

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of

Auction of Flexible-Use Service Licenses in  
the 2.5 GHz Band for Next-Generation  
Wireless Services

AU Docket No. 20-429

**REPLY COMMENTS OF VOQAL**

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## Summary of Reply Comments

In these reply comments, Voqal argues for simple, straightforward auction procedures that allow small organizations a genuine opportunity to participate. We support a single-round, pay-as-bid auction, and point out that even routine simultaneous multi-round auction procedures would be so arcane as to rule us out as prospective bidders.

Voqal supports transparency regarding existing leases of EBS spectrum, and supports comments that existing information asymmetry will harm the ability of bidders to compete on a level playing field with T-Mobile, the dominant entity in the 2.5 GHz band.

Voqal highlights a filing by T-Mobile showing that the present 2.5 GHz spectrum inventory contains well over 400 county/frequency pairs where available white space contains no population. Those pairs are listed in Exhibit A to these reply comments. Some of them involve white space that exists only over bodies of water, and others involve small amounts of land area where no one resides.

Voqal offers an example of anomalous county/frequency pair combinations contained in the Commission's Attachment A spectrum inventory, such as white space areas so small that they cannot feasibly be served. We point out that whereas Commission rules impose extensive restrictions on transmissions from within a small white space territory if the licensee does not control adjacent areas, the reverse is not true as long as the white space remains unlicensed. Perhaps counterintuitively, this means it is easier for populations in small scraps of white space to be served if the area is not auctioned.

Finally, Voqal asks that the Commission establish a waiver process and filing window to allow parties to petition for the removal of unsuitable county/frequency pairs from the auction inventory. We recommend a three-part waiver standard, whereby failure to meet any one of

these criteria would justify removal: minimum population, minimum size, and suitability for wireless service.

## About Voqal

Voqal is the collective trade name for five nonprofit organizations that hold licenses in the Educational Broadband Service (“EBS”): Chicago Instructional Technology Foundation (“CITF”), Denver Area Educational Telecommunications Consortium (“DAETC”), Instructional Telecommunications Foundation (“ITF”), Portland Regional Educational Telecommunications Corporation (“PRETC”), and Twin Cities Schools’ Telecommunications Group (“TCSTG”).<sup>1</sup> Though these five commenting organizations are separate, many of their activities are similar or are conducted together, a combination that tended to be confusing to users. Consequently, the five nonprofits adopted the trade name Voqal in common. In this pleading, they are referred to collectively as Voqal. Instructional Telecommunications Foundation (“ITF” or “Voqal USA”) submitted comments in the above-captioned proceeding. It is here joined by the other four Voqal companies in these reply comments.

### I. Auction Design

Auction 108 is unique in many respects. While the Commission intends to auction off thousands of county-sized licenses in blocks of contiguous spectrum, there are significant encumbrances in many county/frequency pairs. Some Voqal organizations are considering bidding for spectrum in the planned 2.5 GHz auction, but like many other smaller bidding entities, the Voqal nonprofits have limited resources and no prior experience with a Commission auction. In order for it to be feasible for entities like them to participate, bidding procedures need to be simple and very straightforward. Experienced consultants, game theorists, and other

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<sup>1</sup> CITF, also known as Voqal Chicago, is licensee of EBS Station WLX-630, Chicago. DAETC, also known as Voqal Denver, is licensee of WHR488, Denver. ITF, also known as Voqal USA, is licensee of WHR-509, Indianapolis; WHR-527, Philadelphia; WHR-512, Sacramento; WHR-511, Kansas City; WLX-699, Salt Lake City; WLX-694, Las Vegas; and WLX-816, Phoenix. PRETC, also known as Voqal Portland, is licensee of WHR-522, Portland, OR. TCSTG, also known as Voqal Twin Cities, is licensee of WHR-487, Minneapolis.

experts will be advising larger auction participants, but it will not be feasible for Voqal to employ them due to our small size.

A. Voqal Supports Simple Auction Processes, Including a Single-Round, Pay-as-Bid Auction.

Voqal supports a single-round, pay-as-bid auction. Even one complex simultaneous multiple-round (“SMR”) attribute such as maintaining bidding unit eligibility through ongoing bidding activity<sup>2</sup> would rule Voqal out as a participant. We lack the expertise to manage such a requirement. Voqal does not plan to organize its bids as an economic theorist might. Thus, we will not “assess the business and bidding strategies, needs, and plans of ... competitors.”<sup>3</sup> Rather, the comments of The Wireless Internet Service Providers Association reflect our attitude toward bidding for spectrum:

... [C]oncerns about the lack of price discovery are overcome by the expected bidding strategies smaller bidders can be expected to employ. They will simply put the price they are willing to pay for the targeted area they want to serve and live with the consequences. Bids will be based on what they are willing to pay for a particular license, not by what other bidders may be willing to pay.<sup>4</sup>

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<sup>2</sup> See Hector Lopez, *Supporting an Efficient Allocation of 2.5 GHz Licenses Using a Simultaneous Multiple-Round Auction* at 4 (Apr. 2021) (describing the activity rule), attached to Comments of U.S. Cellular Corp., AU Docket No. 20-429 (filed May 3, 2021).

<sup>3</sup> See *id.* at 3-4 for a reported five-step bidding process entailed in a single-round auction.

<sup>4</sup> Comments of The Wireless Internet Service Providers Association at iv, AU Docket No. 20-429 (filed May 3, 2021). See also Comments of AT&T Services, Inc. at 5, AU Docket No. 20-429 (filed May 3, 2021) (“Comments of AT&T”) (“By its nature, an SMR auction requires participating bidders to monitor the auction consistently. That requires a substantial commitment of resources for any bidder, but as the Commission explains, it could be particularly ‘demanding’ for ‘smaller entities, many of which we expect will compete in Auction 108.’ Bidders ‘may consider such a resource commitment to be too onerous and may choose not to participate in th[e] auction,’ especially ‘smaller entities that are seeking only a limited number of relatively low value licenses.’”) (alteration in original) (internal citations omitted).

SMR auctions have produced very high bids when there are multiple, financially capable, highly motivated bidders, as was the case in the recent C-band auction. That is unlikely to be the environment for a 2.5 GHz auction, where the Commission will be auctioning odd scraps of urban spectrum produced by gaps between EBS incumbents' Geographic Service Areas ("GSAs"), along with large rural territories where there is little requirement for the extensive contiguous spectrum that makes 2.5 GHz such a prized source of midband spectrum.

We oppose Vickrey or V-SRSB pricing.<sup>5</sup> Such a methodology would allow the principal incumbent in the band to bid lavishly, knowing that it would pay only the same amount as less well-funded or less motivated bidders. This type of pricing would cost the U.S. Treasury dearly. We are aware that any large company is capable of outbidding Voqal for whatever spectrum it desires. If it does so, however, it should pay the actual cost of its winning bid.

**B. Voqal Supports an Either/Or Bidding Indicator.**

Notwithstanding our emphasis on simplicity, the Commission's proposal for an either/or indicator could be very helpful to prospective small bidders like us. Voqal would seek to acquire spectrum in specific counties where we see opportunities. These are likely to be rural in character, and we do not expect to need more than a single channel block. It would be an unfortunate development if, by chance, we and other bidders all sought the same county/frequency pair; in contrast, with the benefit of an either/or indicator, such a contretemps would be avoided, as a Voqal nonprofit could bid on all the available blocks in the county in pursuit of winning only one.

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<sup>5</sup> See, e.g., Comments of T-Mobile USA, Inc. at 10-11, AU Docket No. 20-429 (filed May 3, 2021) ("Comments of T-Mobile") (supporting this type of pricing).

II. Voqal Supports Transparency Regarding Existing Lease Provisions as a Means to Reduce Information Asymmetry in this Auction.

Voqal agrees with comments by AT&T Services, Inc. and Verizon that information asymmetries between T-Mobile and competing bidders almost surely will skew the 2.5 GHz auction in favor of T-Mobile.<sup>6</sup> The chief hope for vigorous bidding in the 2.5 GHz auction rests with having multiple well-funded bidders. We note that Verizon, in particular, suggests that nationwide telecommunications firms may bid in the 2.5 GHz auction.<sup>7</sup> The Commission should take such steps as are necessary to encourage capable entities like AT&T and Verizon to participate in the forthcoming auction.

While EBS leases often contain confidentiality clauses, we note that Commission Rule 1.9030(b)(3) states that each EBS licensee “must retain a copy of the spectrum leasing agreement and make it available upon request by the Commission.” Clearly, lease disclosures for public interest reasons are within the scope of contemplated regulation.

Voqal has long advocated, and here reiterates, that the Commission should require EBS licensees to file full, unredacted copies of their spectrum leases with the FCC.<sup>8</sup> These documents should be available for public inspection. If the lessor or lessee desires to redact any portion of a lease, it should bear the burden of establishing that the public interest requires secrecy. EBS spectrum is, at bottom, a public resource rather than a private commodity. While licensees are

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<sup>6</sup> Comments of AT&T at 8-10; Comments of Verizon at 3-4, AU Docket No. 20-429 (filed May 3, 2021) (“Comments of Verizon”). As well, this same asymmetry impairs the secondary market for the leasing and sale of EBS spectrum outside of the forthcoming white space auction.

<sup>7</sup> See Comments of Verizon at 2 & n.4.

<sup>8</sup> In an earlier period, when EBS was known as the Instructional Television Fixed Service (“ITFS”), ITFS was regulated by the Media Bureau. The Media Bureau required the public filing of all leases of ITFS spectrum.



entrusted with the authority to lease spectrum, they should be publicly accountable for the terms and conditions of any leasing they undertake. This accountability is impossible if lease terms are held secret.

III. The Commission Should Eliminate from the 2.5 GHz Auction Inventory Any White Space that Is Located Solely Over Bodies of Water or Otherwise Contains No Population.

According to data accompanying T-Mobile's comments, the Commission's Attachment A inventory contains well over 400 county/frequency pairs where available white space contains no population.<sup>9</sup> Voqal sorted Appendix 5 to T-Mobile's comments and attaches the resulting list of reported "zero population" county/frequency blocks as Exhibit A to these reply comments.

As demonstrated by Exhibit A, the "zero population" phenomenon often applies to all three of the new EBS channels in a given county. This is unlike artifacts ITF pointed out in its initial comments, where it found them on only new Channel 2.<sup>10</sup>

One category of "zero population" county/frequency pairs involves geographic areas fully covered by the GSAs of incumbent EBS licensees, except over bodies of water. Examples of such white space are all three new EBS channel blocks at Cuyahoga County, Ohio (home of Cleveland), as well as Milwaukee County, Wisconsin. In these cases, the GSAs of incumbent EBS licensees cover all EBS spectrum in all the land area of these counties. The "white space" of Cuyahoga County is entirely over Lake Erie. In the case of Milwaukee County, white space consists of a portion of Lake Michigan. Maps showing full GSA coverage of all the land area of

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<sup>9</sup> Comments of T-Mobile, app. 5.

<sup>10</sup> See Comments of ITF at 3, AU Docket No. 20-429 (filed May 3, 2021). According to the comments of T-Mobile, the Commission's Appendix A inventory includes small numbers of errors affecting new Channels 1 and 3 as well. See Comments of T-Mobile, apps. 1-3.

both these counties on all new channel blocks are attached to these reply comments as Exhibits B.1 through B.6.

(Voqal does not support eliminating Gulf of Mexico channels from the auction inventory, as that territory is specifically intended to cover oil rigs and other users located in water. Gulf of Mexico white space is not included in Exhibit A to these reply comments.)

Other “zero population” counties have small scraps of land area that are outside the GSAs of incumbent EBS licensees, but where no one lives. Because of the lack of population and other characteristics of these white spaces, as we describe below, Voqal urges that they be removed from the auction inventory.

The Reply Comments of the Roman Catholic Church in the State of Hawaii provide one of the more dramatic examples of this type of white space. According to those reply comments, Honolulu County includes not only the island of Oahu—with a population approaching one million—but also unpopulated wildlife refuges located on various islands, atolls, reefs, and islets, some of them hundreds of miles from Oahu.<sup>11</sup> Oahu is fully covered by incumbent GSAs on all three new channel blocks,<sup>12</sup> and the additional scraps of zero population white space are clearly unsuitable for wireless service.

Another example is illustrated by Exhibits B.7 through B.9 to these reply comments, showing the situation in Camden County, New Jersey. Camden County is located immediately adjacent to Philadelphia and is home to over 500,000 people, according to 2010 figures.<sup>13</sup> As

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<sup>11</sup> See Reply Comments of the Roman Catholic Church in the State of Hawaii at 1-2 & attach., AU Docket No. 20-429 (filed May 17, 2021).

<sup>12</sup> *Id.*

<sup>13</sup> See *Auction of Flexible-Use Service Licenses in the 2.5 GHz Band for Next-Generation Wireless Services*, Public Notice, 36 FCC Rcd. 645, attach. A (2021) (“Auction Notice”).

shown on the above-mentioned exhibits, there is a small, wooded area abutting Camden County's boundary with Atlantic and Gloucester Counties—amounting to 1.0 square kilometer<sup>14</sup>—that is outside the incumbent GSAs on some frequencies of new EBS Channel 2 or any frequencies of new Channel 3. As shown on Exhibit B.9, no structures are present in this white space.

In yet another example, a small portion of Denver County falls outside of incumbent EBS GSAs on new EBS Channels 1 through 3, as shown by Exhibits B.10 through B.13. Exhibit B.11 shows this white space in close detail. The area of this white space is just 10.8 square kilometers.<sup>15</sup> All of it is located on the outskirts of Denver International Airport, including parts of a runway and taxiway. No residences are located in this exceptionally noisy area. The airport's terminals and its other structures are included within EBS incumbents' GSAs.<sup>16</sup> Even if the white space had population within its boundaries, it is highly questionable whether a wireless network could be constructed directly adjacent to an airport without significant siting and technical challenges.

IV. The Commission Should Eliminate from the 2.5 GHz Auction Inventory Minor Scraps of White Space Territory That Meet *De Minimus* Criteria, Including Inability to Support Meaningful Wireless Service.

The Auction 108 inventory list contains a number of white space areas with extremely limited geography and population. The Comments of T-Mobile point out the ironic example of Cook County, Illinois (home to Chicago), where an extremely small sliver of white space with a

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<sup>14</sup> This area measurement is contained in the Engineering Report of DeLawder Communications, Inc., attached to these reply comments as the second page of the addendum titled "Engineering Methodology Employed in These Reply Comments and Accompany Exhibits" ("DeLawder Report").

<sup>15</sup> *Id.*

<sup>16</sup> *See* Exhibit B.11.

population of 211 requires the auctioning of all three EBS frequency blocks throughout the entire county, and a minimum opening bid of \$1.5 million.<sup>17</sup> T-Mobile used this example to argue for greater disclosures by the Commission with regard to available population and a reduction of the size of upfront payments.<sup>18</sup> In contrast, Voqal believes that Cook County exemplifies white space that should be excluded from the auction under criteria we propose later in these reply comments.

A. Description of Cook County, IL White Space

Cook County EBS white space occupies 5.2 square kilometers.<sup>19</sup> This territory is primarily made up of land, but it contains at least three small bodies of water. In contrast, Cook County contains 2,447.5 square kilometers of land and 4,234.6 square kilometers if one counts the surface area of both land and water.<sup>20</sup> Cook County white space includes all three new EBS frequency blocks, and the location of white space is identical on all of them.

As shown by Exhibits C.1, C.2, and C.3 to these reply comments, the white space territory is a very small area that is shaped like an inverted right triangle, with the northern boundary represented by the county line between McHenry County, Illinois and Cook County; with the western boundary represented by the county line between Kane County, Illinois and Cook County; and the (slightly curved) hypotenuse represented by the line between the incumbent EBS GSAs and the above-mentioned county boundaries. According to T-Mobile's comments, Cook County's white space population is 211 people out of a county population of

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<sup>17</sup> See Comments of T-Mobile at 19-20 & fig. 2.

<sup>18</sup> *Id.* at 20, 24-25.

<sup>19</sup> See DeLawder Report.

<sup>20</sup> *Cook County, Illinois*, Wikipedia, [https://en.wikipedia.org/wiki/Cook\\_County,\\_Illinois](https://en.wikipedia.org/wiki/Cook_County,_Illinois) (last accessed May 26, 2021).

5.1 million.<sup>21</sup> The character of the white space is shown by Exhibits C.3 and C.4 to these reply comments. Exhibit C.3 is a close-up detail of the northern (widest) portion of the white space, showing the adjacent incumbent EBS GSA in red and the white space as an aerial photo. Exhibit C.4 is shown in tighter close-up—showing the northwest portion of the white space on a topographic background—with the adjacent incumbent EBS GSA in red.

Though Cook County is home to one of the country's largest cities, the white space is rural. As shown by Exhibit C.4, the white space territory east of Bateman Road is made up chiefly of wetlands and lakes. Only one building is visible on Exhibit C.4 east of Bateman Road. The area west of Bateman Road is partly wooded and contains a number of rural residences. There is very limited road access, as shown by both Exhibits C.3 and C.4. For access reasons, it is questionable that it would be technically feasible to properly locate base stations in this white space.

B. It Is Impractical to Serve Cook County's White Space Territory Unless the Licensee Also Controls Nearby EBS Spectrum.

Cook County white space is so small that it is impractical to operate even a single conventional macro cell site within it. As demonstrated by Exhibit C.5 to these reply comments, there is no location within the white space area that can accommodate even a single one-kilometer service radius, and the triangular white space grows even narrower the farther south it is. No macro cell could serve the population located south of Algonquin Road, and it is doubtful that some residences could be served by small cells because they immediately abut incumbent GSAs.

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<sup>21</sup> Comments of T-Mobile at 19.

If a non-incumbent party were to purchase Cook County’s white space at auction, it would be confronted by the need to serve the bulk of this tiny population while averting interference to incumbent EBS licensees or the parties who purchase white space in immediately adjacent McHenry and Kane Counties, as its transmissions’ strength at the boundary with an incumbent could not exceed 47 dB $\mu$ V/m.<sup>22</sup> As Soniqwave noted in its comments, “providing a viable service using heavily encumbered Auction 108 licenses will be challenging (if not in many cases impossible) for any entity that does not also control the encumbrances.”<sup>23</sup>

Soniqwave also cites challenges arising from the height benchmarking requirements of Rule 27.1221 and “the unusually strict out-of-band emission limits” contained in Rule 27.53(m).<sup>24</sup>

Unless operated in cooperation with adjacent incumbents, providing required service to Cook County white space would at best be a regulatory exercise involving extremely-low-power small cells erected at low heights to serve a negligible population. At worst, it would be impossible.

C. In Contrast, It Would Be Relatively Easy to Weave Cook County White Space into a Network Based in Nearby Service Areas if This White Space Remains Unlicensed.

Should Cook County white space be removed from auction inventory and therefore not sold, licensees operating near the boundary of this small area would face no equivalent limitations due to Commission Rule 27.55(a)(4), which states, in pertinent part: “Licensees may exceed [the maximum EBS boundary] signal level where there is no affected licensee that is constructed and providing service.”

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<sup>22</sup> 47 C.F.R. § 27.55(a)(ii).

<sup>23</sup> Comments of Soniqwave Networks LLC at 3, AU Docket No. 20-429 (filed May 3, 2021).

<sup>24</sup> *Id.* at 3 n.8.

Given that this section of Cook, Kane, and McHenry Counties is largely rural, it is likely that relatively high antenna elevations will be used in the 2.5 GHz wireless network and that cell radii will exceed one kilometer. Perhaps counterintuitively, under such conditions it is more likely that the 211 residents of Cook County white space will receive adequate wireless service if the area remains unlicensed.

V. Voqal Asks That the Commission Adopt Waiver Standards to Exempt a County/Frequency Pair from Auction Inventory and Allow a Time Window for the Submission of Waiver Requests.

Given the numerous examples provided both within these reply comments and on the record in this proceeding, Voqal reiterates its call for the Commission to produce an updated auction inventory list and allow time for the public to comment on it. We believe that commenters should also be able to seek waivers—subject to the criteria proposed below—to exempt a county/frequency pair from the auction.

A. Standards for Exemption

Voqal recommends three standards for exemption, any one of which would be sufficient triggers: minimal population, minimal white space size, and inability to deliver meaningful wireless service within the white space. We believe that these proposed standards will allow the Commission to conduct an orderly process for ruling on waiver requests.

Minimum population. Voqal proposes a minimum population standard of less than 0.1% of the county’s full population or 500 white space residents, whichever is lower.

Minimum size. Voqal proposes a minimum area of 0.1% of the county’s full geographic area or 5 square kilometers, whichever is lower. The Commission adopted an analogous *de minimis* standard in its 700 MHz rules, basing its decision on the danger of interference originating from unduly small service areas. In a 2007 rulemaking, the Commission declined to split off an unserved area from an incumbent’s licensed 700 MHz territory unless it had “a

contiguous area of at least 130 square kilometers,”<sup>25</sup> a quantity much greater than Voqal proposes here. The Commission wrote:

Areas smaller than this will not be deemed unserved by the Commission, because auctioning and licensing smaller areas to new licensees could result in harmful interference to incumbent licensees. Accordingly, unserved areas that are smaller than 130 kilometers will continue to be a part of the licensee’s license area.<sup>26</sup>

The same logic applies to slivers of EBS white space—they are too small for service and pose an interference risk to incumbents serving adjacent GSAs, especially given the combined requirements of Rules 27.53(m), 27.55(a)(i), and 27.1221.

Suitability for Wireless Service. Voqal proposes that white space be deemed unsuitable for wireless service, regardless of its area measured in square kilometers, if it is shaped in a manner that renders it unable to accommodate at least one base station with a circular service area of no less than one kilometer in radius.

**B. Waiver Request Timing and Process**

In its comments, ITF proposed that the Commission revise the Auction Notice Attachment A inventory list and thereafter provide a 120-day comment period for additional corrections, maps, and commentary. As a supplement to that proposed process, Voqal proposes that parties be allowed to propose waivers for the inclusion of county/frequency pairs in inventory for the first 60 days of this comment period. Waiver requests would have to be based on engineering showings regarding one or more of the above-listed three criteria.

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<sup>25</sup> *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report & Order, 22 FCC Rcd. 15,289, ¶ 174 (2007).

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



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