



PUBLIC NOTICE

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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 No. 18-85

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I. INTRODUCTION

1. By this Public Notice, the Commission announces that it will auction a total of 5,986 Upper Microwave Flexible Use Service (UMFUS) licenses in the 27.5–28.35 GHz (28 GHz) and 24.25–24.45 and 24.75–25.25 GHz (24 GHz) bands (collectively, the UMFUS bands),¹ and it seeks comment on the procedures to be used for these auctions. The bidding in the auction for licenses in the 28 GHz band, which is designated as Auction 101, is scheduled to commence on November 14, 2018. Bidding in the auction for licenses in the 24 GHz band, which is designated as Auction 102, will be scheduled to commence subsequent to the conclusion of bidding in Auction 101. As discussed below, we propose to use our standard simultaneous multiple-round (SMR) auction format for Auction 101 (28 GHz) and a clock auction format for Auction 102 (24 GHz).² By initiating the pre-auction processes for Auctions 101 and 102, we take another important step to promote the deployment of fifth-generation (5G) wireless, the Internet of Things (IoT), and other advanced spectrum-based services at frequencies above 24 GHz.³ In

¹ See *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8023-43, paras. 19-72 (2016) (*2016 Spectrum Frontiers Order*); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988, 10994-11002, paras. 15-42 (2017) (*2017 Spectrum Frontiers Order* or *2017 Spectrum Frontiers FNPRM*) (collectively, the *Spectrum Frontiers Orders*).

² See Sections V.A (Auction 101 — 28 GHz), V.B (Auction 102 — 24 GHz), below.

³ See generally *Spectrum Frontiers Orders*.

doing so, we help ensure continued American leadership in wireless broadband, which represents a critical component of economic growth, job creation, public safety, and global competitiveness.

II. LICENSES TO BE OFFERED IN AUCTIONS 101 AND 102

A. Description of Licenses

2. The 1.55 gigahertz of UMFUS spectrum⁴ available in Auctions 101 and 102 will be licensed on a geographic area basis.⁵ The 3,074 licenses in the 28 GHz band offered in Auction 101 will be county-based licenses.⁶ The 28 GHz band will be licensed as two 425 megahertz blocks (27.500-27.925 GHz and 27.925-28.350 GHz).⁷ For each county in which 28 GHz licenses will be available for auction, both blocks of the 28 GHz band will be available.

3. Auction 102 will offer 2,912 licenses in the 24 GHz band, and the licenses will be based on PEAs.⁸ The lower segment of the 24 GHz band (24.25–24.45 GHz) will be licensed as two 100 megahertz blocks, while the upper segment (24.75–25.25 GHz) will be licensed as five 100 megahertz blocks.⁹

4. Each of the bands available in Auctions 101 and 102 will be licensed on an unpaired basis. A licensee in these bands may provide any services permitted under a fixed or mobile allocation, as set forth in the non-Federal Government column of the Table of Frequency Allocations in Section 2.106 of the Commission's rules.¹⁰

5. Table 1 contains summary information regarding the UMFUS licenses available in Auction 101. Table 2 contains summary information regarding the UMFUS licenses available in Auction 102.

Table 1: UMFUS License Summary — Auction 101 (28 GHz)

Block	Frequencies (GHz)	Total Bandwidth	Geographic Area Type	Number of Licenses
1	27.5–27.925	425 megahertz	County	1,537
2	27.925–28.35	425 megahertz	County	1,537

Table 2: UMFUS License Summary — Auction 102 (24 GHz)

⁴ Compare Letter from Steve B. Sharkey, Vice President, T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, FCC, AU Docket No. 18-85 (filed Apr. 3, 2018) (urging the Commission to conduct an auction covering all of the millimeter wave bands); Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, AU Docket No. 18-85 et al., at 2 (filed Apr. 11, 2018) (urging the Commission to include as many millimeter wave bands as practicable in its planned November 2018 auction) (CTIA *Ex Parte*).

⁵ See *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8028, para. 30; *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 10998, para. 27. We note that the second FNPRM in the Spectrum Frontiers proceeding raised issues with respect to Fixed-Satellite Services (FSS) use in a portion of the 24 GHz band, operability in the 24 GHz band, whether to add an alternative performance requirement metric for UMFUS services in the millimeter wave (mmW or mmWave) bands, and certain issues related to mobile spectrum holdings policies for UMFUS services in the mmW bands. See *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11017-23, paras. 90-108. The Commission plans to make a decision on these issues before the start of Auction 101.

⁶ See *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8029, para. 35. There are a total of 3,232 counties.

⁷ *Id.* at 8043, para. 72.

⁸ See *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 10998, para. 28. There are a total of 416 PEAs.

⁹ *Id.* at 11000, para. 34.

¹⁰ 47 CFR § 30.6.

Block	Frequencies (GHz)	Total Bandwidth	Geographic Area Type	Number of Licenses
1	24.25–24.35	100 megahertz	PEA	416
2	24.35–24.45	100 megahertz	PEA	416
3	24.75–24.85	100 megahertz	PEA	416
4	24.85–24.95	100 megahertz	PEA	416
5	24.95–25.05	100 megahertz	PEA	416
6	25.05–25.15	100 megahertz	PEA	416
7	25.15–25.25	100 megahertz	PEA	416

6. A summary of the licenses to be offered in Auctions 101 and 102 is available in Attachment A to this Public Notice.¹¹ Due to the large number of licenses offered in Auctions 101 and 102, the complete list of licenses to be offered in these auctions will be provided in electronic format only, available as separate “Attachment A” files at www.fcc.gov/auction/101-102.

B. Incumbents in 28 GHz and 24 GHz Bands

7. Active licenses in the 28 GHz band cover 1,695 full counties and two partial counties.¹² Active licenses in the 24 GHz band cover nine PEAs.¹³

C. Sharing Issues

1. 28 GHz Band

8. As background that should guide decisions to participate in the auctions, the Commission set up a sharing scheme for the 28 GHz band. Specifically, licenses for UMFUS in the 28 GHz band are being made available on a shared basis with FSS earth stations on a co-primary basis. Up to three transmitting FSS earth stations may be located in each county that are not required to protect UMFUS operations within a specified interference zone.¹⁴ In the *2016 Spectrum Frontiers Order*, the Commission grandfathered all existing 28 GHz FSS earth stations authorized as of the adoption date, July 14, 2016, and granted them the right to operate under the terms of their existing authorizations without taking into account possible interference to UMFUS operations.¹⁵ That decision also grandfathered pending applications for 28 GHz earth stations filed prior to the adoption date of the *2016 Spectrum Frontiers Order* if such applications were subsequently granted pursuant to the existing Part 25 rules.¹⁶ The Commission also gave FSS operators multiple mechanisms for deploying earth stations. First, it granted status to any FSS earth stations for which the FSS operator also holds the UMFUS license, whether through participation in an auction or the secondary markets, that covers the earth station’s permitted interference.¹⁷ To the extent FSS operators and UMFUS licensees enter into private agreements, the

¹¹ The 28 GHz licenses listed in Attachment A as available in Auction 101 do not include counties within the boundaries of existing active 28 GHz licenses.

¹² In Horry County, South Carolina, and Anchorage County, Alaska, part of the county is encumbered and the other part will be offered in Auction 101. Those two counties are noted with a double asterisk in Attachment A.

¹³ The nine PEAs are: PEA 15 - Phoenix, AZ; PEA 26 - Las Vegas, NV; PEA 75 - Albuquerque, NM; PEA 76 - Reno, NV; PEA 126 - Casa Grande, AZ; PEA 229 - Saint George, UT; PEA 285 - Gallup, NM; PEA 323 - Socorro, NM; and PEA 375 - Deming, NM. In each PEA, two out of the seven blocks currently are encumbered by an existing licensee. These nine PEAs are noted with an asterisk in Attachment A.

¹⁴ *Id.* § 25.136(a).

¹⁵ *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8037, para. 59.

¹⁶ *Id.*

¹⁷ *Id.* at 8037, para. 58.

Commission held that their relationship will be governed by those agreements.¹⁸ The Commission also determined that FSS earth stations may continue to be authorized without the benefit of an interference zone, i.e., on a secondary basis.¹⁹

9. In the *2017 Spectrum Frontiers Order*, the Commission decided that it would continue to authorize satellite earth stations on a first-come, first-served basis in the 28 GHz band, but modified the guidelines for their deployment.²⁰ The current rule for sharing between UMFUS and FSS earth stations in the 28 GHz band is Section 25.136(a) of the Commission's rules.²¹

2. 24 GHz Band

10. Similarly, the Commission adopted a sharing regime for the 24 GHz band as well. Specifically, licenses for UMFUS in the upper segment of the 24 GHz band (24.75–25.25 GHz) are being made available on a shared basis with incumbent Broadcast Satellite Service (BSS) feeder link stations. The upper segment of the 24 GHz band (24.75–25.25 GHz) is divided into two parts. Satellite use of the upper part (25.05–25.25 GHz) is currently restricted to BSS feeder link earth stations in EAs where there is no Fixed Service licensee.²² The lower part (24.75–25.05 GHz), which has no terrestrial licensees, is open for all FSS use, though BSS feeder links have priority.²³ BSS feeder link earth stations can be licensed to operate in the 24.75–25.05 GHz and 25.05–25.25 GHz bands.²⁴ In the *2017 Spectrum Frontiers FNPRM*, the Commission sought comment on licensing FSS earth stations in the 24.75–25.25 GHz band on a co-primary basis under the provisions in Section 25.136(d).²⁵ This means that the 24.75–25.25 GHz band would be available only for individually-licensed FSS earth stations that meet specific requirements applicable to earth stations in other bands shared with UMFUS (e.g., limitations on population covered, number of earth station locations in a PEA, and a prohibition on earth stations in places where they would preclude terrestrial service to people or equipment that are in transit or are present at mass gatherings).²⁶

¹⁸ *Id.*

¹⁹ *Id.* The Commission encouraged UMFUS licensees to be flexible in providing certainty to the operation of secondary FSS earth stations in areas where they do not intend to deploy terrestrial services, but emphasized that FSS earth stations deployed on a secondary basis will otherwise have no expectation of interfering rights and will have to cease operation if requested by UMFUS licensees at any time on the basis of harmful interference to their services. *Id.*

²⁰ See *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11027-35, paras. 122-41.

²¹ 47 CFR § 25.136(a). Under Section 25.136(a), FSS is secondary to UMFUS in the 28 GHz band; however, an FSS license applicant may be authorized to operate in the 28 GHz band without providing interference protection to UMFUS licensees if the applicant meets one of the following criteria: (1) the FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a power flux density, at 10 meters above ground level, of greater than or equal to -77.6 dBm/m²/MHz; (2) the FSS earth station was authorized prior to July 14, 2016; or (3) the application for the FSS earth station was filed prior to July 14, 2016 and has been subsequently granted; or (4) the applicant demonstrates compliance with the application requirements described in subsections 25.136(a)(4)(i)-(iv). *Id.*

²² *Id.* § 25.203(l); see also *id.* §§ 2.106 n.NG535, 25.202(a)(1).

²³ See *id.* § 2.106 n.NG535.

²⁴ *Id.* §§ 2.106 n.NG535, 25.202(a)(1).

²⁵ *2017 Spectrum Frontiers FNPRM*, 32 FCC Rcd at 11019-20, paras. 94-97.

²⁶ *Id.* at 11019, para. 94.

III. APPLICATION AND BIDDING PROCESSES: IMPLEMENTATION OF PART 1 RULES FOR AUCTIONS 101 AND 102

A. Separate Auction Application and Bidding Processes

11. We propose to offer the 5,986 licenses described above through two separate auctions, Auctions 101 and 102, respectively. Bidding in Auction 101 for 28 GHz band licenses is scheduled to commence on November 14, 2018. We propose to commence bidding in Auction 102 for 24 GHz band licenses subsequent to the close of bidding in Auction 101.

12. The Commission proposes to use separate application and bidding processes for Auctions 101 and 102. We propose separate auctions so that we can use different auction formats for Auctions 101 and 102, which will accommodate differences in the characteristics of the specific inventories of licenses available in these two bands and simplify the bidding process for participants.²⁷ For example, the similarities among blocks in the 24 GHz band facilitate using a clock auction with generic blocks, which will speed up the bidding relative to license-by-license bidding, which is needed when blocks in the band are less uniformly available, as in 28 GHz. With respect to bidding, we propose to use our standard SMR auction format for Auction 101 (28 GHz) and a clock auction format, similar to that used for the forward auction portion (Auction 1002) of the Broadcast Incentive Auction, for Auction 102 (24 GHz), as described and explained in greater detail below.²⁸ We propose to accept auction applications during separate application filing windows—one for Auction 101 and one for Auction 102. We also seek comment on whether the filing window for Auction 102 should occur prior to the close of bidding in Auction 101.

13. The Commission seeks comment on issues related to the timing of the proposed, separate application and bidding processes. Commenters should address how the sequence and timing for Auctions 101 and 102 processes, including pre- and post-auction procedures, may affect bidder participation in one or both auctions. Specifically, how can we coordinate the timing of auction application and bidding procedures so as to minimize burdens on auction applicants and maximize participation and competition in both auctions? Should we open both windows before bidding begins in Auction 101? Or should we wait to open the filing window for Auction 102 until after bidding in Auction 101 has begun? Alternatively, should we wait to open the application window for Auction 102 until after the close of bidding in Auction 101?

14. We note that, if the filing window for Auction 102 occurs prior to the close of bidding in Auction 101, entities wishing to participate in either auction would be applicants during overlapping periods of time.²⁹ Further, because the licenses to be offered in both Auctions 101 and 102 cover UMFUS spectrum and are subject to many of the same service rules, applicants may view the licenses to be offered in these auctions as substitutes, at least to some extent, and therefore may be interested in participating in both auctions. Therefore, we encourage commenters to consider how the timing of the separate application windows and bidding processes for Auctions 101 and 102 might affect the ban on joint bidding agreements and prohibition of certain communications by auction applicants during these overlapping auctions, as well as information disclosure procedures during the auction process, as

²⁷ See Sections V.A (Auction 101 — 28 GHz), V.B (Auction 102 — 24 GHz), below.

²⁸ See Sections V.A (Auction 101 — 28 GHz), V.B (Auction 102 — 24 GHz), below.

²⁹ If, based on our final procedures for these auctions, the Auction 102 application window occurs before the close of bidding in Auction 101, we propose to apply our rules regarding certain application requirements and certifications (e.g., joint bidding, agreements relating to the licenses subject to auction), the rule prohibiting certain communications, and our procedures regarding information available during the auction process across both auctions, as detailed below, to promote both participation and competition thereby furthering the public interest objectives of assigning licenses by competitive bidding. See Sections III.B (Information Procedures During the Auction Process), III.C (Application of Prohibition of Certain Communications), III.D (Application Requirements and Certifications Relating to Joint Bidding and Other Agreements), below.

discussed in greater detail below.³⁰ Commenters should provide specific reasons for supporting or objecting to any approach.

B. Information Procedures During the Auction Process

15. As with most recent Commission spectrum license auctions, the Commission proposes to limit information available in Auctions 101 and 102 in order to prevent the identification of bidders placing particular bids until after the bidding has closed.³¹ More specifically, the Commission proposes to not make public until after bidding has closed: (1) the licenses or license areas 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 101 or 102, (3) any applicant's bidding eligibility, and (4) any other bidding-related information that might reveal the identity of the bidder placing a bid.

16. Under these proposed limited information procedures (sometimes also referred to as anonymous bidding), information to be made public after each round of bidding in Auction 101 would include the amount of every bid placed and whether a bid was withdrawn (if withdrawals are permitted). In Auction 102, information to be made public would include, for each category of license in each geographic area, the supply, the aggregate demand, the price at the end of the last completed round, and the price for the next round.³² In both auctions, however, the identities of bidders placing specific bids or withdrawals (if permitted) and the net bid amounts (reflecting bidding credits) would not be disclosed until after the close of bidding.

17. Bidders would have access to additional information related to their own bidding and bid eligibility. For example, bidders would be able to view their own level of eligibility, before and during the respective auction, through the FCC auction bidding system.

18. After the close of bidding, bidders' license and/or PEA selections, as applicable,³³ upfront payment amounts, bidding eligibility, bids, and other bidding-related actions would be made publicly available.

19. Because applicants may be interested in participating in both auctions, if the Auction 102 application window occurs before the close of Auction 101, we propose that information relating to either auction that is non-public under our limited information procedures would remain non-public until after bidding has closed in both auctions. This approach will protect against disclosure, prior to the close of both auctions, of information relating to either auction that may indicate bidding strategies in the other.

³⁰ See Sections III.B (Information Procedures During the Auction Process), III.C (Application of Prohibition of Certain Communications), III.D (Application Requirements and Certifications Relating to Joint Bidding and Other Agreements), below.

³¹ See, e.g., *Broadcast Incentive Auction Scheduled to Begin on March 29, 2016; Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, Public Notice, 30 FCC Rcd 8975, 9046, para. 138 (2015) (*Auction 1000 Bidding Procedures Public Notice*); *Auction of Advanced Wireless Services (AWS-3) Licenses Scheduled for November 13, 2014; Notice and Filing Requirements, Reserve Prices, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 97*, Public Notice, 29 FCC Rcd 8386, 8429-30, para. 150 (WTB 2014) (*Auction 97 Procedures Public Notice*); *Auction of 700 MHz Band Licenses Scheduled for July 19, 2011; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 92*, Public Notice, 26 FCC Rcd 3342, 3372-73, paras. 126-29 (WTB 2011); *Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66*, Public Notice, 21 FCC Rcd 4562, 4600-05, paras. 140-57 (2006); see also 47 CFR § 1.2104(h).

³² See Section V.B (Auction 102 — 24 GHz), below.

³³ Under our proposed SMR auction design for Auction 101, an applicant would identify on its auction application the licenses offered on which it may wish to bid during the auction. Under our proposed clock auction design for Auction 102, an applicant would select on its auction application all of the PEA(s) on which it may want to bid from the list of available PEAs.

Under this scheduling scenario, should we instead release results and make available all bidding information related to Auction 101 after the close of that auction is announced by public notice? Commenters should discuss the potential impact of the approach they favor on participation and competition in both auctions. If we adopt an alternative scheduling approach and open the Auction 102 application window after the close of bidding in Auction 101, however, we propose to apply the limited information procedures discussed above to each auction separately, and would make non-public information relating to Auction 101 available after the close of that auction and before the application filing window for Auction 102.

20. We seek comment on the above details of our proposal for implementing limited information procedures, or anonymous bidding, in Auctions 101 and 102, under a scenario in which we schedule the application window for Auction 102 to occur prior to the close of bidding in Auction 101. We also seek comment on the implementation alternatives under alternative scenarios for the timing of the auction application windows. Concerns about anti-competitive bidding and other factors that the Commission relied on as a basis for using anonymous bidding in prior auctions also would appear to apply to Auctions 101 and 102.³⁴ The Commission encourages parties to provide information about the benefits and costs of complying with limited information procedures in Auctions 101 and 102, as compared with the benefits and costs of alternative procedures that would provide for the disclosure of more information on bidder identities and interests in the auctions. Commenters opposing the use of anonymous bidding in Auctions 101 and 102 should explain their reasoning and propose alternative information rules.

C. Application of Prohibition of Certain Communications

21. 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[.]"³⁵

22. If, based on our final procedures for these auctions, the short-form window for Auction 102 occurs before the close of Auction 101, entities wishing to participate in either auction will be

³⁴ See, e.g., *Auction 1000 Bidding Procedures Public Notice*, 30 FCC Rcd at 9046, para. 138 (finding that limiting the availability of auction information until after the auction is over "helps ensure the competitiveness of the bidding"); *Auction 97 Procedures Public Notice*, 29 FCC Rcd at 8429-30, para. 150 & n.240 ("The limited information disclosure procedures used in past auctions have helped safeguard against potential anticompetitive behavior such as retaliatory bidding and collusion . . ."); *Auction of H Block Licenses in the 1915-1920 MHz and 1995-2000 MHz Bands Scheduled for January 14, 2014; Notice and Filing Requirements, Reserve Price, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 96*, Public Notice, 28 FCC Rcd 13019, 13055-56, paras. 136-37 (2013) (finding that "the competitive benefits associated with anonymous bidding outweigh the potential benefits of full information disclosure" and concluding that "[n]othing in the record persuades us that we should depart from the now-established Commission practice of implementing anonymous bidding procedures in wireless spectrum auctions") (*H Block Procedures Public Notice*).

³⁵ 47 CFR § 1.2105(c)(1). For purposes of Section 1.2105(c)'s prohibition, 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 percent 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)(1). Below, we propose a definition of "nationwide provider" for purposes of Auctions 101 and 102, in accordance with the *2015 Part I Report and Order*. See para. 26, below.

applicants during overlapping periods of time. In this scenario, based on the relationship between the two auctions, we propose to apply the prohibition of Section 1.2105(c)(1) across both auctions. Thus, an applicant in either auction that communicates its bids or bidding strategies to an applicant to participate in the other auction would violate the Commission's prohibited communication rule,³⁶ which will apply to "all applicants" to participate in either auction, and not only to applicants for the same auction. That is, the rule prohibiting certain communications will apply to any applicant in either Auction 101 or 102. Accordingly, no Auction 101 applicant may discuss bids or bidding strategies with any other Auction 101 applicant or with an Auction 102 applicant. Conversely, no Auction 102 applicant may discuss bids or bidding strategies with any other Auction 102 applicant or with an Auction 101 applicant. In addition, the down payment deadline for Auction 102 would be the relevant down payment deadline for determining when the prohibition ends for each applicant in either auction.³⁷ This approach should provide clarity with respect to permitted and prohibited communications by establishing a single end point for the prohibition.

23. If we adopt an alternative approach and schedule the Auction 102 application window to occur after the close of bidding in Auction 101, we propose to apply the prohibition of certain communications separately to each auction, using each auction's post-auction down payment deadline to determine when the prohibition ends for applicants in that auction.

24. We seek comment on the details of our proposals for applying the prohibition of certain communications across Auctions 101 and 102 in the scenario in which the Auction 102 application window occurs before the close of bidding in Auction 101. If commenters support alternatives for applying the prohibition in this scenario they should provide implementation details and explain how such suggestions promote the purpose of the prohibition. We also seek comment on our suggestion for applying the prohibition under the alternative scenario in which the Auction 102 application window occurs after the close of bidding in Auction 101. We request that commenters address costs and benefits of each of these alternative ways of implementing the prohibition, and any other alternatives they may suggest, including any potential effects on auction participation and competition as well as any burden on applicants.³⁸

D. Application Requirements and Certifications Relating to Joint Bidding and Other Agreements

25. As recently amended in the *2015 Part I Report and Order*, the Commission's rules generally prohibit joint bidding and other arrangements involving auction applicants (including any party that controls or is controlled by such applicants).³⁹ This prohibition applies to joint bidding arrangements

³⁶ See Section III.A (Separate Auction Application and Bidding Processes), above.

³⁷ See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands et al.*, Second Report and Order, 22 FCC Rcd 15289, 15405, para. 316 (2007) (deciding that with respect to Auctions 73 and 76, "the applicable 'down payment deadline' for purposes of our anti-collusion rule shall be the 'down payment deadline' established for the subsequent auction") (*700 MHz Second Report and Order*). In the *700 MHz Second Report and Order*, the Commission concluded that because licenses for the same spectrum would be offered in Auctions 73 and 76, and the auctions would take place relatively close in time, "the purpose of our anti-collusion rule requires that the provisions of that rule continue to apply until the down payment deadline for the subsequent auction." *Id.*

³⁸ See, e.g., *CTIA Ex Parte* at 2 (urging "the Commission to consider the implications for the agency and auction participants if the Commission's anti-collusion rules apply across the two auctions and include applicants in both").

³⁹ 47 CFR § 1.2105(a)(2)(ix); see also *Updating Part 1 Competitive Bidding Rules 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, 7569-77, paras. 177-98 (2015) (*2015 Part I Report and Order*). For purposes of the prohibition on joint bidding arrangements, "joint bidding arrangements" include arrangements relating to the licenses being auctioned that address or communicate, directly or indirectly, bidding at the auction, bidding strategies, including arrangements regarding price or the specific licenses on which to bid, and any such

(continued....)

involving two or more nationwide providers, as well as joint bidding arrangements involving a nationwide and one or more non-nationwide providers, where any party to the arrangement is an applicant for the auction.⁴⁰ In the *2015 Part 1 Report and Order*, the Commission explained that, for purposes of its competitive bidding rules, the entities that qualify as nationwide providers will generally be identified in procedures public notices released before each auction.⁴¹

26. For the purpose of implementing our competitive bidding rules in Auctions 101 and 102,⁴² we propose to identify AT&T, Sprint, T-Mobile, and Verizon Wireless as “nationwide providers.”⁴³ Because our rules allow an UMFUS licensee in the 28 GHz and 24 GHz bands to provide flexible terrestrial wireless services, including mobile services, we base our proposal on the Commission’s identification of nationwide providers in the *20th Annual Mobile Competition Report*.⁴⁴ Commenters who disagree with this proposal should identify alternative “nationwide providers” and explain why we should depart from the list of nationwide providers identified in the *20th Annual Mobile Competition Report*.

27. To implement the prohibition on joint bidding arrangements, the Commission’s rules require each auction applicant in its short-form application to certify that it has disclosed any arrangements or understandings of any kind relating to the licenses being auctioned to which it (or any party that controls or is controlled by it) is a part; the applicant must also certify that it (or any party that controls or is controlled by it) has not entered and will not enter into any arrangement or understanding of any kind relating directly or indirectly to bidding at auction with, among others, “any other applicant” or a nationwide provider.⁴⁵

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arrangements relating to the post-auction market structure. *2015 Part 1 Report and Order*, 30 FCC Rcd at 7575, para. 195.

⁴⁰ 47 CFR § 1.2105(a)(2)(ix); see also *2015 Part 1 Report and Order*, 30 FCC Rcd at 7571, 7573-75, paras. 182, 186-87, 191, 193. A “non-nationwide provider” refers to any provider of communications services that is not a “nationwide provider.” *2015 Part 1 Report and Order*, 30 FCC Rcd at 7575, para. 195.

⁴¹ *2015 Part 1 Report and Order*, 30 FCC Rcd at 7571, para. 182 n.596.

⁴² See 47 CFR § 1.2105.

⁴³ This proposal is also consistent with the Commission’s identification of “nationwide providers” for the purpose of implementing its competitive bidding rules in the forward auction portion of the Broadcast Incentive Auction. See *Application Procedures for Broadcast Incentive Auction Scheduled to Begin on March 29, 2016; Technical Formulas for Competitive Bidding*, Public Notice, 30 FCC Rcd 11034, 11070, para. 111 (WTB 2015) (“For Auction 1002, AT&T, Verizon, Sprint, and T-Mobile are considered to be ‘nationwide providers.’”).

⁴⁴ See *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Twentieth Report, 32 FCC Rcd 8968, 8975, para. 13 (2017) (*20th Annual Mobile Competition Report*).

⁴⁵ “The short-form application must contain . . .

(viii) Certification that the applicant has provided in its application a brief description of, and identified each party to, any partnerships, joint ventures, consortia or other agreements, arrangements or understandings of any kind relating to the licenses being auctioned, including any agreements that address or communicate directly or indirectly bids (including specific prices), bidding strategies (including the specific licenses on which to bid or not to bid), or the post-auction market structure, to which the applicant, or any party that controls as defined in paragraph (a)(4) of this section or is controlled by the applicant, is a party.

(ix) Certification that the applicant (or any party that controls as defined in paragraph (a)(4) of this section or is controlled by the applicant) has not entered and will not enter into any partnerships, joint ventures, consortia or other agreements, arrangements, or understandings of any kind relating to the licenses being auctioned that address or communicate, directly or indirectly, bidding at auction (including specific prices to be bid) or bidding strategies (including the specific licenses on which to bid or not to bid), or post-auction market structure with: any other applicant (or any party that controls or is controlled

(continued....)

28. If, based on our final procedures for these auctions, the Auction 102 short-form window occurs before the close of bidding in Auction 101, because entities wishing to participate in either auction would be applicants during overlapping periods of time, we propose to apply the rule prohibiting joint bidding arrangements to any applicant for Auction 101 or 102. Moreover, an entity wishing to participate in either auction would be required to disclose in its short-form application any bidding arrangements or understandings of any kind relating to the licenses being auctioned in either Auction 101 or 102. That is, under this scenario, for the purpose of implementing our competitive bidding rules in Auctions 101 and 102, we propose to apply the prohibition against joint bidding agreements such that the “licenses being auctioned” and “licenses at auction” include all of the licenses being offered in Auctions 101 and 102.⁴⁶ We seek comment on this proposal. If, in the alternative, we were to adopt procedures to schedule the Auction 102 application window to occur after the close of bidding in Auction 101, we propose that we would apply the prohibition separately to the specific licenses in each auction. We seek comment on this alternative. Commenters should give specific reasons for preferring one approach or the other and address the potential effects of each approach on applicants as well as the potential effect of each on auction participation and competition.

E. Bidding Credit Caps

29. We seek comment on establishing reasonable caps on the total amount of bidding credits that an eligible small business or rural service provider may be awarded for either Auction 101 or 102. The Commission administers its bidding credit programs to promote small business and rural service provider participation in auctions and in the provision of spectrum-based services.⁴⁷

30. 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 preceding three years, and which determine the size of the bidding credit discount.⁴⁸ In the *2015 Part 1 Report and Order*, the Commission revised the gross revenue thresholds that define the eligibility tiers for the small business bidding credit,⁴⁹ and it adopted a rural service provider bidding credit

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by another applicant); with a nationwide provider that is not an applicant (or any party that controls or is controlled by such a nationwide provider); or, if the applicant is a nationwide provider, with any non-nationwide provider that is not an applicant (or with any party that controls or is controlled by such a non-nationwide provider), other than:

(a) Agreements, arrangements, or understandings of any kind that are solely operational as defined under paragraph (a)(4) of this section;

(b) Agreements, arrangements, or understandings of any kind to form consortia or joint ventures as defined under paragraph (a)(4) of this section;

(c) Agreements, arrangements or understandings of any kind with respect to the transfer or assignment of licenses, provided that such agreements, arrangements or understandings do not both relate to the licenses at auction and address or communicate, directly or indirectly, bidding at auction (including specific prices to be bid), or bidding strategies (including the specific licenses on which to bid or not to bid), or post-auction market structure.”

47 CFR § 1.2105(a)(2)(viii)-(ix); *see also 2015 Part 1 Report and Order*, 30 FCC Rcd at 7570-78, paras. 180-201.

⁴⁶ *See* 47 CFR § 1.2105(a)(viii)-(ix), (c)(3).

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

⁴⁸ *See* 47 CFR § 1.2110(f)(2).

⁴⁹ *2015 Part 1 Report and Order*, 30 FCC Rcd at 7524-25, paras. 73-74. The Commission retained the existing 15, 25, and 35 percent 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.

program.⁵⁰ In the *2016 Spectrum Frontiers Order*, the Commission decided to conduct any auction of UMFUS licenses in conformity with the amended Part 1 rules.⁵¹ It also determined that eligibility for the small business bidding credit in UMFUS auctions would be defined using two of the thresholds of the standardized schedule of small business sizes.⁵² Specifically, the Commission determined that an entity with average annual gross revenues for the preceding three years not exceeding \$55 million would be designated as a “small business” eligible for a 15 percent bidding credit, and that an entity with average annual gross revenues for the preceding three years not exceeding \$20 million would be designated as a “very small business” eligible for a 25 percent bidding credit.⁵³ The Commission further 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 percent rural service provider bidding credit.⁵⁴

31. To protect the integrity of the bidding credit program and to mitigate the incentives for abuse, the Commission, in the *2015 Part 1 Report and Order*, established a process to implement a reasonable cap on the total amount of bidding credits 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.⁵⁵ Specifically, 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.⁵⁶ For the Broadcast Incentive Auction, the Commission adopted a \$150 million cap on small business bidding credits and a \$10 million cap on rural service provider bidding credits.⁵⁷

32. For Auction 101 and Auction 102, we propose a \$25 million cap on the total amount of bidding credits that may be awarded to an eligible small business in each auction (i.e., \$25 million in each auction). As noted in the *2015 Part 1 Report and Order*, the Commission set the \$150 million cap for the Broadcast Incentive Auction at a higher level than anticipated for future auctions, given the significant advantages of the low-band spectrum licenses in the Incentive Auction and the capital requirements associated with low-band spectrum.⁵⁸ By comparison, Auction 101 and Auction 102 will offer licenses in the mmW spectrum, which has less robust propagation characteristics than the 600 MHz spectrum offered in the Incentive Auction.⁵⁹ Moreover, we anticipate that the range of potential use cases suitable for the

⁵⁰ *Id.* at 7530-31, para. 88; *see also* 47 CFR § 1.2110(f)(4).

⁵¹ *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8097-98, para. 245.

⁵² *Id.* at 8099, paras. 249-50; *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* 47 CFR § 1.2110(b)(1)(i); *2015 Part 1 Report and Order*, 30 FCC Rcd at 7529, para. 85.

⁵³ *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8099, para. 250; *see also* 47 CFR § 30.302(a).

⁵⁴ *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8100, para. 251; *see also* 47 CFR § 30.302(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 2015 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. *2015 Part 1 Report and Order*, 30 FCC Rcd at 7536-37, para. 104 & n.340.

⁵⁵ *See 2015 Part 1 Report and Order*, 30 FCC Rcd at 7541, 7544, paras. 114, 119.

⁵⁶ *Id.* at 7541, para. 114; *see also* 47 CFR § 1.2110(f)(2)(ii), (4)(ii).

⁵⁷ *2015 Part 1 Report and Order*, 30 FCC Rcd at 7544-45, para. 122.

⁵⁸ *Id.* at 7544, para. 122.

⁵⁹ *See generally 2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8020, paras. 6-7.

UMFUS bands, including localized fiber replacement and IoT, combined with the small license areas in these bands, may permit deployment of smaller scale networks with lower total costs.⁶⁰ Further, based on past auction data, we expect that a \$25 million cap on small business bidding credits will allow the substantial majority of small businesses in the auction to take full advantage of the bidding credit program.⁶¹ We therefore believe that our proposed cap will promote the statutory goals of providing meaningful opportunities for *bona fide* small businesses to compete in auctions and in the provision of spectrum-based services,⁶² without compromising our responsibility to prevent unjust enrichment and ensure efficient and intensive use of spectrum.⁶³

33. We propose to adopt a \$10 million cap on the total amount of bidding credits that may be awarded to an eligible rural service provider in Auction 101 and Auction 102 (i.e., \$10 million in each auction).⁶⁴ Based on our analysis of data from the Broadcast Incentive Auction, in which no rural service provider exceeded the \$10 million cap, 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 101 or Auction 102.⁶⁵ In addition, to create parity in Auctions 101 and 102 among eligible small businesses and rural service providers competing against each other in smaller markets, we propose a \$10 million cap on the overall amount of bidding credits that any winning small business bidder in either auction may apply to winning licenses in markets with a population of 500,000 or less.⁶⁶

34. We seek comment on these proposals. Specifically, do the expected capital requirements associated with operating in the UMFUS bands, the potential number and value of UMFUS licenses, past auction data, or any other considerations justify the proposed caps or a higher or lower cap for either type of bidding credit in either auction? Commenters are encouraged to identify circumstances and characteristics of these mmW auctions that should guide us in establishing bidding credit caps, and to provide specific, data-driven arguments in support of their proposals.

⁶⁰ See, e.g., *id.* at 8029, para. 35 (“[A] county-based license affords a licensee the flexibility to develop localized services, allows for targeted deployments based on market forces and customer demand, and facilitates access by both smaller and larger carriers.”); *id.* at 8046, para. 82 (“[Licensing on a PEA basis] strikes the appropriate balance between facilitating access to spectrum by both large and small providers . . . while incentivizing investment in, and rapid deployment of, new technologies.”); *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 10991, para. 5 (“We note that major carriers and smaller operators are beginning to develop the mmW frequencies’ potential for low-cost wireless equivalents of fiber to homes and small businesses.”).

⁶¹ We observe, for example, that a \$25 million cap would have allowed 95 percent of small businesses in Auction 66, 98 percent of small businesses in Auction 73, 73 percent of small businesses in Auction 97, and 75 percent of small businesses in the Broadcast Incentive Auction to realize the full value of their bidding credits based on gross winning bid amounts. See *2015 Part 1 Report and Order*, 30 FCC Rcd at 7541, para. 115 n. 367; see also generally *Incentive Auction Closing and Channel Reassignment Public Notice et al.*, Public Notice, 32 FCC Rcd 2786, Appx. B (WTB/MB 2017) (*Incentive Auction Closing Public Notice*). Further, 100 percent of rural service providers that claimed bidding credits in the Incentive Auction fell below the \$10 million cap adopted by the Commission. See generally *Incentive Auction Closing Public Notice*, 32 FCC Rcd at Appx. B.

⁶² See 47 U.S.C. § 309(j)(4)(D); see also *id.* § 309(j)(3)(A)-(B).

⁶³ See *id.* § 309(j)(3)(C)-(D).

⁶⁴ 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).

⁶⁵ The Broadcast Incentive Auction is the only concluded auction to date to implement the rural service provider bidding credit established in the *2015 Part 1 Report and Order*. Of the 27 rural service providers that were awarded bidding credits in the Broadcast Incentive Auction, only 8 rural providers were awarded more than \$1 million, and the largest bidding credit received was approximately \$2.4 million. See generally *Incentive Auction Closing Public Notice*, 32 FCC Rcd at Appx. B.

⁶⁶ This proposal is consistent with the approach adopted by the Commission in the Broadcast Incentive Auction. See *2015 Part 1 Report and Order*, 30 FCC Rcd at 7546-47, paras. 127-28.

35. 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.⁶⁷ These rules include a prohibition, which applies to all applicants (whether or not seeking bidding credits), against changes in ownership of the applicant that would constitute an assignment or transfer of control.⁶⁸ **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.** We believe that this policy will help to ensure compliance with the Commission's rules applicable to the award of bidding credits prior to the conduct of these auctions, which will involve competing bids from those who do and do not seek bidding credits, and thus preserves the integrity of the auctions process. We also believe that this will meet the Commission's objectives in awarding licenses through the competitive bidding process.⁶⁹

IV. DUE DILIGENCE

36. Each potential bidder is solely responsible for investigating and evaluating all technical and marketplace factors that may have a bearing on the value of the licenses that it is seeking in Auctions 101 and 102. Each bidder is responsible for assuring that, if it wins a license, it will be able to build and operate facilities in accordance with the Commission's rules. **The Commission makes no representations or warranties about the use of this spectrum for particular services. 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.**⁷⁰ **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.**

37. An applicant should perform its due diligence research and analysis before proceeding, as it would with any new business venture. Each potential bidder should perform technical analyses and/or refresh any previous analyses to assure itself that, should it become a winning bidder for any Auction 101 or Auction 102 license, it will be able to build and operate facilities that will comply fully with all applicable technical and regulatory requirements. We strongly encourage each applicant to inspect any prospective sites for communications facilities located in, or near, the geographic area for which it plans to bid; confirm the availability of such sites; and familiarize itself with the Commission's rules regarding the National Environmental Policy Act.⁷¹

38. We strongly encourage each applicant to conduct its own research prior to Auctions 101 and 102, as applicable, in order to determine the existence of pending administrative, rulemaking, or

⁶⁷ See, e.g., 47 CFR §§ 1.2110-11.

⁶⁸ *Id.* § 1.2105(b)(2). Pursuant to 47 CFR § 1.929(a)(2), any substantial change in ownership or control is classified as a major amendment. See also *id.* § 1.927(a)-(b), (h).

⁶⁹ 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); see also *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8097-101, paras. 244-54.

⁷⁰ 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)).

⁷¹ 47 CFR Chapter 1, Part 1, Subpart I.

judicial proceedings that might affect its decisions regarding participation in the auction.

39. We also strongly encourage participants in Auctions 101 and 102 to continue such research throughout the auctions. The due diligence considerations mentioned in this Public Notice do not constitute an exhaustive list of steps that should be undertaken prior to participating in these auctions. As always, the burden is on the potential bidder to determine how much research to undertake, depending upon the specific facts and circumstances related to its interests.

40. In addition to the foregoing due diligence considerations, which we encourage of bidders in all auctions, we call particular attention in Auctions 101 and 102 to the spectrum-sharing issues described above.⁷² Each applicant should follow closely releases from the Commission concerning these issues and to consider carefully the technical and economic implications for commercial use of the UMFUS bands.

41. We also remind bidders of the Commission's mobile spectrum holding policies applicable to the mmW bands. Specifically, for purposes of reviewing proposed secondary market transactions, the Commission adopted a threshold of 1850 megahertz of combined mmW spectrum in the 24 GHz, 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands.⁷³ In addition, the Commission proposed in the *2017 Spectrum Frontiers FNPRM* to eliminate the pre-auction limit of 1250 megahertz that had been adopted for the 28 GHz, 37 GHz, and 39 GHz bands, consistent with the Commission's conclusion not to adopt a pre-auction limit for the 24 GHz and 47 GHz bands.⁷⁴ Further, the Commission sought comment on whether, in the absence of pre-auction limits for mmW spectrum, it should adopt a post-auction, case-by-case review of mmW spectrum holdings for long-form applications for initial mmW licenses.⁷⁵

V. PROPOSED BIDDING PROCEDURES

A. Auction 101 — 28 GHz

1. Simultaneous Multiple-Round Auction Design

42. We propose to use the Commission's standard SMR auction format for Auction 101, which offers license-by-license bidding.⁷⁶ As described further below, 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. Typically, bidding remains open on all licenses until bidding stops on every license. We seek comment on this proposal.

2. Bidding Rounds

43. Under this proposal, Auction 101 will consist of sequential bidding rounds, each followed by the release of round results. The initial bidding schedule will 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 round results files will be included in the same public notice.

44. The Commission will conduct Auction 101 over the Internet using the FCC auction bidding system. Bidders will also have the option of placing bids by telephone through a dedicated auction bidder line. The toll-free telephone number for the auction bidder line will be provided to qualified bidders prior to the start of bidding in the auction.

⁷² See Section II.C (Sharing Issues), above.

⁷³ *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11011, para. 74.

⁷⁴ *2017 Spectrum Frontiers FNPRM*, 32 FCC Rcd at 11022, para. 105.

⁷⁵ *Id.* at 11022, para. 106.

⁷⁶ See *Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Second Report and Order, 9 FCC Rcd 2348, 2360-75, paras. 68-159 (1994) (*Competitive Bidding Second Report and Order*), for a general discussion of competitive bidding design.

45. The Commission proposes that the Wireless Telecommunications Bureau (Bureau) 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 will allow the Bureau 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. We seek comment on this proposal. 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.

3. Stopping Rule

46. The Commission has discretion to establish stopping rules before or during multiple round auctions in order to complete the auction within a reasonable time.⁷⁷ For Auction 101, we propose to employ a simultaneous stopping rule approach, which means all licenses remain available for bidding until bidding stops on every license. Specifically, bidding will 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 in Auction 101).⁷⁸ Under the proposed simultaneous 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 how long the bidding in Auction 101 would last.

47. Further, we propose that the Bureau would retain the discretion to exercise any of the following stopping options during Auction 101:

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 101), 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 101), 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 a 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 the Bureau. If the Bureau invokes this special stopping rule, it will accept bids in the specified final round(s), after which the auction will 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

⁷⁷ 47 CFR § 1.2104(e).

⁷⁸ 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 V.A.10 (Provisionally Winning Bids). Proactive waivers are described in Section V.A.7 (Activity Rule Waivers and Reducing Eligibility), and bid withdrawals are described in Section V.A.11 (Bid Removal and Bid Withdrawal), below.

101). In this event, the effect will be the same as if a bidder had applied a waiver. The activity rule will apply as usual, and a bidder with insufficient activity will lose bidding eligibility or use a waiver.

48. We propose that the Bureau 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, the Bureau is likely to attempt to change the pace of Auction 101. For example, the Bureau may adjust the pace of bidding by changing the number of bidding rounds per day and/or the minimum acceptable bids. We propose that the Bureau retain continuing discretion to exercise any of these options with or without prior announcement by the Bureau during the auction. We seek comment on these proposals.

4. Information Relating to Auction Delay, Suspension, or Cancellation

49. For Auction 101, we propose that at any time before or during the bidding process, the Bureau may delay, suspend, or cancel bidding in the auction 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.⁷⁹ The Bureau will 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, the Bureau may, in its sole discretion, elect to resume the auction starting from the beginning of the current round or from some previous round, or cancel the auction in its entirety. We emphasize that the Bureau will exercise this authority solely at its discretion, and not as a substitute for situations in which bidders may wish to apply their activity rule waivers. We seek comment on this proposal.

5. Upfront Payments and Bidding Eligibility

50. 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.⁸⁰ As described below, the upfront payment is a refundable deposit made by an applicant to establish its eligibility to bid on licenses. Upfront payments related to the inventory of licenses being auctioned 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.⁸¹ With these considerations in mind, the Commission proposes upfront payments based on \$0.001 per megahertz of bandwidth per population (per "MHz-pop").⁸² The proposed upfront payments equal approximately half the proposed minimum opening bids, which are established as described in Section V.A.8, below. We seek comment on these upfront payment amounts, which are specified in the Attachment A files.

51. The Commission further proposes that the amount of the upfront payment submitted by a bidder will determine its initial bidding eligibility in bidding units, which are a measure of bidder eligibility and bidding activity. We propose to assign each license a specific number of bidding units, equal to one bidding unit per dollar of the upfront payment. The number of bidding units for a given license is fixed and does not change during the auction as prices change. If an applicant is found to be qualified to bid on more than one license being offered in Auction 101, such bidder may place bids on

⁷⁹ 47 CFR § 1.2104(i).

⁸⁰ *Id.* § 1.2106.

⁸¹ See *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2377-79, paras. 169-76.

⁸² The results of these calculations are subject to a minimum of \$100 and 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.

multiple licenses, provided that the total number of bidding units associated with those licenses does not exceed its current eligibility. A bidder cannot increase its eligibility during the auction; it can only maintain its eligibility or decrease its eligibility. Thus, in calculating its upfront payment amount and hence its initial bidding eligibility, 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 these proposals.

52. In the *2017 Spectrum Frontiers Order*, we observed that the Communications Act requires any upfront auction payments required by the Commission to be deposited in an interest-bearing account, but that no financial institution, to our knowledge, is currently willing to accommodate the holding of upfront payments for a large spectrum auction.⁸³ However, Congress recently passed legislation amending the Communications Act to provide that upfront auction payments for future auctions are to be deposited in the U.S. Treasury.⁸⁴ Accordingly, upfront payments for Auctions 101 and 102 will be deposited in the U.S. Treasury.⁸⁵

Example: Upfront Payments, Bidding Eligibility, and Bidding Flexibility			
County	State	Bidding Units	Upfront Payment
Tippecanoe	Indiana	73,000	\$73,000
Elkhart	Indiana	84,000	\$84,000

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 157,000 bidding units (73,000 + 84,000) of bidding eligibility. If a bidder only wishes to bid on one, but not both, purchasing 84,000 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 73,000 bidding units, the bidder would have enough eligibility to bid for a license in Tippecanoe County but not for one in Elkhart County.

6. Activity Rule

53. In order to ensure that the auction closes within a reasonable period of time, 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.⁸⁶

54. The Commission proposes to divide the auction into at least two stages, each characterized by a different activity requirement.⁸⁷ The auction will start in Stage One. We propose that the Bureau will have the discretion to advance the auction to the next stage by announcement during the

⁸³ *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 10991, para. 6.

⁸⁴ See Consolidated Appropriations Act, 2018, H.R. 1625, Public Law 115-141, Division P, Title 1 at § 101 (2018).

⁸⁵ See Section V.B.6 (Upfront Payments and Bidding Eligibility), below.

⁸⁶ See Section V.A.7 (Activity Rule Waivers and Reducing Eligibility), below.

⁸⁷ See 47 CFR § 1.2104(f).

auction. In exercising this discretion, we anticipate that the Bureau will consider a variety of measures of auction activity, including but not limited to, the percentage of bidding units associated with licenses on which there are new bids,⁸⁸ the number of new bids, and the increase in revenue. We seek comment on these proposals.

55. We propose the following stages and corresponding activity requirements:

Stage One: In each round of the first stage of the auction, a bidder desiring to maintain its current bidding eligibility is required to be active on bidding units associated with licenses representing at least 80 percent of its current bidding eligibility. Failure to maintain the required activity level will result in the use of an activity rule waiver or a reduction in the bidder's bidding eligibility for the next round of bidding. During Stage One, a bidder's reduced eligibility for the next round will be calculated by multiplying the bidder's current round activity by five-fourths (5/4).

Stage Two: In each round of the second stage, a bidder desiring to maintain its current bidding eligibility is required to be active on 95 percent of its current bidding eligibility. Failure to maintain the required activity level will result in the use of an activity rule waiver or a reduction in the bidder's bidding eligibility for the next round of bidding. During Stage Two, a bidder's reduced eligibility for the next round will be calculated by multiplying the bidder's current round activity by twenty-nineteenths (20/19).

56. We seek comment on these activity requirements. Under this proposal, the Bureau will also retain the discretion to change the activity requirements during the auction. For example, the Bureau could decide to add an additional stage with a higher activity requirement, not to transition to Stage Two if it believes the auction is progressing satisfactorily under the Stage One activity requirement, or to transition to Stage Two with an activity requirement that is higher or lower than the 95 percent proposed herein.⁸⁹ If the Bureau exercises this discretion, it will alert bidders by announcement in the FCC auction bidding system.

7. Activity Rule Waivers and Reducing Eligibility

57. For our proposed SMR auction format, we propose that when a bidder's activity in the current round is below the required minimum level, it may 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 principally 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.

58. Consistent with recent FCC spectrum auctions, the Commission proposes that each bidder in Auction 101 be provided with three activity rule waivers that may be used as set forth at the bidder's discretion during the course of the auction. The FCC auction bidding system will 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 will 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

⁸⁸ For example, when monitoring activity for determining when to change stages, the Bureau may consider the percentage of bidding units of the licenses receiving new provisionally winning bids, excluding any FCC-held licenses. In past auctions, the Bureau has generally—but not always—changed stages when this measure was approximately 20 percent or below for 3 consecutive rounds of bidding.

⁸⁹ If the Bureau implements stages with activity requirements other than the ones listed above, a bidder's reduced eligibility for the next round will be calculated by multiplying the bidder's current round activity by the reciprocal of the activity requirement. For example, with a 98 percent activity requirement, the bidder's current round activity would be multiplied by 50/49; with a 100 percent activity requirement, the bidder's current round activity would become its bidding eligibility (current round activity would be multiplied by 1/1).

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 will be permanently reduced, possibly curtailing or eliminating the ability to place additional bids in the auction.

59. A bidder with insufficient activity may wish to reduce its bidding eligibility rather than use an activity rule waiver. If so, the bidder must affirmatively 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 cannot regain its lost bidding eligibility.

60. Under the proposed simultaneous stopping rule, 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 withdrawals are permitted in Auction 101), the auction will remain open and the bidder's eligibility will 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 101), or no proactive waiver will not keep the auction open. We seek comment on this proposal.

8. Reserve Price or Minimum Opening Bids

61. Consistent with the statutory mandate of Section 309(j) of the Communications Act of 1934, as amended,⁹⁰ the Commission seeks comment on the use of a minimum opening bid amount and/or reserve price prior to the start of each auction.⁹¹

62. We propose to establish minimum opening bid amounts for Auction 101. The bidding system will not accept bids lower than these amounts. Based on our experience in past auctions, setting minimum opening bid amounts judiciously is an effective tool for accelerating the competitive bidding process.⁹² We do not propose to establish an aggregate reserve price⁹³ or license reserve prices different from minimum opening bid amounts for the licenses to be offered in Auction 101.

63. For Auction 101, we propose to calculate minimum opening bid amounts on a license-by-license basis using a formula based on bandwidth and license area population, similar to our approach in many previous spectrum auctions. We propose to use a calculation based on \$0.002 per MHz-pop.⁹⁴ We seek comment on these minimum opening bid amounts, which are specified in the Attachment A files. If commenters believe that these minimum opening bid amounts will result in unsold licenses or are not reasonable amounts, they should explain why this is so and comment on the desirability of an alternative approach. Commenters should support their claims with valuation analyses and suggested amounts or formulas for reserve prices or minimum opening bids.

⁹⁰ 47 U.S.C. § 309(j)(4)(F); *see also* 47 CFR § 1.2104(c), (d).

⁹¹ *See Implementation of Section 309(j) of the Communications Act—Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Service Licenses et al.*, First Report and Order, 13 FCC Rcd 15920, 15971, para. 134 (1998) (*Broadcast First Report and Order*); *Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures et al.*, Third Report and Order and Second Further Notice of Proposed Rule Making, 13 FCC Rcd 374, 454-56, paras. 139-41 (1997) (*Part 1 Third Report and Order*); *see also* 47 CFR § 1.2104(c), (d).

⁹² *See, e.g., Auction 97 Procedures Public Notice*, 29 FCC Rcd at 8440, para. 193.

⁹³ A reserve price is an amount below which an item, or group of items, may not be won. A reserve price may be higher than the minimum opening bid, or for a group of items, the sum of minimum opening bids.

⁹⁴ The results of these calculations are subject to a minimum of \$200 and will be rounded. *See* note 82 (concerning rounding), above.

64. In establishing minimum opening bid amounts, we particularly seek comment on factors that could reasonably 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.

65. 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.

9. Bid Amounts

66. We propose that, in each round, an eligible bidder will be able to place a bid on a given license in any of up to nine different amounts.⁹⁵ Under this proposal, the FCC auction bidding system interface will list the acceptable bid amounts for each license.

a. Minimum Acceptable Bid Amounts

67. The first of the acceptable bid amounts is called the minimum acceptable bid amount. The minimum acceptable bid amount for a license will be equal to its minimum opening bid amount until there is a provisionally winning bid on the license. 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 that bid amount calculated using the activity-based formula described below. In general, the percentage will be higher for a license receiving many bids than for a license receiving few bids. In the case of a license for which the provisionally winning bid has been withdrawn (if withdrawals are allowed in Auction 101), the minimum acceptable bid amount will equal the second highest bid received for the license.⁹⁶

68. The percentage of the provisionally winning bid used to establish the minimum acceptable bid amount (the additional percentage) is 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.⁹⁷ 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.⁹⁸ We propose to set the weighting factor initially at 0.5, the minimum percentage at 0.1 (10 percent), and the maximum percentage at 0.2 (20 percent). Hence, at these initial settings, the minimum acceptable bid for a license would be between 10 percent and 20 percent 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.

b. Additional Bid Amounts

69. The FCC auction bidding system calculates any additional bid amounts using the minimum acceptable bid amount and an *additional bid increment percentage*. The minimum acceptable

⁹⁵ Bidders must have sufficient eligibility to place a bid on the particular license. See Section V.A.5 (Upfront Payments and Bidding Eligibility), above.

⁹⁶ See Section V.A.11 (Bid Removal and Bid Withdrawal), below.

⁹⁷ 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 is set at 0. See Attachment B (Bid Formula for Auction 101).

⁹⁸ The result will be rounded using the Commission's standard rounding procedures for auctions. See note 82 (concerning rounding), above.

bid amount is multiplied by the additional bid increment percentage, and that result (rounded⁹⁹) is the *additional increment amount*. The first additional acceptable bid amount equals the minimum acceptable bid amount plus the additional increment amount. The second additional acceptable bid amount equals the minimum acceptable bid amount plus two times the additional increment amount; the third additional acceptable bid amount is the minimum acceptable bid amount plus three times the additional increment amount; etc. We propose to set the additional bid increment percentage at five percent initially. Hence, the calculation of the additional increment amount would be (minimum acceptable bid amount) * (0.05), rounded. We seek comment on this proposal.

c. Bid Amount Changes

70. We propose that the Bureau 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 the Bureau determines that circumstances so dictate. Further, we propose that the Bureau retain the discretion to do so on a license-by-license basis. We also propose for the Bureau to 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, the Bureau could set a \$100,000 limit on increases 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 is \$200,000 higher than the provisionally winning bid on a license, the minimum acceptable bid amount would instead be capped at \$100,000 above the provisionally winning bid. We seek comment on the circumstances under which the Bureau should employ such a limit, factors the Bureau 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 the Bureau exercises this discretion, it will alert bidders by announcement in the FCC auction bidding system. We seek comment on these proposals.

71. We seek comment on the above proposals, including whether to use the activity-based formula to establish the additional percentage or a different approach. If commenters disagree with the proposal to begin the auction with nine acceptable bid amounts per license, 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.

10. Provisionally Winning Bids

72. The FCC auction bidding system will determine provisionally winning bids consistent with practices in past auctions. At the end of each bidding round, the bidding system will determine a provisionally winning bid for each license based on the highest bid amount received for the license. A provisionally winning bid will 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 Auction 101 become the winning bids.

73. If identical high bid amounts are submitted on a license in any given round (i.e., tied bids), the FCC auction bidding system will use a pseudo-random number generator to select a single provisionally winning bid from among the tied bids.¹⁰⁰ The remaining bidders, as well as the

⁹⁹ See note 82 (concerning rounding), above.

¹⁰⁰ The auction bidding system assigns a pseudo-random number to each bid when the bid is entered. The tied bid with the highest pseudo-random number will become the provisionally winning bid.

provisionally winning bidder, can 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 receives any bids in a subsequent round, the provisionally winning bid again will be determined by the highest bid amount received for the license.

74. A provisionally winning bid will 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 101). As a reminder, for Auction 101, provisionally winning bids count toward activity for purposes of the activity rule.¹⁰¹

11. Bid Removal and Bid Withdrawal

75. The FCC auction bidding system allows 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 effectively “unsubmits” the bid. In contrast to the bid withdrawal provisions described below, a bidder removing a bid placed in the same round is not subject to a withdrawal payment. Once a round closes, a bidder may no longer remove a bid.

76. We seek comment on whether bid withdrawals should be permitted in Auction 101. 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. A bidder would be able to withdraw its provisionally winning bids using the *withdraw* function in the FCC auction bidding system. A bidder that withdraws its provisionally winning bid(s), if permitted, is subject to the bid withdrawal payment provisions of the Commission’s rules.¹⁰²

77. 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.¹⁰³ We have also acknowledged that allowing bid withdrawals may encourage insincere bidding or increase opportunities for undesirable strategic bidding in certain circumstances.¹⁰⁴

78. Applying this reasoning to Auction 101, we propose to allow each bidder 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 will be at the bidder’s discretion, and there is 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).¹⁰⁵

79. We seek comment on this proposal. If commenters disagree with this proposal, 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.

¹⁰¹ See Section V.A.6 (Activity Rule), above.

¹⁰² See 47 CFR §§ 1.2104(g), 1.2109.

¹⁰³ *Part 1 Third Report and Order*, 13 FCC Rcd at 460, para. 150.

¹⁰⁴ *Id.* at 458, para. 148; see also, e.g., *Implementation of the Commercial Spectrum Enhancement Act and Modernization of the Commission’s Competitive Bidding Rules and Procedures*, Report and Order, 21 FCC Rcd 891, 902-03, para. 29 (2006) (*CSEA/Part 1 Report and Order*).

¹⁰⁵ 47 CFR § 1.2104(g); see also *id.* § 1.2109.

B. Auction 102 — 24 GHz**1. Clock Auction Design**

80. We propose to conduct Auction 102 using an ascending clock auction design. Under this proposal, the first phase of the auction will consist of successive clock bidding rounds in which bidders indicate their demands for categories of generic license blocks in specific geographic areas, followed by a second phase with bidding for frequency-specific license assignments.¹⁰⁶ We also direct the Bureau to prepare and release, concurrent with this Public Notice, technical guides that provide the mathematical details of the proposed auction design and algorithms for the clock and assignment phases of Auction 102.¹⁰⁷ The information in the technical guides supplements the proposals in this Public Notice. For bidding in the clock phase, we propose to establish two categories of generic blocks in most PEAs; the first will consist of the two blocks between 24.25–24.45 GHz and the second category will consist of the five blocks between 24.75–25.25 GHz. In a limited number of PEAs, we propose to include one or more additional bidding categories to include any blocks with less than the full 100 megahertz of spectrum due to relocation of the incumbent licensees.

81. Consistent with the clock auction design used in the forward auction portion of the Broadcast Incentive Auction, Auction 1002, our proposed clock auction format would proceed in a series of rounds, with bidding being conducted simultaneously for all spectrum blocks available in the auction. During the clock phase, the Bureau would announce prices for blocks in each category in each geographic area, and qualified bidders would submit quantity bids for the number of blocks they seek. Bidding rounds would be open for predetermined periods of time, during which bidders would indicate their demands for blocks at the clock prices associated with the current round. As in SMR auctions, bidders would be subject to activity and eligibility rules that govern the pace at which they participate in the auction.

82. Under our proposal, in each geographic area, the clock price for a license category would increase from round to round if bidders indicate total demand that exceeds the number of blocks available in the category. The clock rounds would continue until, for all categories of blocks in all geographic areas, the number of blocks demanded does not exceed the supply of available blocks. At that point, those bidders indicating demand for a block in a category at the final clock price would be deemed winning bidders.

83. We expect that using a clock auction format with bidding for generic blocks followed by an assignment phase will considerably speed up Auction 102 relative to a typical FCC SMR auction. The relatively unencumbered nature of the 24 GHz band means that the blocks can be treated as largely interchangeable, or generic, within a bidding category and a PEA. Bidding for generic blocks in the clock phase rather than for multiple frequency-specific licenses greatly reduces auction duration since bidders no longer need to iteratively bid on the least expensive of several specific but substitutable licenses, as in an SMR auction. An assignment phase allows winners of generic blocks the opportunity to bid for specific frequency assignments. Given the number of licenses being offered in Auction 102 and the generic nature of the licenses, we believe that the time savings of a clock auction relative to an SMR auction will offer significant benefits to bidders and the Commission, and enable the 24 GHz band spectrum to be put to effective use more quickly. In particular, speeding up the auction will reduce the cost of bidder participation, which typically involves internal and external staff resources dedicated to auction monitoring and strategy, as well as the opportunity costs of foregoing communications and arrangements that otherwise would be permitted outside of the “quiet period” under our Part 1 rules.

¹⁰⁶ See Section V.B.12 (Assignment Phase), below.

¹⁰⁷ The *Clock Phase Technical Guide* details proposals for the clock phase of Auction 102. The *Assignment Phase Technical Guide* details proposals for the assignment phase.

84. We seek comment on this proposal and on alternative approaches to conducting, in a timely manner, an auction of 24 GHz licenses.

2. Determining Categories of Generic Blocks for Bidding

85. The *2017 Spectrum Frontiers Order* determined that the 24 GHz band would be licensed uniformly in 100 megahertz blocks, with the lower segment (24.25–24.45 GHz) licensed as two 100 megahertz blocks, and the upper segment (24.75–25.25) as five 100 megahertz blocks, in each of 416 PEAs.¹⁰⁸ Given the 300 megahertz separation between the two segments of the band, we propose to conduct bidding in most PEAs in the clock phase of Auction 102 for generic blocks in two categories. Under our proposal, there will be two generic blocks in the lower 24 GHz segment (Category L) and five generic blocks in the upper 24 GHz segment (Category U). In nine PEAs, an incumbent licensee will be relocated to part of one, and potentially two, 100 megahertz blocks, leaving those blocks with less available bandwidth to be licensed in the auction. Therefore, we propose to include an additional bidding category, or potentially two additional bidding categories, to accommodate any blocks with reduced bandwidth. We anticipate that a reduced-bandwidth block will be located in the upper block of the lower segment and a possible second reduced block will be in the uppermost block of the upper segment. The bidding categories for these blocks will be referred to as Category LI and Category UI, respectively.

86. Accordingly, in each round of the clock phase, a bidder will have the opportunity to bid for up to two blocks of spectrum in Category L and for up to five blocks in Category U, in each of 407 PEAs. In nine PEAs, bidders may bid for one fewer block in either Category L or Category U (and possibly in both categories), and for one block in Category LI and/or UI. Bidding in the auction will determine a single price for all of the generic blocks in each category in each PEA. Winners of generic blocks in the clock phase will then have the opportunity to bid for specific frequency license assignments during the assignment phase of the auction.

87. We seek comment on our proposal to conduct bidding in two categories of generic blocks, corresponding to the two segments of the band, in the unencumbered PEAs during the clock phase of the auction. We also seek comment on conducting bidding on an additional category or categories when a block in a PEA has less than 100 megahertz of bandwidth. Is there a minimum number of megahertz below which we should not offer a block? If there is a reduced bandwidth block in the lower segment of the band and another in the upper segment of the band, should we include both blocks in a single category, instead of our proposal to create a separate category for each? Commenters that believe we should instead conduct bidding for a single category of generic blocks in the unencumbered PEAs, or for more than two categories, should explain their reasoning and address issues of auction length and bidder manageability.

3. Bidding Rounds

88. Under this proposal, Auction 102 will consist of sequential bidding rounds, each followed by the release of round results. The initial bidding schedule will be announced in a public notice to be released at least one week before the start of bidding.

89. The Commission will conduct Auction 102 over the Internet using the FCC auction bidding system. Bidders will also have the option of placing bids by telephone through a dedicated auction bidder line. The toll-free telephone number for the auction bidder line will be provided to qualified bidders prior to the start of bidding in the auction.

90. The Commission proposes that the Bureau 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. Under this proposal, the Bureau may change the amount of time for bidding rounds, the amount of time between rounds, or the number of rounds per day,

¹⁰⁸ See *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 10998, 11000, paras. 27-28, 34.

depending upon bidding activity and other factors. The Commission seeks comment on this proposal. 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.

4. Stopping Rule

91. We propose a simultaneous stopping rule for Auction 102, under which all categories of licenses in all PEAs would remain available for bidding until the bidding stops on every category.¹⁰⁹ Specifically, we propose that the clock phase of bidding will close for all categories of blocks after the first round in which there is no excess demand in any category in any PEA. Consequently, under this approach, it is not possible to determine in advance how long Auction 102 would last. We seek comment on our proposed simultaneous stopping rule.

5. Information Relating to Auction Delay, Suspension, or Cancellation

92. For Auction 102, we propose that at any time before or during the bidding process, the Bureau may delay, suspend, or cancel bidding in Auction 102 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.¹¹⁰ The Bureau will 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, the Bureau may, in its sole discretion, elect to resume the auction starting from the beginning of the current round or from some previous round, or cancel the auction in its entirety. We emphasize that the Bureau will exercise this authority solely at its discretion. We seek comment on this proposal.

6. Upfront Payments and Bidding Eligibility

93. 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.¹¹¹ As described below, the upfront payment is a refundable deposit made by an applicant to establish its eligibility to bid on licenses. Upfront payments that are related to the inventory of licenses being auctioned 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.¹¹² With these considerations in mind, the Commission proposes upfront payments based on \$0.001 per MHz-pop.¹¹³ The proposed upfront payments equal approximately half the proposed minimum opening bids, which are established as described in Section V.B.8.a, below. We seek comment on these upfront payment amounts, which are specified in the Attachment A files.

¹⁰⁹ The Commission has discretion to establish stopping rules before or during multiple round auctions in order to complete the auction within a reasonable time. 47 CFR § 1.2104(e); *see also, e.g., Auction 97 Procedures Public Notice*, 29 FCC Rcd at 8434-36, paras. 172-78; *H Block Procedures Public Notice*, 28 FCC Rcd at 13061, paras. 161-63.

¹¹⁰ *See* 47 CFR § 1.2104(i).

¹¹¹ *See id.* § 1.2106.

¹¹² *See Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2377-79, paras. 169-76. 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 percent more than the amount that otherwise would be required." 47 CFR § 1.2106(a).

¹¹³ The results of these calculations will be rounded using the Commission's standard rounding procedures for auctions. *See* note 82 (concerning rounding), above. Additionally, the proposed upfront payment amount for Gulf of Mexico licenses is \$1,000.

94. The Commission further proposes that the amount of the upfront payment submitted by a bidder will determine its initial bidding eligibility in bidding units, which are a measure of bidder eligibility and bidding activity. We propose to assign each PEA a specific number of bidding units, equal to one bidding unit per dollar of the upfront payment listed in Attachment A. The number of bidding units for a given PEA is fixed and does not change during the auction as prices change. The bidding unit amount assigned to a specific PEA will pertain to a single generic block for that PEA. To the extent that bidders wish to bid on multiple generic blocks simultaneously, they will need to ensure that their upfront payment provides enough eligibility to cover multiple blocks. Under this proposed approach to calculating bidding units, the generic Category L and Category U blocks in a PEA will be assigned the same number of bidding units, which will facilitate bidding across categories. Any Category LI and Category UI blocks in a PEA will be assigned proportionally fewer bidding units than the 100 megahertz blocks.

95. Under our proposed approach, a bidder's upfront payment will not be attributed to blocks in a specific PEA or PEAs. If an applicant is found to be qualified to bid on more than one block being offered in Auction 102, such bidder may place bids on multiple blocks, provided that the total number of bidding units associated with those blocks does not exceed its current eligibility. A bidder cannot increase its eligibility during the auction; it can only maintain its eligibility or decrease its eligibility. Thus, in calculating its upfront payment amount and hence its initial bidding eligibility, an applicant must determine the maximum number of bidding units on which it may wish to bid in any single round, and submit an upfront payment amount covering that total number of bidding units. We seek comment on these proposals.

96. For Auction 102, we anticipate setting a deadline for the submission of upfront payments that will occur after bidding in Auction 101 concludes even if the Auction 102 auction application window is scheduled to occur prior to the close of bidding in Auction 101. Under this approach, an Auction 102 applicant that participated in Auction 101 could take into account the licenses it won in Auction 101 when determining the amount of its upfront payment. We seek comment on the anticipated timing for upfront payments for Auction 102.

7. Activity Rule, Activity Rule Waivers, and Reducing Eligibility

97. In order to ensure that the auction closes within a reasonable period of time, an activity rule requires bidders to bid actively throughout the auction, rather than wait until late in the auction before participating. For a clock auction, a bidder's activity in a round for purposes of the activity rule will be the sum of the bidding units associated with the bidder's demands as applied by the auction system during bid processing. 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 a reduction in the bidder's eligibility, possibly curtailing or eliminating the bidder's ability to place additional bids in the auction.

98. We propose to require that bidders maintain a fixed, high level of activity in each round of Auction 102 in order to maintain bidding eligibility. Specifically, we propose to require that bidders be active on between 92 and 97 percent of their bidding eligibility in all regular clock rounds. Thus, the activity rule would be satisfied when a bidder has bidding activity on blocks with bidding units that total 92 to 97 percent of its current eligibility in the round. If the activity rule is met, then the bidder's eligibility does not change in the next round. We propose to calculate bidding activity based on the bids that are accepted by the FCC auction bidding system. That is, if a bidder requests a reduction in the quantity of blocks it demands in a category, but the FCC auction bidding system does not accept the request because demand for the category would fall below the available supply, the bidder's activity will

reflect its unreduced demand.¹¹⁴ If the activity rule is not met in a round, a bidder's eligibility automatically would be reduced. Under our proposal, the Bureau will retain the discretion to change the activity requirements during the auction.

99. We invite comment on this proposal, in particular on where to set the activity requirement between 92 and 97 percent. Commenters may wish to address the relationship between the proposed activity rule and the ability of bidders to switch their demands across PEAs or across categories of blocks within a PEA.¹¹⁵ We encourage any commenters that oppose an activity rule in this range to explain their reasons with specificity.

100. We point out that under our proposed clock auction, bidders are required to indicate their demands in every round, even if their demands at the new round's prices are unchanged from the previous round. Missing bids—bids that are not reconfirmed—are treated by the auction bidding system as requests to reduce to a quantity of zero blocks for the category. If these requests are applied, or applied partially, a bidder's bidding activity, and hence its bidding eligibility for the next round, will be reduced.

101. For Auction 102, we do not propose to provide for activity rule waivers to preserve a bidder's eligibility. This proposal is consistent with the ascending clock auction procedures used in Auction 1002.¹¹⁶ In previous FCC multiple round auctions, when a bidder's eligibility in the current round was below a required minimum level, the bidder was able to preserve its current level of eligibility with a limited number of activity rule waivers.¹¹⁷ The clock auction, however, relies on precisely identifying the point at which demand falls to equal supply to determine winning bidders and final prices. Allowing waivers would create uncertainty with respect to the exact level of bidder demand, interfering with the basic clock price-setting and winner determination mechanism. Moreover, uncertainty about the level of demand would affect the way bidders' requests to reduce demand are processed by the FCC auction bidding system, as discussed below.¹¹⁸ We seek comment on this proposal.

8. Acceptable Bids

a. Reserve Price or Minimum Opening Bids

102. Consistent with the statutory mandate of Section 309(j) of the Communications Act of 1934, as amended,¹¹⁹ we seek comment on the use of a minimum opening bid amount and/or reserve price prior to the start of each auction.¹²⁰

103. We propose to establish minimum opening bid amounts for Auction 102. The bidding system will not accept bids lower than these amounts. Based on our experience in past auctions, setting minimum opening bid amounts judiciously is an effective tool for accelerating the competitive bidding process.¹²¹ At the beginning of the clock phase, a bidder will indicate how many blocks in a generic license category in a PEA it demands at the minimum opening bid price. For Auction 102, we propose to establish initial clock prices, or minimum opening bids, as set forth in the following paragraph. We do

¹¹⁴ See Section V.B.9 (Reducing Demand, Bid Types, and Bid Processing), below (proposing that the auction system not allow a bidder to reduce the quantity of blocks it demands in a category if the reduction will result in aggregate demand falling below the available supply of licenses in the category).

¹¹⁵ See Section V.B.9 (Reducing Demand, Bid Types, and Bid Processing), below.

¹¹⁶ See *Auction 1000 Bidding Procedures Public Notice*, 30 FCC Rcd at 9077, para. 213.

¹¹⁷ See, e.g., *H Block Procedures Public Notice*, 28 FCC Rcd at 13060, paras. 157-60.

¹¹⁸ See Section V.B.9 (Reducing Demand, Bid Types, and Bid Processing), below.

¹¹⁹ 47 U.S.C. § 309(j)(4)(F); see also 47 CFR § 1.2104(c), (d).

¹²⁰ See *Broadcast First Report and Order*, 13 FCC Rcd at 15971, para. 134; *Part 1 Third Report and Order*, 13 FCC Rcd at 454-56, paras. 139-41; see also 47 CFR § 1.2104(c), (d).

¹²¹ See, e.g., *Auction 97 Procedures Public Notice*, 29 FCC Rcd at 8440, para. 193.

not propose to establish an aggregate reserve price¹²² or block reserve prices that are different from minimum opening bid amounts for the licenses to be offered in Auction 102.

104. For Auction 102, we propose to calculate minimum opening bid amounts using a formula based on bandwidth and license area population, similar to our approach in many previous spectrum auctions. Accordingly, blocks with less than the full 100 megahertz of bandwidth would have lower minimum opening bid amounts than the other blocks in a PEA. We propose to use a calculation based on \$.002 per MHz-pop.¹²³ We seek comment on these minimum opening bid amounts, which are specified in the Attachment A files. If commenters believe that these minimum opening bid amounts will result in unsold licenses, are not reasonable amounts, or should instead operate as reserve prices, they should explain why this is so and comment on the desirability of an alternative approach. Commenters should support their claims with valuation analyses and suggested amounts or formulas for reserve prices or minimum opening bids.

105. In establishing minimum opening bid amounts, we particularly seek comment on factors that could reasonably 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.

106. 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.

b. Clock Price Increments

107. Under our proposed clock auction format for Auction 102, after bidding in the first round and before each subsequent round, the FCC auction bidding system will announce a clock price for the next round, which is the highest price to which bidders can respond during the round. We propose to set the clock price for each category available in each specific PEA for a round by adding a fixed percentage increment to the price for the previous round.¹²⁴ As long as total demand for blocks in a category exceeds the supply of blocks, the percentage increment will be added to the clock price from the prior round. If demand equaled supply at an intra-round bid price in a previous round, then the clock price for the next round will be set by adding the percentage increment to the intra-round bid price.¹²⁵

108. We propose to apply an increment that is between five and fifteen percent and generally to apply the same increment percentage to all categories in all PEAs. We propose to set the initial increment within this range, and to adjust the increment as rounds continue. The proposed five-to-fifteen percent increment range will allow the FCC to set a percentage that manages the auction pace, taking into account bidders' needs to evaluate their bidding strategies while moving the auction along quickly. We also propose that increments may be changed during the auction on a PEA-by-PEA or category-by-category basis based on bidding activity to assure that the system can offer appropriate price choices to bidders.

c. Intra-Round Bids

109. We propose to permit a bidder to make intra-round bids by indicating a point between the

¹²² A reserve price is an amount below which an item, or group of items, may not be won. A reserve price may be higher than the minimum opening bid, or for a group of items, the sum of minimum opening bids.

¹²³ See note 82 (concerning rounding), above. Additionally, the minimum opening bid amount for Gulf of Mexico licenses is \$1,000.

¹²⁴ For example, if the price for the first round is \$10, and the price increment is 20 percent, the clock price for the second round will be \$12.

¹²⁵ Final clock prices, however, will not increase above the price at which there is no excess demand.

previous round's price and the new clock price at which its demand for blocks in a category changes. In placing an intra-round bid, a bidder would indicate a specific price and a quantity of blocks it demands if the price for blocks in the category should increase beyond that price.

110. Intra-round bids would be optional; a bidder may choose to express its demands only at the clock prices. This proposal to permit intra-round bidding would allow the auction system to use relatively large clock increments, thereby speeding the clock phase, without running the risk that a jump in the clock price will overshoot the market clearing price—the point at which demand for blocks equals the available supply.

9. Reducing Demand, Bid Types, and Bid Processing

111. Here we propose specific bidding procedures for the clock phase of Auction 102, and address how the FCC auction bidding system will process the proposed types of permitted bids.¹²⁶ As an initial matter, we propose that the FCC auction bidding system not allow a bidder to reduce the quantity of blocks it demands in a category if the reduction will result in aggregate demand falling below the available supply of blocks in the category.

112. Under the ascending clock format we propose for Auction 102, a bidder will indicate in each round the quantity of blocks in each category in each PEA that it demands at a given price, indicating that it is willing to pay up to that price for the specified quantity.¹²⁷ A bidder can express its demands at the clock price or at an intra-round price, and bid quantities can represent an increase or a decrease over the bidder's previous demands for blocks in a category.

113. Under our proposal, if a bidder demands fewer blocks in a category than it did in the previous round, the FCC auction bidding system will treat the bid as a request to reduce demand that will be implemented only if aggregate demand would not fall below the available supply of blocks in the category.

114. We also propose to process bids in order of price point after a round ends, where the price point represents the percentage of the bidding interval for the round.¹²⁸ Under this proposal, once a round ends, the FCC auction bidding system will process bids in ascending order of price point, first considering intra-round bids in order of price point and then bids at the clock price. The system will consider bids at the lowest price point for all categories in all PEAs, then look at bids at the next price point in all areas, and so on. In processing the bids submitted in the round, the FCC auction bidding system will determine the extent to which there is excess demand for each category in each PEA in order to determine whether a bidder's requested change(s) in demand can be implemented.

115. For a given category in a given PEA, the uniform price for all of the blocks in the category will stop increasing when aggregate demand no longer exceeds the available supply of blocks in the category. If no further bids are placed, the final clock phase price for the category will be the stopped price.¹²⁹

116. In order to facilitate bidding for multiple blocks in a PEA, we propose that bidders will be permitted to make two types of bids: simple bids and switch bids.

¹²⁶ Complete Auction 102 clock phase bid types and bid processing details are provided in the *Clock Phase Technical Guide*.

¹²⁷ For example, a bidder may indicate that it demands two blocks in Category U in a given PEA.

¹²⁸ For example, if the price for the previous round is \$5,000 and the new clock price is \$6,000, a price of \$5,100 will correspond to the 10 percent price point, since it is 10 percent of the bidding interval between \$5,000 and \$6,000.

¹²⁹ This and other Auction 102 bid processing details are addressed in the *Clock Phase Technical Guide*.

- A “simple” bid indicates a desired quantity of licenses in a category at a price (either the clock price or an intra-round price). Simple bids may be applied partially. A simple bid that involves a reduction from the bidder’s previous demands may be implemented partially if aggregate excess demand is insufficient to support the entire reduction. A simple bid to increase a bidder’s demands in a category may be applied partially if the total number of bidding units associated with the bidder’s demand exceeds the bidder’s bidding eligibility for the round.
- A “switch” bid allows the bidder to request to move its demand for a quantity of licenses from the L category to the U category, or vice versa, within the same PEA.¹³⁰ A switch bid may be applied partially, but the increase in demand in the “to” category will always match in quantity the reduction in the “from” category.

117. The proposed bid types will allow bidders to express their demand for blocks in the next clock round without running the risk that they will be forced to purchase more spectrum at a higher price than they wish. When a bid to reduce demand can be applied only partially, the uniform price for the category will stop increasing at that point, since the partial application of the bid results in demand falling to equal supply. Hence, a bidder that makes a simple bid or a switch bid that cannot be fully applied will not face a price for the remaining demand that is higher than its bid price.

118. Because in any given round some bidders may increase demands for licenses in a category while others may request reductions, the price point at which a bid is considered by the auction bidding system can affect whether it is accepted. In addition to proposing that bids be considered by the system in order of increasing “price point,” we further propose that bids not accepted because of insufficient aggregate demand or insufficient eligibility be held in a queue and considered, again in order, if there should be excess supply or sufficient eligibility later in the processing after other bids are processed.

119. More specifically, under our proposed procedures, once a round closes, the auction system will process the bids by first considering the bid submitted at the lowest price point and determine whether it can be accepted given aggregate demand as determined most recently and given the associated bidder’s eligibility. If the bid can be accepted, or partially accepted, the number of licenses the bidder demands will be adjusted, and aggregate demand will be recalculated accordingly. If the bid cannot be accepted in part or in full, the unfulfilled bid, or portion thereof, will be held in a queue to be considered later during bid processing for that round. The FCC auction bidding system will then consider the bid submitted at the next highest price point, accepting it in full, in part, or not at all, given recalculated aggregate demand and given the associated bidder’s eligibility. Any unfulfilled requests will again be held in a queue, and aggregate demand will again be recalculated. Every time a bid or part of a bid is accepted and aggregate demand has been recalculated, the unfulfilled bids held in queue will be reconsidered, in the order of their original price points (and by pseudo-random number, in the case of tied price points). The auction bidding system will not carry over unfulfilled bid requests to the next round, however. The bidding system will advise bidders of the status of their bids when round results are released.

120. After the bids are processed in each round, the FCC auction bidding system will announce new clock prices to indicate a range of acceptable bids for the next round. Each bidder will be informed of the number of blocks in a category on which it holds bids, the extent of excess demand for each category, and, if demand fell to equal supply during the round, the intra-round price point at which that occurred.¹³¹

¹³⁰ Switch bids may not include a block in Category LI or UI.

¹³¹ As discussed above, we propose that if there is excess demand, a fixed percentage increment will be added to the clock price for the previous round, and this percentage will be the same for all categories in all PEAs. However, if
(continued...)

121. *No Bidding Aggregation.* Because of the additional complexity such procedures would introduce into the auction, we do not propose to incorporate any package bidding procedures into Auction 102. A bidder may bid on multiple blocks in a PEA and in multiple PEAs. As set forth below, we propose that the assignment phase will assign contiguous blocks to winners of multiple blocks in a category in a PEA, and give bidders an opportunity to express their preferences for specific frequency blocks, thereby facilitating aggregations of licenses.

122. We seek comment on our proposals regarding reducing demand, bid types, and bid processing for Auction 102.

10. Winning Bids in the Clock Phase

123. Under our proposed clock auction format for Auction 102, bidders that are still expressing demand for a quantity of blocks in a category in a PEA at the time the stopping rule is met will become the winning bidders, and will be assigned specific frequencies in the assignment phase.

11. Bid Removal and Bid Withdrawal

124. The FCC auction bidding system allows 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 effectively “unsubmits” the bid. Once a round closes, a bidder may no longer remove a bid.

125. Unlike an SMR auction, there are no provisionally winning bids in a clock auction. As a result, the concept of bid withdrawals is inapplicable to a clock auction. As proposed above, however, bidders in Auction 102 may request to reduce demand for generic blocks.¹³²

12. Assignment Phase

126. We propose procedures to implement the assignment phase, for which the *Assignment Phase Technical Guide* provides the mathematical details. Under our proposal, winning bidders from the clock phase that have a preference for specific frequencies will have an opportunity to submit sealed bids for particular frequency blocks in a separate single assignment round for each particular PEA or group of PEAs. We propose that this assignment phase be voluntary: winning bidders in the clock phase of Auction 102 need not participate in order to be assigned a number of licenses corresponding to the outcome of the clock phase. Moreover, a bidder that wins multiple blocks in a category in a PEA will be assigned contiguous blocks of licenses, even without participating in the assignment phase.¹³³ We propose to group bidding for multiple PEAs in some circumstances, so as to reduce the number of separate assignment rounds required, and to sequence the bidding for the various PEAs.

127. We seek comment below on this proposed approach to structure bidding and bid processing in each assignment round.

a. Sequencing and Grouping of PEAs

128. We propose to sequence assignment rounds so as to make it easier for bidders to incorporate frequency assignments from previously-assigned areas into their bid preferences for other areas, recognizing that bidders winning multiple blocks of licenses generally will prefer contiguous blocks across adjacent PEAs. To that end, we propose to conduct rounds for the largest markets first to enable bidders to establish a “footprint” from which to work.

(Continued from previous page) _____

in the round, an intra-round bid brings demand down to the point at which it is equal to supply, we propose that the clock increment will be added to that intra-round price. *See* Section V.B.8.c (Intra-Round Bids), above.

¹³² *See* Section V.B.9 (Reducing Demand, Bid Types, and Bid Processing) (discussing how the system will process requests to reduce demand), above.

¹³³ A winner of a block in a category that includes only a single block will not need to bid for an assignment in the assignment phase.

129. Specifically, we propose to conduct a separate assignment round for each of the top 40 PEAs and to conduct these assignment rounds sequentially, beginning with the largest PEAs. Once the top 40 PEAs have been assigned, we propose to conduct, for each Regional Economic Area Grouping (REAG), a series of assignment rounds for the remaining PEAs within that region. We further propose, where feasible, to group into a single market for assignment any non-top 40 PEAs within a region in which the supply of blocks is the same in each category, the same bidders won the same number of blocks in each category, and all are subject to the small markets bidding cap or all not subject to the cap, which will also help maximize contiguity across PEAs. We propose to sequence the assignment rounds within a REAG in descending order of population for a PEA group or individual PEA. We further propose, to the extent practical, to conduct the bidding for the different REAGs in parallel, to reduce the total amount of time required to complete the assignment phase.

130. We seek comment on these proposals for sequencing assignment rounds, and on our proposal to group PEAs for bidding under some circumstances within REAGs.

b. Acceptable Bids and Bid Processing

131. Under our proposal, in each assignment round, a bidder will be asked to assign a price to one or more possible frequency assignments for which it wishes to express a preference, consistent with its winning bid(s) for generic blocks in the clock phase.¹³⁴ The price will represent a maximum payment that the bidder is willing to pay, in addition to the base price established in the clock phase for the generic blocks, for the frequency-specific license or licenses in its bid. We propose that a bidder will submit its preferences for blocks it won in the upper and lower segments separately, rather than submitting bids for preferences that include blocks in both segments. That is, if a bidder won one block in the lower segment and two blocks in the upper segment, it would not be able to submit a single bid amount for an assignment that included all three blocks. Instead, it would submit its bid for an assignment in the lower segment separately from its bid or bids for assignments in the upper segment.

132. We propose to use an optimization approach to determine the winning frequency assignment for each category in each assignment round. We propose that the auction system will select the assignment that maximizes the sum of bid amounts among all assignments that satisfy the contiguity requirements.¹³⁵ We propose that the additional price a bidder will pay for a specific frequency assignment (above the base price) will be calculated consistent with a generalized “second price” approach—that is, the winner will pay a price that would be just sufficient to result in the bidder receiving that same winning frequency assignment while ensuring that no group of bidders is willing to pay more for an alternative assignment that satisfies the contiguity restrictions.¹³⁶ This price will be less than or equal to the price the bidder indicated it was willing to pay for the assignment. We propose to determine prices in this way because it facilitates bidding strategy for the bidders, encouraging them to bid their full value for the assignment, knowing that if the assignment is selected, they will pay no more than would be necessary to ensure that the outcome is competitive.¹³⁷

133. We seek comment on these proposed procedures. In particular, we ask whether bidders would find it useful to be able to submit a single bid for assignments that include frequencies in the lower segment and frequencies in the upper segment, in cases where the bidder won blocks in both segments.

¹³⁴ The *Assignment Phase Technical Guide* provides mathematical details of this proposal.

¹³⁵ Furthermore, if multiple blocks in Category U in a PEA remain unsold, the unsold licenses will be contiguous.

¹³⁶ The *Assignment Phase Technical Guide* provides mathematical details of this proposal.

¹³⁷ The pricing approach we propose is a version of a Vickrey-Clarke-Groves mechanism. It is described in the *Assignment Phase Technical Guide*.

VI. POST-AUCTION PAYMENTS

A. Interim Withdrawal Payment Percentage

134. In the event the Commission allows bid withdrawals in Auction 101,¹³⁸ the Commission proposes the interim bid withdrawal payment be 15 percent of the withdrawn bid. 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.¹³⁹ 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.¹⁴⁰

135. The amount of the interim bid withdrawal payment is established in advance of bidding in each auction and may range from three percent to twenty percent of the withdrawn bid amount.¹⁴¹ 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.¹⁴² 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.¹⁴³ With respect to the flexible-use UMFUS licenses being offered in Auction 101, the service rules permit a 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 percent of the withdrawn bid for Auction 101.¹⁴⁴ We seek comment on this proposal.

B. Additional Default Payment Percentage

136. 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.¹⁴⁵ 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.

¹³⁸ As discussed above, bid withdrawals are not applicable in a clock auction format. See Section V.B.11 (Bid Removal and Bid Withdrawal), above.

¹³⁹ 47 CFR § 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.*

¹⁴⁰ *Id.*

¹⁴¹ *Id.*, amended by *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 903-04, paras. 30-32.

¹⁴² *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 903-04, para. 31.

¹⁴³ *Id.* at 904, para. 31 n.57.

¹⁴⁴ See, e.g., *H Block Procedures Public Notice*, 28 FCC Rcd at 13071, para. 203 (adopting an interim bid withdrawal payment of 15 percent of the withdrawn bid).

¹⁴⁵ 47 CFR § 1.2104(g)(2).

137. The Commission's rules provide that, in advance of each auction, it will establish a percentage between three and twenty percent of the applicable winning bid to be assessed as an additional default payment.¹⁴⁶ 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.¹⁴⁷

138. For Auctions 101 and 102, the Commission proposes to establish an additional default payment of 15 percent.¹⁴⁸ 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 percent will be more effective in deterring defaults than the 3 percent used in some earlier auctions.¹⁴⁹ At the same time, we do not believe the detrimental effects of any defaults in Auctions 101 and 102 are likely to be unusually great. In light of these considerations, the Commission proposes for Auctions 101 and 102 an additional default payment of 15 percent of the relevant bid. The Commission seeks comment on this proposal.

139. In case they are needed for post-auction administrative purposes, the bidding system will calculate individual per-license prices that are separate from final auction payments, which are calculated on an aggregate basis. The bidding system will apportion to individual licenses any assignment phase payments and any capped bidding credit discounts,¹⁵⁰ since in both cases, a single amount may apply to multiple licenses.¹⁵¹

VII. TUTORIAL AND ADDITIONAL INFORMATION FOR APPLICANTS

140. The Commission intends to provide additional information on the bidding system and to offer demonstrations and other educational opportunities for applicants in Auction 101 and 102 to familiarize themselves with the FCC auction application system and the auction bidding system. For example, the Commission intends to release an online tutorial for each auction that will help applicants understand the procedures to be followed in the filing of their auction short-form applications (FCC Form 175) for Auctions 101 and 102, respectively.

¹⁴⁶ *Id.* § 1.2104(g)(2)(ii).

¹⁴⁷ *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 903-04, paras. 31.

¹⁴⁸ *See, e.g., Auction 97 Procedures Public Notice*, 29 FCC Rcd at 8451, para. 240 (adopting an additional default payment of 15 percent); *H Block Procedures Public Notice*, 28 FCC Rcd at 13073-74, para. 218 (adopting an additional default payment of 15 percent).

¹⁴⁹ *CSEA/Part 1 Report and Order*, 21 FCC Rcd at 902-03, para 29.

¹⁵⁰ *See* Section III.E (Bidding Credit Caps), above.

¹⁵¹ For additional details, see Section 8 of the Assignment Phase Technical Guide (Post-Auction per-License Price Calculations).

VIII. PROCEDURAL MATTERS

A. Supplemental Initial Regulatory Flexibility Analysis

141. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹⁵² the Commission has 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 *Spectrum Frontiers Orders* and other Commission orders pursuant to which Auctions 101 and 102 will be conducted.¹⁵³ 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. The Commission will send a copy of this Public Notice, including this Supplemental IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).¹⁵⁴ In addition, this Public Notice and Supplemental IRFA (or summaries thereof) will be published in the *Federal Register*.¹⁵⁵

1. Need for, and Objectives of, the Proposed Rules

142. This Public Notice seeks comment on proposed procedural rules to govern Auctions 101 and 102, two auctions of 5,986 Upper Microwave Flexible Use Service (UMFUS) licenses. This process is intended to provide notice of and adequate time for potential applicants to comment on proposed auction procedures.¹⁵⁶ To promote the efficient and fair administration of the competitive bidding process for all Auction 101 and Auction 102 participants, the Commission seeks comment on the following proposed procedures:

- use of separate application and bidding processes for Auctions 101 and 102, including separate application filing windows;
- application of the current rules prohibiting certain communications among applicants in the same auction (i.e., Auction 101 or Auction 102), and between Auction 101 applicants and Auction 102 applicants;
- identification of “nationwide providers” for the purpose of implementing the Commission’s competitive bidding rules in Auctions 101 and 102;
- establishment of bidding credit caps for eligible small businesses and rural service providers in Auctions 101 and 102;
- use of a simultaneous multiple-round auction format for Auction 101, consisting of sequential bidding rounds with a simultaneous stopping rule (with discretion by the Bureau to exercise alternative stopping rules under certain circumstances);
- use of a clock auction format for Auction 102 under which each qualified bidder will indicate in successive clock bidding rounds its demands for categories of generic blocks in specific geographic areas;

¹⁵² 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

¹⁵³ *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, Notice of Proposed Rulemaking, 30 FCC Rcd 11878, 11997-12003, Appx. B (2015); *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8234-42, 8262-69, Appendices E, H; *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11087-96, 11107-11, Appendices C, D, F.

¹⁵⁴ *See* 5 U.S.C. § 603(a).

¹⁵⁵ *See id.*

¹⁵⁶ *See* 47 U.S.C. § 309(j)(3)(E)(i) (requiring the Commission to seek comment on auction procedures).

- a specific minimum opening bid amount for each license available in Auction 101 and for generic blocks in each PEA available in Auction 102;
- a specific upfront payment amount for each license available in Auction 101 and for generic blocks in each PEA available in Auction 102;
- establishment of a bidder's initial bidding eligibility in bidding units based on that bidder's upfront payment through assignment of a specific number of bidding units for each license (Auction 101) or generic block (Auction 102);
- 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;
- for Auction 101, a two-stage auction in which a bidder is required to be active on 80 percent of its bidding eligibility in each round of the first stage, and on 95 percent of its bidding eligibility in each round of the second stage;
- for Auction 102, a requirement that bidders be active on between 92 and 97 percent of their bidding eligibility in all regular clock rounds;
- for Auction 101, provision of three activity rule waivers for each bidder to allow it to preserve eligibility during the course of the auction;
- for Auction 101, use of minimum acceptable bid amounts and additional bid increments, along with a proposed methodology for calculating such amounts, with the Bureau retaining discretion to change its methodology if circumstances dictate;
- for Auction 102, establishment of acceptable bid amounts, including clock price increments and intra-round bids, along with a proposed methodology for calculating such amounts;
- for Auction 102, use of two bid types, along with a proposed methodology for processing bids and requests to reduce demand;
- for Auction 101, 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;
- for Auction 102, establishment of an assignment phase that will determine which frequency-specific licenses will be won by the winning bidders of generic blocks during the clock phase;
- establishment of an interim bid withdrawal percentage of 15 percent of the withdrawn bid in the event the Commission allows bid withdrawals in Auction 101; and
- establishment of an additional default payment of 15 percent under Section 1.2104(g)(2) of the rules in the event that a winning bidder defaults or is disqualified after either auction.

2. Legal Basis

143. 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 auction program in 1994 and would conduct Auctions 101 and 102.¹⁵⁷

3. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

144. 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.¹⁵⁸ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”¹⁵⁹ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.¹⁶⁰ 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.¹⁶¹

145. As noted above, FRFAs were incorporated into the *Spectrum Frontiers Orders*. 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 FRFAs in the *Spectrum Frontiers Orders*.¹⁶²

4. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

146. The Commission designed the auction application process itself to minimize reporting and compliance requirements for applicants, including small business 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.¹⁶³ 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.

¹⁵⁷ See generally 47 CFR Part 1, Subpart Q; see also 47 CFR §§ 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*, Notice of Proposed Rule Making, 8 FCC Rcd 7635, 7666, Appx (1993); *Amendment of Part 1 of the Commission’s Rules—Competitive Bidding Proceeding*, Order, Memorandum Opinion and Order and Notice of Proposed Rule Making, 12 FCC Rcd 5686, 5749-53, Appx. C (1997); *2015 Part 1 Report and Order*, 30 FCC Rcd at 7613-28, Appx. B. In addition, multiple Final Regulatory Flexibility Analyses (FRFAs) were included in the rulemaking orders which adopted or amended rule provisions relevant to this Public Notice. See *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8234-42, Appx. E; *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11087-96, Appendices C, D.

¹⁵⁸ 5 U.S.C. § 603(b)(3).

¹⁵⁹ *Id.* § 601(6).

¹⁶⁰ *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.”

¹⁶¹ 15 U.S.C. § 632.

¹⁶² *2016 Spectrum Frontiers Order*, 31 FCC Rcd at 8234-42, Appx. E; *2017 Spectrum Frontiers Order*, 32 FCC Rcd at 11087-96, Appendices C, D.

¹⁶³ See *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2376-77, paras. 163-66.

5. Steps taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

147. 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.”¹⁶⁴

148. The Commission has taken steps to minimize any economic impact of its auction procedures on small businesses through among other things, the many resources it provides potential auction participants. 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 business 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 utilize the web-based, interactive online tutorial produced by Commission staff for each auction to familiarize themselves with auction procedures, filing requirements, bidding procedures, and other matters related to an auction.

149. The Commission also makes 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 businesses to conduct research prior to and throughout the auction. Prior to and at the close of Auctions 101 and 102, the Commission will post public notices on the Auctions website, which articulate the procedures and deadlines for the respective auctions. The Commission makes this information easily accessible and without charge to benefit all Auction 101 and Auction 102 applicants, including small businesses, thereby lowering their administrative costs to comply with the Commission’s competitive bidding rules.

150. Prior to the start of bidding in each auction, eligible bidders are given an opportunity to become familiar with auction procedures and the bidding system by participating in a mock auction. Further, the Commission intends to conduct Auctions 101 and 102 electronically over the Internet using its 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 101 and Auction 102 by all eligible bidders, and may result in significant cost savings for small business entities who utilize these alternatives. Moreover, the adoption of bidding procedures in advance of the auctions, consistent with statutory directive, is designed to ensure that the auctions will be administered predictably and fairly for all participants, including small businesses.

151. For Auction 101 and Auction 102, we propose a \$25 million cap on the total amount of bidding credits that may be awarded to an eligible small business and a \$10 million cap on the total amount of bidding credits that may be awarded to a rural service provider in each auction. In addition, we propose a \$10 million cap on the overall amount of bidding credits that any winning small business bidder in either auction may apply to winning licenses in markets with a population of 500,000 or less. Based on the technical characteristics of the UMFUS bands and our analysis of past auction data, we anticipate that our proposed caps will allow the majority of small businesses in each auction to take full advantage of the bidding credit program, thereby lowering the relative costs of participation for small businesses.

¹⁶⁴ 5 U.S.C. § 603(c)(1)-(4).

152. These proposed procedures for the conduct of Auction 101 and 102 constitute the more specific implementation of the competitive bidding rules contemplated by Parts 1 and 30 of the Commission's rules and the underlying rulemaking orders, including the *Spectrum Frontiers Orders* and relevant competitive bidding orders, and are fully consistent therewith.¹⁶⁵

6. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

153. None.

B. Deadlines and Filing Procedures

154. Pursuant to Sections 1.415 and 1.419 of the Commission's rules,¹⁶⁶ 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. 18-85. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies.¹⁶⁷ We strongly encourage interested parties to file comments electronically, and to specify the particular auction(s) (i.e., Auction 101 and/or Auction 102) to which their comments are directed.

- *Electronic Filers:* Comments may be filed electronically using the Internet by accessing the ECFS at <http://www.fcc.gov/cgb/ecfs>.
- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the captions of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

155. Filings in response to this Public Notice may be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th Street, SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. Eastern Time (ET). All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.
- Commercial overnight mail (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 445 12th Street, SW, Washington, DC 20554.

156. *E-mail:* We also request that a copy of all comments and reply comments be submitted electronically to the following address: auction101-102@fcc.gov.

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

158. This proceeding has been designated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.¹⁶⁸ Persons making oral *ex parte* presentations must file a copy of

¹⁶⁵ See generally *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2360-75, paras. 68-159.

¹⁶⁶ 47 CFR §§ 1.415, 1.419.

¹⁶⁷ See generally *Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

¹⁶⁸ See 47 CFR §§ 1.1200(a), 1.1206.

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.

C. Contact Information

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

Broadband Division, Wireless Telecommunications Bureau

Upper Microwave Flexible Use Service (UMFUS) questions: Nancy Zaczek (legal) or Janet Young (technical), at (202) 418-2487

Auctions and Spectrum Access Division, Wireless Telecommunications Bureau

Auction legal questions: Erik Beith or Kathryn Hinton at (202) 418-0660
General auction questions: Auctions Hotline at (717) 338-2868

Office of Communications Business Opportunities

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

Action taken on April 17, 2018: By Chairman Pai and Commissioners O'Rielly, Carr, and Rosenworcel issuing separate statements; Commissioner Clyburn concurring and issuing a statement.

ATTACHMENT A

Summary of Licenses to Be Auctioned

Due to the large number of licenses available in Auctions 101 and 102, the complete lists of licenses and markets available for these auctions will be provided in electronic format only, available as separate “Attachment A” files at www.fcc.gov/auction/101-102.

Auction 101 — 28 GHz License Summary

Block	Frequencies (GHz)	Total Bandwidth	Geographic Area Type	Number of Licenses
1	27.5–27.925	425 megahertz	County*	1,537
2	27.925–28.35	425 megahertz	County*	1,537
Total		850 megahertz		3,074

*Includes two partial counties due to prior partitioning

Auction 101 — Aggregate Bidding Units, Upfront Payments, and Minimum Opening Bids

	Bidding Units	Upfront Payments	Minimum Opening Bids
Per Block	31,462,510	\$31,462,510	\$62,926,300
Total	62,925,020	\$62,925,020	\$125,852,600

Auction 102 — 24 GHz License Summary

Block	Frequencies (GHz)	Total Bandwidth	Geographic Area Type	Number of Licenses
1	24.25–24.35	100 megahertz	PEA	416
2*	24.35–24.45	100 megahertz	PEA	416
3	24.75–24.85	100 megahertz	PEA	416
4	24.85–24.95	100 megahertz	PEA	416
5	24.95–25.05	100 megahertz	PEA	416
6	25.05–25.15	100 megahertz	PEA	416
7*	25.15–25.25	100 megahertz	PEA	416
Total		700 megahertz		2,912

*Includes some markets with incumbents

Auction 102 — Aggregate Bidding Units, Upfront Payments, and Minimum Opening Bids

	Bidding Units	Upfront Payments	Minimum Opening Bids
Per Block	31,283,090	\$31,283,090	\$62,567,600
Total	218,981,630	\$218,981,630	\$437,973,200

ATTACHMENT B

Minimum Acceptable Bid Formula for Auction 101

The following formula used to calculate minimum acceptable bids 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: *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)*, AU Docket No. 18-85.

The recent Winter Olympics included many “firsts.” It was the first Winter Games hosted by South Korea. It was the first time the United States won a gold medal in curling. And most relevant to our work, it was the first Olympics to debut 5G technology, the next generation of wireless connectivity.

The FCC has been working hard to do what we need to do to ensure American leadership in 5G. Last month, we updated our wireless infrastructure rules to make sure that the physical networks of the future can exist. And this month, we turn our attention to 5G’s invisible building blocks by kicking off the spectrum auction process. As I announced in February, the FCC intends to hold in November an auction of spectrum in the 28 GHz band, followed immediately thereafter by an auction of spectrum in the 24 GHz band.

To meet that timeline, we need to move quickly. And that’s what we are doing today. We set the foundation for America’s first millimeter-wave auctions by seeking input on application and bidding procedures for the auction of 28 GHz and 24 GHz licenses. It may not be flashy, but this is a vital step toward promoting U.S. innovation in 5G wireless services, the Internet of Things, and many technological “firsts” in these previously-underused, high-band frequencies.

It’s also important to mention that we will be able to commence spectrum auctions later this year because of recent legislative action. I’m grateful to Congress for passing, and the President for signing, legislation fixing a technical problem involving upfront payments by auction bidders for spectrum. While this problem stood in the way of the FCC holding a major spectrum auction, I’m grateful that we were able to roll up our sleeves and work together with Congress and the Executive Branch to remove this roadblock. And we intend to take advantage of this cleared lane. After completing auctions for the 28 GHz and 24 GHz bands, we anticipate auctioning additional bands in the near future.

I’d like to thank the staff who worked on this item: Erik Beith, Craig Bromberger, Steve Buenzow, Chas Eberle, Katie Hinton, William Huber, Gary Michaels, Linda Sanderson, John Schauble, Blaise Scinto, Martha Stancill, Sue Sterner, Don Stockdale, Joel Taubenblatt, and Margie Weiner from the Wireless Telecommunications Bureau, and Laurence Atlas, David Horowitz, Bill Richardson, and Anjali Singh from the Office of General Counsel. We will continue to rely on your expertise as we approach the November 14 start of the 28 GHz auction.

**CONCURRING STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN**

Re: 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 No. 18-85.

When we adopted the First Order in the Spectrum Frontiers proceeding nearly two years ago, I recall mentioning those pockets in our nation where too many remain stuck in a 2G and 3G reality. Our goals for 5G should include “ubiquity and affordability,” I said, and the “U.S. will only truly win the 5G race if all of our citizens benefit.”

One way in which this agency can assist in achieving these goals, is through the promotion of competition in the spectrum bands above 24 Gigahertz. And while our policies have greatly benefitted from the filings of a wide range of parties on how best to design our license and service rules to advance competition in the Spectrum Frontiers proceeding, we still need input so that our auction procedures are as pro-competitive as possible.

In the initial draft of this Auctions Comment Public Notice, I was concerned about us creating an unnecessary problem by proposing to permit the filing of applications for Auction 102 before the close of Auction 101. The Notice clearly lays out the reasons why we must have separate auctions, explains that we want to encourage participation and competition in both auctions, and acknowledges that permitting the filing of applications for Auction 102 before the close of Auction 101 could be problematic for those wanting to bid in both auctions. So, I thank my colleagues for agreeing to my request to no longer propose, but simply seek comment on whether the Commission should accept applications for the second auction before the first one closes.

I also appreciate the support for a statement that the Commission will resolve pending issues from the 2017 Spectrum Frontiers Further Notice of Proposed Rulemaking, that are relevant to holding auctions for the 28 and 24 GHz band. One of the key issues raised in that Further Notice, is the proposal to repeal the pre-auction spectrum limit to participate in millimeter wave auctions. But in order to supply interested bidders with a clear set of rules, and to determine whether these auctions comply with Section 309(j) of the Communications Act’s directive that we avoid an undue concentration of licenses, it is very important that we resolve this issue.

However, we should resolve the applications for review of the Bureau Orders that granted license transfers from Straight Path to Verizon and from Fiber Tower to AT&T, before determining if we should repeal the pre-auction spectrum limits. When the Commission decided to have a spectrum threshold to assess the competitive impact of concentration of millimeter wave spectrum, it included the 28 and 39 GHz spectrum in that analysis. Therefore, before deciding whether the Commission should reverse its 2016 decision that a pre-auction spectrum limit serves the public interest, the full Commission should have the opportunity to address the arguments being made in those applications for review, as to the competitive impact that those transactions have on 5G services.

I am, however, disappointed that my colleagues did not support my request for a line of questions on whether the Commission should auction the 24 GHz band before 28. I agree that there are pros and cons to whichever bands the Commission auctions first. For example, since the 24 GHz band is greenfield, it may generate more interest than the 28 GHz band. But by not asking the question, we send the signal that the Commission would not even entertain any argument on leading with 24. Why would we want to prejudge these views now? I encourage those that believe auctioning the 24 GHz band would better serve the public interest, to still file comments making that point.

While I obviously had concerns with certain portions of this Auctions Comment Notice, I wish to thank Don Stockdale and his team in the Wireless Telecommunications Bureau for briefing me as well as their presentations this morning.

**STATEMENT OF
COMMISSIONER MICHAEL O'RIELLY**

Re: 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 No. 18-85.

I appreciate the efforts of Chairman Pai to schedule the much-needed 24 and 28 GHz auctions and for bringing this item to the Commission. By moving forward, we are reaffirming our commitment to providers that they will have the spectrum resources they need to deploy 5G technologies, as well as to all Americans that the United States will remain the leader in wireless technologies. This item is a harbinger of good things to come.

In the next few months, I look forward to receiving, as promised, an item that will resolve the remaining issues presented by the petitions for reconsideration to the 2016 order and those raised in the accompanying further notice. We will also take the next steps to open up the remaining bands (*i.e.*, 32, 42, 50 GHz) in the 2016 further notice. We also must start the process to allocate additional bands, such as 26 GHz, for commercial wireless services.

Additionally, we need to schedule auctions for the 37 and 39 GHz bands immediately and create an auction timetable for the other bands coming down the pipeline. Affected industry needs to know as soon as possible when they will need the resources to participate in what is turning into a necessary ingredient in 5G services.

I am pleased that we are moving forward with these two bands, especially since I forged the deal, during the last Commission, to ensure that 24 GHz was included in the 2016 further notice.

I approve.

**STATEMENT OF
COMMISSIONER BRENDAN CARR**

Re: 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 No. 18-85.

The FCC has been moving aggressively to ensure the United States can win the global race to 5G—to ensure that our regulations are 5G Ready. Last month, we took concrete steps to enable more Americans to benefit from 5G by modernizing our approach to the deployment of wireless infrastructure. On the spectrum side, we were the first country in the world to allocate high-band spectrum for 5G. And with this Public Notice, we are taking the next step towards bringing over 1.5 GHz of millimeter wave spectrum to auction. The Chairman deserves credit for pressing ahead and ensuring we were ready to hold these auctions as soon as Congress provided us with the authority to do so.

The FCC's forward-leaning approach to 5G benefits everyday Americans. You see, 5G is about more than abstract broadband speed and lower latency. It's about enabling the next-generation of innovation and entrepreneurship in America. It's about autonomous cars—which could reduce the number of traffic deaths from the 40,000 per year we see today to nearly zero. It's about the industrial Internet of Things and smart city applications—which could revolutionize the way we live, work, and play. And it's about delivering remote surgery and telehealth applications to communities that today lack the healthcare options they deserve.

We are already seeing glimpses of this connected future. Just last week, I visited a ranch in the rural Amargosa Valley of Nevada. Ponderosa Dairies has 15,000 cows—and each is tagged with an RFID chip. So they joke that these are “connected cows.” The RFID chips track the livestock and report back vital information on their health. In turn, this data is transmitted over a wireless broadband connection to a veterinarian, who lives a number of states away.

A few months before that, I visited Mississippi where C-Spire is testing 5G technologies. And I toured the University of Mississippi Medical Center outside of Jackson. Using wireless broadband, they are bringing healthcare services to rural communities that would otherwise lack access to specialists or even basic care. Through remote patient monitoring, the Center helps screen and treat patients with diabetes living in some of the most rural parts of the Magnolia state.

And before my Mississippi trip, I visited General Electric in Houston and learned about their work developing 5G Internet of Things and remote monitoring applications that can drive greater efficiencies and productivity across many sectors of our economy.

As interesting as these experiences all were, they only hint at the new innovations we could see as next-generation networks come online.

But back in the here and now, we continue to have work to do to enable this future. And that work includes adopting the detailed and admittedly weedy technical rules for our first high-band 5G spectrum auctions. So I am glad we are starting that process today. As we do so, the FCC will continue to move quickly to identify and auction additional spectrum bands for 5G and other innovative uses.

I want to thank the Wireless Telecommunications Bureau for its work on this item and for its continuing efforts as we proceed to auction. The item has my support.

**STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL**

Re: 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 No. 18-85.

Earlier this year, as country after country announced plans to hold auctions for fifth generation—or 5G—wireless, I wrote in TechCrunch that the United States should be first. If our experience with wireless technology cycles has shown us anything, it is that being there in the beginning matters. After trailing our European counterparts in the roll-out of 3G mobile services we were the first to deploy the next generation—4G. That leadership paid dividends. An entire ecosystem of devices, operating systems, and services grew up around our networks and this mobile activity.

Of course, we can't rest on our laurels. That is why it is troubling that this agency has watched as South Korea, Germany, Australia, the United Kingdom, and Romania have already announced plans for 5G auctions. China also has big plans in the works with significant amounts of mid-band and high-band spectrum already identified for 5G.

Today, thankfully, this agency takes steps to put ourselves back in the running. I'm glad my colleagues are ready to get back on track. Today we schedule our first 5G auction and finally get out of the starting gate. We start with the 28 GHz band and follow with the 24 GHz band. This is real progress.

However, from here on out we need to do more than just join the pack with an auction in 2018. If we want to lead, we need a pipeline of both millimeter wave and mid-band spectrum for 5G. That means making transparent our plans for every subsequent auction. We can do this with something simple: a calendar. Let's publish a calendar that states clearly to the entire wireless ecosystem—from existing providers to new spectrum interests to manufacturers and consumers—just when and how the FCC will auction new airwaves to support 5G services. That is what leadership entails. That is what we need to do.