

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

In the Matter of )  
 )  
Partitioning, Disaggregation, and ) GN Docket No. 19-38  
Leasing of Spectrum )  
 )

**COMMENTS OF DYNAMIC SPECTRUM ALLIANCE**

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## INTRODUCTION AND SUMMARY

The Dynamic Spectrum Alliance (“DSA”)<sup>1</sup> welcomes the Federal Communications Commission’s efforts to increase the availability of advanced telecommunications services in rural areas, facilitate access to spectrum by covered small carriers and enhance the efficacy of secondary spectrum markets.<sup>2</sup> As the Commission has previously observed, effective secondary markets can in theory be a tool to help alleviate spectrum shortages, encourage innovation, put spectrum to its highest and best use, and bridge the digital divide<sup>3</sup>--goals which DSA enthusiastically shares. As many parties including DSA have previously established, however, secondary markets have not historically been successful in achieving those goals. Rather, the evidence indicates that secondary markets have largely failed--whether due to high transaction costs, lack of incentives, or a combination of the two--when it comes to providing spectrum to smaller competitive or rural carriers, let alone innovative industrial, enterprise or institutional users. Alarming, as NCTA has observed, secondary markets have in fact “proven to be an effective tool for large operators to *consolidate* spectrum” rather than making spectrum available for non-carrier use cases.<sup>4</sup> With these challenges in mind, two related innovations for which DSA

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<sup>1</sup> The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of DSA members is available on the DSA’s website at [www.dynamicspectrumalliance.org/members/](http://www.dynamicspectrumalliance.org/members/).

<sup>2</sup> *In the Matter of Partitioning, Disaggregation, and Leasing of Spectrum*, Notice of Proposed Rulemaking, WT Docket No. 19-38, FCC 19-22 (rel. Mar. 15, 2019) (“*NPRM*”).

<sup>3</sup> *See generally Id.*

<sup>4</sup> Comments of NCTA - the Internet and Television Assn’s (“NCTA”), GN Docket No. 17-258 (filed Dec. 28, 2017) at 6 (emphasis in original).

has long advocated *can* help achieve the goals of this proceeding: the “use-it-or-share-it” regulatory framework and dynamic database management.

Use-it-or-share-it: The traditional model of exclusive use of spectrum over large geographical areas for extended terms (e.g., ten years with an expectation of renewal) provides little incentive for licensees to make their spectrum available for smaller, rural or competitive use cases. In such circumstances, licensees may not want to take on the transaction costs required to partition, disaggregate or sublease their license to a third party. More fundamentally, licensees may want to preserve optionality in the future to build out to less economically attractive areas, or even be motivated to stifle competition. The result is underutilization of spectrum and warehousing, often at the expense of the underserved and rural communities. Adoption of use-it-or-share-it rules would encourage licensees to put their spectrum to use more quickly, or absent that, make unused spectrum available for opportunistic uses or lessees on the secondary market.

Dynamic database management: Finding available spectrum, negotiating sublicensing arrangements, and overcoming bureaucratic hurdles are particularly time-consuming and costly endeavors for parties seeking access to licenses spectrum. Lowering these transaction costs is critical to creating robust and liquid secondary markets. The Commission should employ automated databases--similar to the soon-to-be-deployed Spectrum Access System (SAS) in the 3.5GHz Citizens Broadband Radio Service (CBRS) band--that can be used to identify usable spectrum, maintain detailed network information, and coordinate between different users and priority rights. A new spectrum secondary market exchange could use the capabilities of databases like the SAS to facilitate and enact secondary market transactions.

## DISCUSSION

### **I. Secondary Spectrum Markets Function Poorly.**

Carrier licensees often build out their networks to a small portion of a large license area, leaving a surplus of unused spectrum, usually in less densely populated areas. The Commission has acknowledged that adopting policies that favor licensing large areas for extended terms can lead to spectrum being underutilized, and that secondary market transactions are means for licensees to meet market demand for their surplus spectrum.<sup>5</sup> Indeed, the Commission has repeatedly acknowledged that secondary markets promote “efficient use of spectrum by enabling licensees to make offerings directly responsive to market demands for particular types of services, increasing competition by allowing new entrants to enter markets, and expediting provision of services that might not otherwise be provided in the near term.”<sup>6</sup>

Even with a surplus of spectrum and high demand for its use, however, real world evidence points to a poorly functioning secondary spectrum marketplace that achieves little in the way of making spectrum available to small, competitive, rural or innovative users. For instance, the Wireless Internet Service Providers Association (“WISPA”) surveyed members in 2017 and found that 25 percent of survey respondents reported that they had attempted to obtain licensed spectrum from AT&T, Verizon, Sprint or T-Mobile, but that less than ten percent of

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<sup>5</sup> See *In the Matter of Promoting Investment in the 3550–3700 MHz Band*, Report & Order, 33 FCC Rcd. 10598, ¶ 97 (2018) (“CBRS Order”)

<sup>6</sup> See, e.g., *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8094, para. 233; see also *Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees*, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21831, 21833, ¶ 1 (1996).

those who had made those attempts were successful.<sup>7</sup> WISPA’s survey is consistent with the Commission’s licensing records, which show that carriers that typically acquire large-area licenses at auction rarely engage in secondary market transactions with smaller competitive service providers.<sup>8</sup>

## **II. High Transaction Costs Contribute to Poorly Functioning Secondary Markets.**

A significant contributing factor to the poor functioning of secondary spectrum markets is high transaction costs. Bureaucratic hurdles, inability for potential buyers to obtain information on available spectrum, administrative burdens on buyers and sellers, and complex and costly negotiations for secondary rights make the proposition of creating a robust marketplace difficult.<sup>9</sup>

Moreover, as economist William Lehr has observed, these transaction costs fall disproportionately on smaller, competitive, or rural users who would have to “incur spectrum leasing costs that are likely to be higher for them than for a large national operator who is likely already to have an in-house team to manage spectrum transactions.”<sup>10</sup> The upshot of these less-than-ideal conditions for secondary markets is that spectrum is left underutilized and consumers

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<sup>7</sup> Comments of the Wireless Internet Serv. Providers Ass’n at A-3, GN Docket No. 17-258 at 43-44 (filed Dec. 28, 2017).

<sup>8</sup> Mobile Future, FCC Spectrum Auctions and Secondary Market Policies: An Assessment of the Distribution of Spectrum Resources Under the Spectrum Screen (Nov. 2013), at 19, available at <http://mobilefuture.org/wp-content/uploads/2013/11/Paper-Distribution-ofSpectrum-Resources.pdf>.

<sup>9</sup> See Joe Kane, *How To Reduce Transaction Costs In Spectrum Markets*, R Street Policy Study No. 166, 5 (Mar. 2019), available at <https://2o9ub0417chl2lg6m43em6psi2i-wpengine.netdna-ssl.com/wp-content/uploads/2019/03/Final-166-Updated1.pdf>.

<sup>10</sup> William Lehr, Analysis of Proposed Modification to CBRS PAL Framework, GN Docket No. 17-258 (filed Dec. 28, 2017) at 12.

left underserved, particularly in rural areas where the asymmetric impact of transaction costs on smaller providers can be particularly acute.

### **III. A Use-it-or-Share-it Authorization Would Promote More Intensive Spectrum Use and Facilitate Secondary Market Transactions**

As described above, permissive secondary market rules have failed to put an adequate share of unused spectrum to work in rural and other underserved areas that are less profitable for the holders of most exclusive, large-area licenses. Accordingly, DSA recommends that the Commission extend its use-it-or-share-it rules to a larger number of exclusively-licensed bands in order to promote more intensive use of the spectrum, as well as stronger incentives and mechanisms to encourage secondary market transactions. Opportunistic access, coupled with strong protections for incumbent licensees, should be considered as a central part of any effort aimed at expanding both direct and secondary market access to unused spectrum by smaller and non-traditional ISPs, as well as for enterprise and institutional use, in rural and underserved areas.

Conceptually, use-it-or-share-it rules authorize opportunistic access to licensed spectrum that is locally unused or underutilized, coupled with the assurance that users will not interfere with licensees and will in fact vacate the spectrum as needed once the licensee commences service. Until the spectrum is actually put into service in a local area it should be available for non-interfering use by networks and devices that are multi-band and required to regularly. Licensees lose no rights whatsoever and bear a *de minimus* burden to simply inform the certified database coordinator prior to commencing service in a particular local area, so that any opportunistic users will be immediately denied permission to operate on that frequency band.

This approach is far from unprecedented. Use-it-or-share-it rules have been adopted by the Commission in relation to two significant flexible-use bands in recent years: the post-auction 600 MHz band and the Priority Access License (PAL) spectrum at 3.5 GHz that will soon be auctioned. First, in 2014, the Commission’s *Incentive Auction Report & Order* authorized TV White Space devices (WSDs) to continue operating in the 600 MHz band post-auction until such time as the licensee gives notice that it will “commence operations” in that local area.<sup>11</sup> The Commission recognized that temporary, opportunistic access to unused 600 MHz spectrum on a localized basis would encourage more intensive use of the band while doing no harm to licensees who would be ensured exclusive, non-interfering use of the spectrum thanks to the enforcing function of the automated TV Bands Database (TVDB). The Commission expressed its confidence in the ability of an automated database to protect licensees: “Since TVWS devices can operate only on channels identified in the TV bands databases, these databases can serve to ensure that unlicensed operations will no longer occur on a channel on which a licensee has commenced service. When a 600 MHz Band licensee plans to commence operations . . . that licensee can notify any of the TV bands database administrators when and where it plans to commence operations.”<sup>12</sup>

Building on this precedent, in 2016 the Commission again authorized opportunistic access (“General Authorized Access” or “GAA”) to unused Priority Access Licensed (“PAL”)

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<sup>11</sup> Report and Order, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268 (2014), at 680 (“*Incentive Auction Report & Order*”); Notice of Proposed Rulemaking, *Amendment of Part 15 of the Commission’s Rules For Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gaps, and Channel 37*, ET Docket No. 14-165, 29 FCC Rcd 12248 (2014), at 131-144 (“*Part 15 NPRM*”).

<sup>12</sup> Report and Order, GN Docket No. 12-268, 680 (May 15, 2014).



spectrum as part of the Citizens Broadband Radio Service (CBRS). In its *Order on Reconsideration*, the Commission stated: “We believe that the ‘use it or share it’ approach of our rules for this unique band also thus more reasonably accommodates the goals of Section 309(j) of the Act, including ‘to prevent stockpiling or warehousing of spectrum.’”<sup>13</sup> Of course, like the 600 MHz authorization, opportunistic use of unused PAL spectrum is controlled by the Spectrum Access System, which requires that GAA users must periodically check with the database to renew permission to continue operating. As even some mobile carriers acknowledged in that proceeding,<sup>14</sup> there is no risk of harmful interference or loss of usage rights to the licensee provided that permission for opportunistic GAA use is valid only until one of the SAS operators receives a notification that the licensee is ready to commence service in that local area.

A general ‘use it or share it’ authorization has a number of affirmative benefits that advance the goals of the Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act (“MOBILE NOW Act”) and the Commission’s secondary market rules.

First, opportunistic access reduces spectrum warehousing in areas where the economics are least attractive for large ISPs, particularly in rural and other less densely populated areas with low ARPU. A “use it or share it” approach creates a general incentive for licensees to build out

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<sup>13</sup> Order on Reconsideration and Second Report and Order, GN Docket No. 12-354, at ¶ 177 (April 28, 2016).

<sup>14</sup> For example, T-Mobile reaffirmed that the company “supports allowing GAA users to access PA spectrum when it is unassigned or affirmatively unused.” T-Mobile Comments, *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Further Notice of Proposed Rulemaking, GN Docket No. 12-354, at 5 (rel. Apr. 23, 2014) (“FNPRM”). Verizon stated that it “does not oppose GAA use of . . . PAL channels that the licensee is not using.” Verizon Comments, *FNPRM*, GN Docket No. 12-354, at 10.

services more quickly, or to make greater efforts to partition or lease, since opportunistic use of the band will demonstrate that smaller ISPs and other users are finding value in the unused portions of their license area. This will discourage spectrum warehousing and increase access for operators that are ready to deploy, but who lack needed spectrum access in that local area.

Second, opportunistic access further encourages secondary market transactions by facilitating price discovery on both the supply and demand side. For licensees, it will both identify users interested in a potential lease or partition and provide information on the potential value (i.e., how much is my spectrum worth?). For users, opportunistic use is an opportunity to test the local market and to determine the value of a more secure, longer-term lease or partition agreement (i.e., how much am I willing to pay for spectrum?).

Third, opportunistic access will lower barriers to entry for innovative new use cases by parties that at least initially either cannot afford or do not believe they need to pay for exclusive use and interference protection. The option to deploy, at least initially, without committing to the cost of a long-term lease or license could be particularly useful for small rural ISPs, such as WISPs that currently rely on unlicensed spectrum. Although the duration of opportunistic access is uncertain, they can at a minimum use it to increase capacity.

Opportunistic access could also enable individual enterprises to incorporate the unused and available spectrum to enhance a wide variety of networks and deployments – on campuses, inside venues, factories, school buildings and other facilities. The Commission recognized this opportunity in its 2018 CBRS Order, stating that : “Targeted use cases are already encouraged by

the “use-or-share” nature of the band and the GAA tier.”<sup>15</sup> Just as unused PAL spectrum will enhance the utility of deployments that rely primarily on GAA spectrum, opportunistic access to licensed spectrum in other bands could enhance the capacity and utility of a variety of new and innovative use cases in addition to small and rural ISPs.

Finally, as described more fully in the next section, an automated database can greatly reduce the costs of secondary market transactions. Among other value-added services, a database operator could incorporate blockchain technology “to verify and execute spectrum sharing agreements between primary and secondary users in licensed spectrum. An anticipated advantage of a spectrum blockchain is that secondary market transactions can be automated, subject to predetermined conditions, and transparent to permitted users as well as to the regulator.”<sup>16</sup>

#### **IV. Dynamic Databases Can Help Reduce Transaction Costs.**

The Commission should adopt automated database technology to reduce transaction costs and create conditions for robust secondary markets. Dynamic database management is a reality today and should not be viewed by the Commission as speculative or theoretical.<sup>17</sup> In the CBRS band, for example, the SAS coordinates CBRS frequency use and relative rights between the GAA and PAL tier, manages coexistence, registers and authorizes CBRS radio devices,

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<sup>15</sup> Report and Order, GN Docket No. 17-258 (Oct. 23, 2018) ¶ 37.

<sup>16</sup> *Automated Frequency Coordination: An Established Tool for Modern Spectrum Management*, Dynamic Spectrum Alliance, at 52 (March 2019).

<sup>17</sup> The SAS is currently concluding Commission certification and is expected to be commercially deployed in the coming months.

maintains network data and configurations, and provides SAS users with information on the spectrum environment.<sup>18</sup> Leveraging these capabilities for secondary markets would allow potential buyers to determine actual spectrum usage and find deployment opportunities, coordinate rights between licensees and lessees, and ensure coexistence and compliance with protection criteria. Taken one step further, databases could administer secondary transaction themselves-- for instance, by creating a spectrum exchange employing blockchain technology-- by registering, authorizing, and enforcing standard, non-complex secondary market transactions. For example, an opportunistic lessee could be authorized by a database to deploy a network within a certain geographical area at a given frequency and power level, provided that the lessee agreed to pay offered price and deployment didn't create interference (at which point the database could shut down the usage).

Dynamic databases can also be employed to monitor and enforce build out requirements in real time. Today the SAS maintains comprehensive real-time information about network deployment in CBRS. This capability could be leveraged by the Commission to shorten build out deadlines (e.g., from ten to five years), expand buildout requirements to cover rural or underserved areas, and reduce or eliminate the ability of licensees to engage in limited or temporary deployments to meet the letter of the requirement, thereby undermining the policy aims of build out rules.

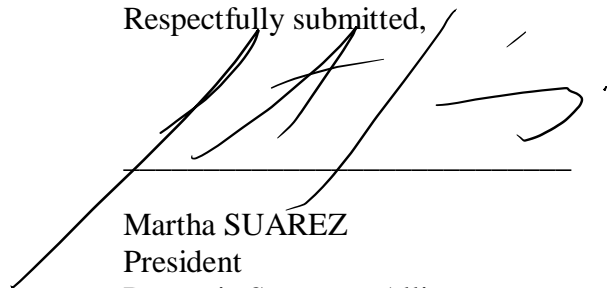
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<sup>18</sup> See 47 C.F.R. § 96.

## CONCLUSION

The Commission has an opportunity to create efficient secondary markets and DSA presented two long-standing and related solutions that can help achieve the goals of this proceeding: the “use-it-or-share-it” regulatory framework and the dynamic sharing management through databases. These approaches provide feasible and effective conditions to provide connectivity to underserved communities and to encourage innovation by lowering barriers to spectrum entry through leasing, partition or disaggregation.

Respectfully submitted,



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