band (2496–2690 MHz). The specific overlay licenses available in Auction 108 will be determined by the results of the Rural Tribal Priority Window, which gave federally recognized Tribes the opportunity to submit applications to acquire new 2.5 GHz band overlay licenses to provide broadband service on rural Tribal lands before the remaining unassigned spectrum is made generally available to all entities through competitive bidding. The Rural Tribal Priority Window closed on September 2, 2020. Based on review of applications received in the Rural Tribal Priority Window, OEA, in conjunction with WTB, will release a public notice announcing the final inventory of 2.5 GHz band overlay licenses to be offered in Auction 108. This public notice will be released in advance of the deadline for the submission of short-form applications to bid in Auction 108 so that potential applicants can make informed decisions about whether to apply. OEA and WTB will also make available resources to assist applicants in conducting due diligence research regarding potential encumbrances in the band prior to the release of the public notice announcing the final auction inventory.

103. This Public Notice and process is intended to provide notice of and adequate time for potential applicants to comment on proposed auction procedures.<sup>127</sup> To promote the efficient and fair administration of the competitive bidding process for all Auction 108 participants, we seek comment on the following proposed procedures that would apply to Auction 108 under either the single-round auction format or the SMR auction format:

- requirement of an additional certification by each applicant in its short-form application, under penalty of perjury, that it has read the public notice adopting procedures for Auction 108 and that it has familiarized itself with those procedures and the requirements for obtaining a license and operating facilities in the 2.5 GHz band;
- use of limited information procedures under which the Commission will not make public until after the bidding has closed: (1) the licenses that an applicant selects for bidding in its auction application (FCC Form 175); (2) the amount of any upfront payment made by or on behalf of an applicant for Auction 108; (3) an applicant's bidding eligibility; and (4) any other bidding-related information that might reveal the identity of the bidder placing a bid;
- establishment of bidding credit caps for eligible small businesses and rural service providers in Auction 108;
- provision of discretionary authority to OEA, in conjunction with WTB, to delay, suspend, or cancel bidding in Auction 108 for any reason that affects the ability of the competitive bidding process to be conducted fairly and efficiently;
- a specific upfront payment amount for each license available in Auction 108;
- establishment of an additional default payment of 15% under section 1.2104(g)(2) of the rules in the event that a winning bidder defaults or is disqualified after the auction.

104. This Public Notice also seeks comment on the following procedures under the single-round auction format:

- use of a single-round auction format for Auction 108 with limited package bidding;
- use of a pay-as-bid pricing rule whereby each winning bidder will pay the sum of its winning bid amounts for the licenses it is awarded, less any applicable bidding credit discount;
- establishment of a bidder's bidding eligibility in bidding units based on that bidder's upfront payment through assignment of a specific number of bidding units for each license;

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<sup>127</sup> See 47 U.S.C. § 309(j)(3)(E)(i) (requiring the Commission to seek comment on auction procedures).

- establishment of a minimum bid amount for each license available in Auction 108 based on each license's potential MHz-pops;
- use of an either/or indicator to allow a bidder to indicate that two or more of its bids are to be treated as mutually exclusive by the bidding system when assigning winning bids; and
- a methodology for processing bids.

105. In addition, this Public Notice seeks comment on the following procedures under the SMR auction format:

- use of a simultaneous multiple-round auction format for Auction 108, consisting of sequential bidding rounds with a simultaneous stopping rule (with discretion by OEA to exercise alternative stopping rules under certain circumstances);
- use of an activity rule that would require bidders to bid actively during the auction rather than waiting until late in the auction before participating;
- an auction with one or more stages, in which, for example, a bidder is required to be active on 80% of its bidding eligibility in each round of the first stage, and on 95% of its bidding eligibility in each round of the second stage;
- provision of three activity rule waivers for each bidder to allow it to preserve eligibility during the course of the auction;
- use of minimum acceptable bid amounts and additional bid increments, along with a methodology for calculating such amounts, with OEA retaining discretion to change its methodology if circumstances dictate;
- a procedure for breaking ties if identical high bid amounts are submitted on a license in a given round;
- bid removal procedures;
- whether to permit bid withdrawals; and
- establishment of an interim bid withdrawal percentage of 15% of the withdrawn bid if the Commission were to allow bid withdrawals in Auction 108.

106. The proposed procedures for the conduct of Auction 108 constitute the more specific implementation of the competitive bidding rules contemplated by Parts 1 and 27 of the Commission's rules, the *2.5 GHz Report and Order*, and relevant competitive bidding orders, and are fully consistent therewith.<sup>128</sup>

107. *Legal Basis.* The Commission's statutory obligations to small businesses under the Communications Act of 1934, as amended, are found in sections 309(j)(3)(B) and 309(j)(4)(D). The statutory basis for the Commission's competitive bidding rules is found in various provisions of the Communications Act of 1934, as amended, including 47 U.S.C. §§ 154(i), 301, 302, 303(e), 303(f), 303(r), 304, 307, and 309(j). The Commission has established a framework of competitive bidding rules, updated most recently in 2015, pursuant to which it has conducted auctions since the inception of the auctions program in 1994 and would conduct Auction 108.<sup>129</sup>

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<sup>128</sup> See generally *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2360-75, paras. 68-159.

<sup>129</sup> See generally 47 CFR Part 1, Subpart Q; see also *id.* §§ 73.5000, 73.5002-.5003, 73.5005-.5009. In promulgating those rules, the Commission conducted numerous RFA analyses to consider the possible impact of those rules on small businesses that might seek to participate in Commission auctions. See, e.g., *Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, PP Docket No. 93-253, Notice of Proposed Rule Making, Appx., 8 FCC Rcd 7635, 7666 (1993); *Amendment of Part 1 of the Commission's Rules—Competitive*

(continued....)

108. *Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply.* The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules and policies, if adopted.<sup>130</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”<sup>131</sup> In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.<sup>132</sup> A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.<sup>133</sup>

109. As noted above, Regulatory Flexibility Analyses were incorporated into the *2.5 GHz NPRM* and the *2.5 GHz Report and Order*. In those analyses, we described in detail the small entities that might be significantly affected. In this Public Notice, we hereby incorporate by reference the descriptions and estimates of the number of small entities from the previous Regulatory Flexibility Analyses in the *2.5 GHz NPRM* and the *2.5 GHz Report and Order*.<sup>134</sup>

110. *Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities.* The Commission designed the auction application process itself to minimize reporting and compliance requirements for applicants, including small entity applicants. In the first part of the Commission’s two-phased auction application process, parties desiring to participate in an auction file streamlined, short-form applications in which they certify under penalty of perjury as to their qualifications.<sup>135</sup> Eligibility to participate in bidding is based on an applicant’s short-form application and certifications, as well as its upfront payment. In the second phase of the process, winning bidders file a more comprehensive long-form application. Thus, an applicant which fails to become a winning bidder does not need to file a long-form application and provide the additional showings and more detailed demonstrations required of a winning bidder.

111. We do not expect the processes and procedures proposed in this Public Notice will require small entities to hire attorneys, engineers, consultants, or other professionals to participate in Auction 108 and comply with the procedures we ultimately adopt because of the information, resources, and guidance we make available to potential and actual participants. For example, we intend to release an online tutorial that will help applicants understand the procedures for filing of the auction short-form application (FCC Form 175). We also intend to make information on the bidding system available and offer demonstrations and other educational opportunities for applicants in Auction 108 to familiarize themselves with the FCC auction application system and the auction bidding system. By providing these resources as well as the resources discussed below, we expect small entities that use the available

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*Bidding Proceeding*, WT Docket No. 97-82, Order, Memorandum Opinion and Order and Notice of Proposed Rule Making, Appx. C, 12 FCC Rcd 5686, 5749-53 (1997); *Updating Part 1 Report and Order*, Appx. B, 30 FCC Rcd at 7613-28, paras. 1-48. In addition, a Final Regulatory Flexibility Analysis (FRFA) was included in the rulemaking order that adopted rule provisions relevant to this Public Notice. See *2.5 GHz Report and Order*, Appx. B, 34 FCC Rcd at 5503-10, paras. 1-28.

<sup>130</sup> 5 U.S.C. § 603(b)(3).

<sup>131</sup> *Id.* § 601(6).

<sup>132</sup> *Id.* § 601(3) (incorporating by reference the definition of “small business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

<sup>133</sup> 15 U.S.C. § 632.

<sup>134</sup> See *2.5 GHz NPRM*, Appx. B, 33 FCC Rcd at 4710-14, paras. 4-13; *2.5 GHz Report and Order*, Appx. B, 34 FCC Rcd at 5504-07, paras. 6-15.

<sup>135</sup> *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2376-77, paras. 163-66.

resources to experience lower participation and compliance costs. Nevertheless, while we cannot quantify the cost of compliance with the proposed procedures, we do not believe that the costs of compliance will unduly burden small entities that choose to participate in the auction because the proposals for Auction 108 are similar in many respects to the procedures in recent auctions conducted by the Commission.<sup>136</sup>

112. *Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered.* The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”<sup>137</sup>

113. We have taken steps to minimize any economic impact of our auction procedures on small entities through, among other things, the Commission’s potential use of a single bidding round and a pay-as-bid pricing rule. We expect that many small entities will bid in Auction 108 and the use of a single-round auction would significantly reduce the time and resource commitment required for participation, if adopted. Due to the large inventory of licenses that will be available in Auction 108, the multiple-round auction format that the Commission has typically used in auctioning spectrum licenses could require several months to complete and require participating bidders to expend resources to consistently monitor the auction during that time. In contrast, we anticipate that with a single bidding round, bid processing for Auction 108 could be completed within a week. In addition, the use of a pay-as-bid pricing rule, which requires each winning bidder to pay the sum of its winning bid amounts for the licenses it is awarded, less any applicable bidding credit discount, should also benefit small entities by giving them more certainty about the costs of their winning bids.

114. In the event the Commission adopts the SMR auction format, we have also taken steps to minimize any economic impact of our auction procedures on small entities through, among other things, the many resources we provide potential auction participants. OEA and WTB propose to make resources available to assist applicants in conducting due diligence research regarding potential encumbrances in the band prior to the release of the public notice announcing the final auction inventory. Small entities and other auction participants may seek clarification of or guidance on complying with competitive bidding rules and procedures, reporting requirements, and the FCC’s auction bidding system. An FCC Auctions Hotline provides access to Commission staff for information about the auction process and procedures. The FCC Auctions Technical Support Hotline is another resource which provides technical assistance to applicants, including small entities, on issues such as access to or navigation within the electronic FCC Form 175 and use of the FCC’s auction bidding system. Small entities may also use the web-based, interactive online tutorial produced by Commission staff to familiarize themselves with auction procedures, filing requirements, bidding procedures, and other matters related to an auction.

115. We also make various databases and other sources of information, including the Auctions program websites and copies of Commission decisions, available to the public without charge, providing a low-cost mechanism for small entities to conduct research prior to and throughout the auction. Prior to and at the close of Auction 108, we will post public notices on the Auctions website, which articulate the procedures and deadlines for the auction. We make this information easily accessible and without charge to benefit all Auction 108 applicants, including small entities, thereby lowering their administrative costs to comply with the Commission’s competitive bidding rules.

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<sup>136</sup> See generally, e.g., *Auction 105 Procedures Public Notice*, 35 FCC Rcd at 2146-205, paras. 14-231.

<sup>137</sup> 5 U.S.C. § 603(c)(1)-(4).

116. Prior to the start of bidding, the Commission also proposes to make available to bidders various educational materials. Eligible bidders will be given an opportunity to become familiar with auction procedures and the bidding system by participating in a mock auction. Further, we intend to conduct Auction 108 electronically over the Internet using a web-based auction system that eliminates the need for bidders to be physically present in a specific location. Qualified bidders also have the option to place bids by telephone. These mechanisms are made available to facilitate participation in Auction 108 by all eligible bidders and may result in significant cost savings for small entities that use these alternatives. Moreover, the adoption of bidding procedures in advance of the auction, consistent with statutory directive, is designed to ensure that the auction will be administered predictably and fairly for all participants, including small entities.

117. For Auction 108, we propose a \$25 million cap on the total bidding credit amount that may be awarded to an eligible small business and a \$10 million cap on the total bidding credit amount that may be awarded to a rural service provider. In addition, we propose a \$10 million cap on the overall amount of bidding credits that any winning small business bidder may apply to licenses won in counties located within any PEA with a population of 500,000 or less. Based on the technical characteristics of the 2.5 GHz band and our analysis of past auction data, we anticipate that our proposed caps will allow the majority of small businesses to take full advantage of the bidding credit program, thereby lowering the relative costs of participation for small businesses.

118. These proposed procedures for the conduct of Auction 108 constitute the more specific implementation of the competitive bidding rules contemplated by Parts 1 and 30 of the Commission's rules, the *2.5 GHz Report and Order*, and relevant competitive bidding orders, and are fully consistent therewith.<sup>138</sup>

119. *Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules.* None.

#### **B. Paperwork Reduction Act Analysis**

120. This document contains proposed new information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

#### **C. Deadlines and Filing Procedures**

121. Pursuant to sections 1.415 and 1.419 of the Commission's rules,<sup>139</sup> interested parties may file comments or reply comments on or before the dates indicated on the first page of this document in AU Docket No. 20-429. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies.<sup>140</sup> We strongly encourage interested parties to file comments electronically.

- *Electronic Filers.* Comments may be filed electronically using the Internet by accessing the ECFS at [www.fcc.gov/ecfs](http://www.fcc.gov/ecfs).
- *Paper Filers.* Parties who choose to file by paper must file an original and one copy of each filing.

<sup>138</sup> *See generally Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2360-75, paras. 68-159.

<sup>139</sup> 47 CFR §§ 1.415, 1.419.

<sup>140</sup> *See generally Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).



122. Filings in response to this Public Notice can be sent by commercial courier or by the U.S. Postal Service. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- Commercial deliveries (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- U.S. Postal Service First-Class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, DC 20554.
- **Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.**<sup>141</sup>

123. *Email.* We also request that a copy of all comments and reply comments be submitted electronically to the following address: [auction108@fcc.gov](mailto:auction108@fcc.gov).

124. *People with Disabilities.* To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer and Government Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY).

125. *Ex Parte Requirements.* This proceeding has been designated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.<sup>142</sup> Persons making oral *ex parte* presentations must file a copy of any written presentations or memoranda summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine Period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentations must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to the Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

#### D. Contact Information

126. For further information concerning this proceeding, contact the offices listed below:

#### **Broadband Division, Wireless Telecommunications Bureau**

2.5 GHz band licensing questions:

Madelaine Maior at (202) 418-1466

#### **Auctions Division, Office of Economics and Analytics**

Auction legal questions:

Erik Beith or Daniel Habif at (202) 418-0660

<sup>141</sup> *FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Red 2788 (OMB 2020), available at: <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

<sup>142</sup> See 47 CFR §§ 1.1200(a), 1.1206.

General auction questions:

Auctions Hotline at (717) 338-2868

**Office of Communications Business Opportunities**

For questions concerning small business inquiries: (202) 418-0990

127. Action by the Commission on January 13, 2021:

– FCC –

**ATTACHMENT A**

**Potential Licenses to Be Auctioned**

This page was intentionally inserted as a placeholder for Attachment A, which is available as a separate file.

## ATTACHMENT B

## Minimum Acceptable Bid Formula for SMR Auction

The following formula used to calculate minimum acceptable bids for an SMR auction is based on activity. After there is a provisionally winning bid for a license, the minimum acceptable bid amount for that license will be equal to the amount of the provisionally winning bid plus a percentage of the bid amount, calculated using the formula below. In general, the percentage will be higher for a license receiving many bids than for a license receiving few bids.

$$A_i = (C * B_i) + ((1-C) * A_{i-1})$$

$$I_{i+1} = \text{smaller of } ((1 + A_i) * N) \text{ and } M$$

$$X_{i+1} = I_{i+1} * Y_i$$

where

$A_i$  = activity index for the current round (round i)

$C$  = activity weight factor

$B_i$  = number of bidders submitting bids on the license in the current round (round i)

$A_{i-1}$  = activity index from previous round (round i-1),  $A_0$  is 0

$I_{i+1}$  = additional percentage for the next round (round i+1)

$N$  = minimum additional percentage or floor

$M$  = maximum additional percentage or ceiling

$X_{i+1}$  = dollar amount corresponding to the additional percentage

$Y_i$  = provisionally winning bid for the license from the current round

## Examples

$$C = 0.5, N = 0.1, M = 0.2$$

Please note that these values are for illustrative purposes only and might not be the same as those used in the auction.

Round 1 (2 bidders submitting bids, provisionally winning bid = \$1,000,000)

1. Calculation of additional percentage for round 2:

$$A_1 = (0.5 * 2) + (0.5 * 0) = 1$$

$$I_2 = \text{The smaller of } [(1 + 1) * 0.1] = 0.2 \text{ and } 0.2 \text{ (the maximum additional percentage)}$$

$$= 0.2$$

2. Calculation of dollar amount associated with the additional percentage for round 2 (using  $I_2$  from above):

$$X_2 = 0.2 * \$1,000,000 = \$200,000$$

3. Minimum acceptable bid amount for round 2 = \$1,200,000

Round 2 (3 bidders submitting bids, provisionally winning bid = \$2,000,000)

1. Calculation of additional percentage for round 3:

$$A_2 = (0.5 * 3) + (0.5 * 1) = 2$$

$$I_3 = \text{The smaller of } [(1 + 2) * 0.1] = 0.3 \text{ and } 0.2 \text{ (the maximum additional percentage)}$$

$$= 0.2$$

2. Calculation of dollar amount associated with the additional percentage for round 3 (using  $I_3$  from above):

$$X_3 = 0.2 * \$2,000,000 = \$400,000$$

3. Minimum acceptable bid amount for round 3 = \$2,400,000

Round 3 (1 bidder submitting bids, provisionally winning bid = \$2,400,000)

1. Calculation of additional percentage for round 4:

$$A_3 = (0.5 * 1) + (0.5 * 2) = 1.5$$

$$I_4 = \text{The smaller of } [(1 + 1.5) * 0.1] = 0.25 \text{ and } 0.2 \text{ (the maximum additional percentage)}$$

$$= 0.2$$

2. Calculation of dollar amount associated with the additional percentage for round 4 (using  $I_4$  from above):

$$X_4 = 0.2 * \$2,400,000 = \$480,000$$

3. Minimum acceptable bid amount for round 4 = \$2,880,000

**STATEMENT OF  
CHAIRMAN AJIT PAI**

Re: *Auction of Flexible-Use Service Licenses in the 2.5 GHz Band for Next-Generation Wireless Services*, AU Docket No. 20-429.

Today we begin the process of adopting procedures for the third FCC auction of critical, mid-band spectrum for 5G. Based on what we have learned from the first two auctions, it is time to get going.

Auction 105, our auction of seven, 10-megahertz Priority Access Licenses per county in the 3.5 GHz band, concluded in August of last year. In that auction, 228 bidders won a total of 20,625 licenses—the largest number of licenses ever awarded through an FCC auction to the largest number of auction winners from a single auction. The diversity of winning bidders ran the gamut, from traditional wireless carriers to cable companies, from wireless Internet service providers to utilities, and even entirely new market entrants. Auction 107, an auction of 280 megahertz of spectrum between 3.7 and 3.98 GHz, is ongoing, with gross proceeds currently exceeding \$80 billion, far above the prior FCC auction record of just under \$45 billion.

The robust participation in both of these auctions is irrefutable evidence of the demand for spectrum—and mid-band spectrum in particular. That’s why the first objective of our 5G FAST Plan has been to quickly make more spectrum available for 5G services. One of this agency’s fundamental responsibilities is to ensure that spectrum is being put to its highest and best use. Unfortunately, until recently, that wasn’t happening in the 2.5 GHz band.

The 2.5 GHz band includes spectrum from 2496 to 2690 MHz and represents the largest band of contiguous spectrum below 3 GHz. The spectrum was designated for Educational Broadband Service (EBS) and Broadband Radio Service. But EBS eligibility and use restrictions, combined with an unusual licensing regime, resulted in much of the 2.5 GHz band lying fallow, particularly west of the Mississippi River. Technological advances also rendered the originally intended purpose for the EBS band largely outdated.

In July 2019, a majority of the Commission voted to transform the rules for the 2.5 GHz band to make more efficient use of this valuable spectrum. The Commission eliminated restrictions on the type of entities that can hold licenses as well as educational use requirements while providing incumbent entities with additional flexibility in how they can use this spectrum. The Commission also prioritized deployment of next-generation services to rural Tribal communities through the creation of a Rural Tribal Priority Window. As I’ve said before, “from the Rosebud Sioux Reservation in South Dakota to the Navajo Nation in Arizona, from the Coeur D’Alene Reservation in Idaho to the Jemez and Zia Pueblos in New Mexico—the digital divide is most keenly felt in Indian Country.” To help bridge that divide, the Commission created a process to allow qualifying Tribal entities to apply for available white-space spectrum covering rural Tribal lands—for free. The Rural Tribal Priority Window closed on September 2, 2020, to massive success. The Commission received more than 400 applications from Tribal entities throughout the country in response to the window and the Commission has already granted 182 of these license applications.

With the Rural Tribal Priority Window now closed, we move to the next phase of making more efficient use of the 2.5 GHz band: seeking public comment on the auction procedures to be used for awarding overlay licenses for the remaining white-space spectrum available in the band. Auction 108 will offer approximately 8,300 geographic overlay licenses in the 2.5 GHz band. In this public notice, we seek comment on whether to use a single bidding round auction format with user-defined package bidding or a simultaneous multiple-round auction format. We also seek comment on other auction mechanics related to competitive bidding design, application and certification procedures, reporting requirements, and the prohibition of certain communications—consistent with prior auctions.

By initiating the pre-auction process for assigning licenses in Auction 108, we take another important step towards releasing critical mid-band spectrum to the market and furthering the deployment

of 5G wireless and other advanced spectrum-based services across the country. With our efforts, the Commission is redeploying prime spectrum that has languished underused to help fulfill the promises of connectivity to *all* Americans.

Today's work will make a meaningful difference in the lives of many Americans. I would be remiss not to thank the dedicated Commission staff who have worked to make this happen. From the Office of Economics and Analytics: Erik Beith, Craig Bomberger, Jonathan Campbell, Rita Cookmeyer, Alex Espinoza, Jill Goldberger, Daniel Habif, Amanda Hilfiger, Bill Huber, Shabnam Javid, Eliot Maenner, William McFarland, Giulia McHenry, Gary Michaels, Linda Sanderson, Michelle Schaefer, Debbie Smith, Martha Stancill, Sue Sterner, and Margy Wiener; from the Wireless Telecommunications Bureau: Cheryl Black, Steve Buenzow, Melvin Del Rosario, Diane Dupert, Erin Fitzgerald, Tim Hilfiger, Jessica Hynosky, Madelaine Maior, Chris Miller, Susan Mort, Matthew Pearl, John Schauble, Catherine Schroeder, Blaise Scinto, Dana Shaffer, Nadja Sodos Wallace, Dorothy Stifflemire, Don Stockdale, and Nancy Zaczek; from the Office of General Counsel: David Horowitz, Keith McCrickard, and Bill Richardson; and from the Office of Managing Director: Laura Dean.