



## TABLE OF CONTENTS

INTRODUCTION AND SUMMARY .....	1
ARGUMENT .....	5
I.    T-Mobile Has Engaged In An Anticompetitive Strategy To Raise Its Rivals' Costs And Harm Consumers Through Undue Spectrum Aggregation.....	5
II.   The Commission Should Withhold Any Additional Mid-Band Licenses From T- Mobile Until It Agrees To An Effective Divestiture Remedy.....	11
CONCLUSION.....	16

## PETITION TO DENY

Pursuant to 47 U.S.C. § 309 and 47 C.F.R. § 1.2108, AT&T Services, Inc.<sup>1</sup> respectfully petitions this Commission to deny T-Mobile's long-form application for assignment of new licenses or condition its grant on T-Mobile's divestiture of sufficient mid-band spectrum to avoid harm to competition and the public interest.<sup>2</sup>

## INTRODUCTION AND SUMMARY

T-Mobile already far exceeds the Commission's spectrum screen in many areas and holds far more spectrum than even T-Mobile thinks it needs. Its spectrum holdings are particularly disproportionate in the mid-band frequencies that the Commission has deemed "critical" to any provider's "5G buildout due to its desirable coverage, capacity, and propagation characteristics."<sup>3</sup> T-Mobile's outsized holdings of that critical spectrum input threaten long-term competition for mobile broadband services, as T-Mobile openly acknowledges in its investor presentations. Granting T-Mobile the additional mid-band licenses it seeks here would push it even further past the spectrum screen (see Appx. A, attached), exacerbate the existing 5G spectrum imbalance, and deepen concerns about long-term wireless competition. In short, granting T-Mobile's long-form application would harm the public interest in violation of 47 U.S.C. § 309(a) unless T-Mobile makes the divestitures needed to restore competitive balance in access to mid-band spectrum.

---

<sup>1</sup> AT&T Services, Inc. files on behalf of itself and its affiliates (collectively "AT&T").

<sup>2</sup> See 47 U.S.C. § 309(a) (prohibiting the grant of spectrum licenses unless doing so will serve the "public interest, convenience, and necessity").

<sup>3</sup> See, e.g., Report and Order and Order of Proposed Modification, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, 35 FCC Rcd. 2343, ¶ 3 (2020) ("C-Band Order").

For years, T-Mobile has told different audiences two contradictory stories about the competitive significance of its spectrum holdings. To policymakers, T-Mobile presents itself as a scrappy and under-resourced upstart struggling to compete against Verizon and AT&T, which it calls the industry’s “two behemoths, who dwarf T-Mobile.”<sup>4</sup> T-Mobile thus tells *the Commission* that the carrier with outsized spectrum assets is not itself, but Verizon, which supposedly has “disproportionate spectrum advantages over T-Mobile.”<sup>5</sup> But T-Mobile simultaneously tells its *investors* the opposite. To them, T-Mobile boasts that “we have such a material [spectrum] advantage right now against AT&T and Verizon” that they do not “have a path to match us”<sup>6</sup> and that this “advantage will last for the entirety of the 5G era and translate into ... extraordinary shareholder returns,”<sup>7</sup> ultimately at the expense of American consumers.

To date, Commission orders have reflected too little attention to T-Mobile’s acknowledged plan to dominate mid-band spectrum to the detriment of competition. *First*, T-Mobile was permitted to acquire spectrum-rich Sprint in 2019 and exceed the spectrum screen in hundreds of localities, all without any spectrum divestitures or even a market-by-market analysis of the potential harm to competition. As Commissioner Starks noted in dissent, the combined company exceeded the screen “in a whopping 356 CMAs covering about 82 percent of the U.S. population” and held “nearly three times as much spectrum per subscriber as Verizon

---

<sup>4</sup> Mike Sievert, *AT&T and Verizon Are Feeling the Heat of Real Competition*, T-Mobile Blog (Sept. 22, 2020), [https://www.t-mobile.com/news/un-carrier/real\\_competition\\_blog](https://www.t-mobile.com/news/un-carrier/real_competition_blog). In fact, T-Mobile’s market cap is greater than AT&T’s or Verizon’s even though, unlike them, it is a wireless pure play.

<sup>5</sup> Opposition of T-Mobile License LLC to Verizon Petition to Deny, at 10, ULS File Nos. 0009021213 & 0009021220 (Aug. 17, 2020) (“*T-Mobile 8/17/2020 Filing*”).

<sup>6</sup> T-Mobile, *Company Conf. Presentation (Wells Fargo)*, at 7-8 (S&P Glob. Mkt. Intel. June 18, 2020) (“*Wells Fargo Presentation*”) (remarks of President of Technology Neville Ray).

<sup>7</sup> T-Mobile, *Analyst/Investor Day Presentation*, at 4 (S&P Glob. Mkt. Intel. Mar. 11, 2021) (“*Investor Day Presentation*”) (remarks of CEO Mike Sievert).

and more than twice as much spectrum per subscriber as AT&T.”<sup>8</sup> *Second*, since the merger, T-Mobile has acquired substantial C-Band and 3.45 GHz assets even as it told investors that it did not need that new mid-band spectrum to compete, and it completed those purchases, too, without effective regulatory scrutiny. *Third*, the Commission rejected proposals by AT&T and others to open the 2.5 GHz band to genuine bidding competition, opting instead for T-Mobile’s preferred approach. As then-Commissioner Rosenworcel explained in dissent, that decision precluded meaningful competition and “structurally advantage[d] a single nationwide carrier”—again, T-Mobile.<sup>9</sup>

The 2.5 GHz auction has come and gone, and T-Mobile predictably emerged as the easy winner. With this long-form application, it is poised to win 90% of the available 2.5 GHz licenses for \$304 million—orders of magnitude below the bid levels in prior, competitively neutral auctions—and perfect its long-term strategy to keep its competitors from closing the mid-band spectrum gap.<sup>10</sup> If T-Mobile succeeds, it will blow even further past the spectrum screen in large portions of the country, far exceeding the one-third-of-available-spectrum threshold that it once argued should constitute a “hard cap” on auction winnings.<sup>11</sup> The post-auction spectrum

---

<sup>8</sup> Memorandum Opinion and Order, *Applications of T-Mobile US, Inc., and Sprint Corp. For Consent to Transfer Control of Licenses and Authorizations*, 34 FCC Rcd. 10578, 10873 (2019) (Statement of Comm’r Geoffrey Starks, dissenting).

<sup>9</sup> Report and Order, *Transforming the 2.5 GHz Band*, 34 FCC Rcd. 5446, 5525 (2019) (“2.5 GHz Order”) (Statement of Comm’r Jessica Rosenworcel approving in part and dissenting in part).

<sup>10</sup> Mike Dano, *The results are in: T-Mobile dominates FCC’s 2.5 GHz auction*, LightReading (Sept. 1, 2022), <https://www.lightreading.com/5g/the-results-are-in-t-mobile-dominates-fccs-25ghz-auction/d/d-id/780119>.

<sup>11</sup> See Comments of T-Mobile USA, Inc., WT Docket No. 12-269, at 9 (Nov. 28, 2012) (“[T]he Commission should adopt hard caps applicable to the acquisition of initial licenses at auction—an overall cap on spectrum holdings applied on a market-by-market basis. Entities would be prohibited from acquiring spectrum through an auction where the additional spectrum would cause them to exceed the relevant limit. . . . As an aggregate cap, the FCC could use an amount equal to one-third of the spectrum available for mobile wireless services.”); see also *id.* at 18 (“For carriers to compete effectively, they must have efficient and equitable access to critical spectrum resources[.]”). As discussed below, the

imbalance becomes even more glaring when one compares T-Mobile’s *mid-band* holdings to those of the rest of the industry. T-Mobile agrees with AT&T and the Commission that mid-band spectrum, which stretches “from about 2.5 to just under 6 GHz,”<sup>12</sup> is indispensable to any provider’s ability to compete in the 5G ecosystem.<sup>13</sup> To investors but not the Commission, T-Mobile boasts that it has “the best mid-band spectrum assets by far” as a result of its Sprint acquisition<sup>14</sup> and that AT&T and Verizon cannot hope to “close the mid-band spectrum gap despite massive spending.”<sup>15</sup>

This Commission’s intervention is now long overdue, and three steps are warranted. First, the Commission should act on AT&T’s year-old rulemaking petition (*see* Appx. C) seeking enhanced review of spectrum acquisitions that would cause any provider to hold more than one-third of unpaired mid-band spectrum—or, as here, to magnify a mid-band spectrum advantage that already far exceeds that threshold. The Commission should promptly put that petition out for comment and adopt effective mechanisms to prevent anticompetitive aggregations of mid-band spectrum. Second, in the meantime, the Commission should enforce its current spectrum aggregation rules and, as Section 309(a) requires, withhold issuance of any additional mid-band licenses to T-Mobile, including those at issue here, until T-Mobile has divested sufficient mid-band spectrum to restore competitive balance in access to this critical 5G input. Third, the

---

Commission uses one-third of available spectrum as the benchmark for its spectrum screen but has not imposed it as a “hard cap” on spectrum holdings, opting instead for case-by-case competitive analysis where the screen is exceeded.

<sup>12</sup> Bob O’Donnell, *The State of 5G*, T-Mobile Network Blog (Feb. 3, 2022) (“2/3/2022 T-Mobile Blog Post”), <https://www.t-mobile.com/news/network/the-state-of-5g-by-technalysis>.

<sup>13</sup> *Id.*; *see also* *Investor Day Presentation, supra*, at 14 (“Mid-band spectrum is clearly the global sweet spot for 5G.”); *C-Band Order* ¶ 3 (mid-band spectrum is “critical” to any provider’s “5G buildout due to its desirable coverage, capacity, and propagation characteristics”).

<sup>14</sup> *Investor Day Presentation, supra*, at 6.

<sup>15</sup> *Id.* at 7.

Commission should make clear that any future T-Mobile acquisitions of mid-band spectrum, whether in the secondary market or at auction, will be subject to exacting regulatory scrutiny.

## ARGUMENT

### I. T-MOBILE HAS ENGAGED IN AN ANTICOMPETITIVE STRATEGY TO RAISE ITS RIVALS' COSTS AND HARM CONSUMERS THROUGH UNDUE SPECTRUM AGGREGATION.

It is clear from the public record that an unconditional grant of T-Mobile's long-form application would harm the public interest.<sup>16</sup> Chairwoman Rosenworcel has observed that, if America is to lead the 5G ecosystem, "we need smarter spectrum policy" and, in particular, a sharper focus on building a strong and competitive "ecosystem in *mid-band airwaves*."<sup>17</sup> The President has likewise called for effective FCC oversight "to help avoid excessive concentration of spectrum license holdings in the United States, so as to prevent spectrum stockpiling, warehousing of spectrum by licensees, or the creation of barriers to entry."<sup>18</sup>

T-Mobile's spectrum holdings demand precisely this type of competitive scrutiny—which, to date, it has evaded. Even apart from its winnings in this auction, T-Mobile controls a grossly outsized portion of the mid-band spectrum needed to fuel the 5G revolution. Counting all auctions except this one, the remaining three nationwide facilities-based carriers have the following mid-band assets on a weighted average basis:<sup>19</sup>

---

<sup>16</sup> See 47 U.S.C. § 309(d)(1) (facts on which "official notice may be taken" are sufficient to support petitions to deny applications for spectrum licenses).

<sup>17</sup> Statement of Jessica Rosenworcel, *Industries of the Future: Hearing Before the S. Comm. on Commerce, Sci., & Transp.*, 116th Cong. at 2 (2020), <https://docs.fcc.gov/public/attachments/DOC-361933A1.pdf> (emphasis added).

<sup>18</sup> Exec. Order No. 14,036, *Promoting Competition in the American Economy*, 86 Fed. Reg. 36,987, 36,994 § 5(D)(ii) (July 9, 2021).

<sup>19</sup> All values are taken from the Commission's Universal Licensing System except for T-Mobile's 2.5 MHz spectrum holdings, which cannot be easily derived from that system. Those holdings are taken instead from T-Mobile's long-form application (exhibit entitled "Mobile Spectrum Holdings").

- **T-Mobile: 205 megahertz** (165 megahertz of non-auctioned 2.5 GHz spectrum in the 2.5 GHz band, 27 in the C-Band, and 12 in the 3.45 GHz band).
- **AT&T: 120 megahertz:** (80 in the C-Band plus 40 in the 3.45 GHz band).
- **Verizon: 161 megahertz:** (composed entirely of C-Band).<sup>20</sup>

T-Mobile holds this disproportionate mid-band spectrum position not because it outbid others at auction, but because it purchased Sprint, which for years had accumulated massive interests in legacy EBS and BRS spectrum in the 2.5 GHz band outside of any auction context and before the Commission recognized the enormous competitive significance of that band.<sup>21</sup>

Having acquired the lion’s share of mid-band spectrum, T-Mobile emphasizes to Wall Street that its spectrum portfolio gives it a wide and growing advantage over its rivals. As President of Technology Neville Ray boasted last year:

[E]veryone in the industry is playing the same game—building out optimal mid-band spectrum to deliver the perfect combo of speeds and coverage. Often called the “goldilocks” of spectrum . . . mid-band spectrum is clearly the global sweet spot for 5G. . . . *T-Mobile has a winning hand and a lasting advantage.* Verizon and AT&T have very limited mid-band deployments to date while T-Mobile started preparing for the Sprint merger well over two years ago and began work in

---

<sup>20</sup> Although Verizon has nonexclusive secondary access to 16 megahertz of CBRS spectrum, that access is subject to severe power limits and interruption by government incumbents. Those holdings thus do not count as “available spectrum” for purposes of any spectrum screen. Verizon also has holdings in the millimeter wave bands, and on that basis T-Mobile has misleadingly argued *to the Commission* that Verizon has “disproportionate spectrum advantages over T-Mobile.” *T-Mobile 8/17/2020 Filing* at 10. But T-Mobile has told *investors* that mmWave spectrum “has severe limitations and is generally limited to a few outdoor areas of some cities.” T-Mobile Press Release, *T-Mobile Further Solidifies 5G Leadership Position with Successful C-Band Auction* (Mar. 10, 2021), <https://www.t-mobile.com/news/network/t-mobile-further-solidifies-5g-leadership-position-with-successful-c-band-auction> (“*T-Mobile 3/10/2021 Press Release*”). The Commission has cited these “unique technical characteristics” in excluding mmWave holdings from the overall spectrum screen. *See Report and Order, Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, 31 FCC Rcd. 8014, ¶ 180 (2016).

<sup>21</sup> *See Report and Order, Policies Regarding Mobile Spectrum Holdings*, 29 FCC Rcd. 6133, ¶¶ 107-125 (2014) (“*Spectrum Holdings Order*”) (discussing EBS and BRS assets acquired by Sprint and its corporate predecessor Clearwire and their historical treatment for spectrum aggregation purposes).

earnest last year. ... *And we'll only continue to grow from there at a pace that can't be matched.*<sup>22</sup>

Ray not only observes that T-Mobile has *more* mid-band spectrum than its rivals in absolute terms, but also asserts that it has *better* mid-band spectrum, given the physical properties of its inherited 2.5 GHz assets. “[S]pectrum,” he says, “obeys the immutable laws of physics. The higher the frequency, the shorter the distance it can travel and the more easily it is blocked by objects. C-band is 3.7 to 3.98 GHz. T-Mobile’s existing mid-band 5G network uses 2.5 GHz spectrum. Higher banded spectrum cannot travel as far.”<sup>23</sup> As a result, he claims, “C-band will require 50% more cell sites for meaningful and continuous coverage, and in some areas, for example in-building, the required densification can be 4x higher than 2.5 GHz,” thus imposing major costs on providers that, unlike T-Mobile, must rely on C-Band spectrum for 5G.<sup>24</sup>

Despite T-Mobile’s disparagement of C-Band propagation characteristics, and despite its mid-band lead, T-Mobile participated in the C-Band auction, bid up prices by placing substantial bids of its own, and ultimately obtained 40 megahertz in many markets. T-Mobile promptly reminded investors that it did not actually need this new spectrum to compete. As its website explains, “these new frequencies are simply additions to [T-Mobile’s] large, existing mid-band 5G networks using the 2.5-2.6 GHz frequency bands.”<sup>25</sup> And in the words of CEO Mike Sievert,

---

<sup>22</sup> Neville Ray, *The Current State of 5G*, T-Mobile Network Blog (Apr. 19, 2021), <https://www.t-mobile.com/news/network/the-current-state-of-5g> (emphases added).

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*; see also *T-Mobile 3/10/2021 Press Release, supra* (“Verizon and AT&T cannot deliver a 5G network with the breadth and depth of T-Mobile’s. It could be years before most of their customers see a meaningful boost from C-Band, and even then, the propagation characteristics limit their mid-band 5G coverage footprints. #Physics 😊.”) (emoji in original).

<sup>25</sup> 2/3/2022 *T-Mobile Blog Post, supra*.

“[w]e’re not in a rush” to deploy C-Band even though “we hope to deploy [it] down the road” at some point.<sup>26</sup>

This spectrum strategy is a textbook example of anticompetitive foreclosure. As the Department of Justice has observed, “the private value for incumbents in a given locale includes not only the revenue from use of the spectrum but also any benefits gained by preventing rivals from improving their services.”<sup>27</sup> Here, some portion of the \$9.3 billion that T-Mobile paid for this substantial chunk of C-Band spectrum reflects “‘foreclosure value’ as distinct from ‘use value.’”<sup>28</sup> Indeed, CEO Sievert suggested that raising his rivals’ costs was a major factor driving T-Mobile’s C-Band bidding strategy. Before the auction, Sievert predicted that AT&T and Verizon would “spend tens of billions of dollars they don’t have” and “stress out their balance sheets” because “they’re way behind us” and will “have to do things that are probably going to be uneconomic.”<sup>29</sup> After the auction, he announced on T-Mobile’s website: “[W]e are incredibly pleased with our clear success in this auction. Our competitors had no choice but to go all in with a break-the-bank attempt to remain relevant in the 5G era.”<sup>30</sup>

Sievert doubled down on this raising-rivals’-costs theme in investor presentations. T-Mobile “won” the C-Band auction because, he said, “AT&T and Verizon ... spen[t] billions of dollars that they didn’t have to try to catch up to our spectrum position, and that’s before they invest tens of billions more for deployment.”<sup>31</sup> As a result, he predicted, AT&T and Verizon will

---

<sup>26</sup> T-Mobile, *FQ4 2021 Earnings Call Tr.*, at 18 (S&P Glob. Mkt. Intel. Feb. 2, 2022).

<sup>27</sup> *Ex Parte* Submission of the United States Dep’t of Justice, *Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, at 10 (Apr. 11, 2013).

<sup>28</sup> *Id.* at 10-11.

<sup>29</sup> T-Mobile, *Company Conference Presentation (Goldman Sachs)*, at 16 (S&P Glob. Mkt. Intel. Sept. 16, 2020) (“*Goldman Sachs Presentation*”).

<sup>30</sup> *T-Mobile 3/10/2021 Press Release*, *supra*.

<sup>31</sup> *Investor Day Presentation*, *supra*, at 7.

permanently trail T-Mobile in network performance: “[T]his spectrum and network lead isn’t just a head start. We’re well positioned to keep the 5G advantage that will last the entirety of the 5G era. ... [W]e’ll remain ahead in this race with low cost and a strong and flexible balance sheet, so we’re able to defend our leading position if we choose to.”<sup>32</sup>

T-Mobile’s claim that it has locked in a spectrum advantage for “the entirety of the 5G era” should raise significant concerns because there is no new mid-band spectrum in the auction pipeline that could equalize the current imbalance in mid-band assets. T-Mobile successfully shut that pipeline down in two proceedings following the C-Band auction. First, at T-Mobile’s suggestion—and over AT&T’s opposition—the Commission imposed “a limit of 40 megahertz out of the total of 100 megahertz” that any participant could win in the recent 3.45 GHz auction.<sup>33</sup> As T-Mobile intended, that auction-specific cap deprived AT&T and Verizon of the means to narrow the gap with T-Mobile in mid-band spectrum. It kept any carrier from obtaining in that auction the type of spectrum asset needed to achieve peak 5G performance: blocks of at least 80-100 megahertz of contiguous spectrum.<sup>34</sup> And it also enabled T-Mobile to avoid spectrum-screen scrutiny of its own acquisitions of additional mid-band spectrum in the same auction.<sup>35</sup>

Second, although Commission staff previously suggested that *this* auction was an opportunity for AT&T and Verizon to catch up with T-Mobile,<sup>36</sup> T-Mobile successfully shut

---

<sup>32</sup> *Id.*

<sup>33</sup> Second Report and Order, *Facilitating Shared Use in the 3100-3550 MHz Band*, 36 FCC Rcd. 5987, ¶ 104 (2021) (“3.45 GHz Order”).

<sup>34</sup> See Appx. C at 8-9 (AT&T Pet. for Rulemaking).

<sup>35</sup> 3.45 GHz Order, ¶ 103 (choosing 40 megahertz auction-specific cap in lieu of post-auction scrutiny).

<sup>36</sup> See Order on Reconsideration, *Application of T-Mobile License LLC and Channel 51 License Co. LLC for Spectrum Manager Lease Arrangement*, ULS File No. 0009021213, DA 20-1442, ¶ 11

down that opportunity too. T-Mobile already controls most 2.5 GHz assets by virtue of its acquisition of Sprint. The residual 2.5 GHz licenses available in this auction are overlay licenses for use in the less populous “white space” areas between incumbent license areas, and any operations using those overlay licenses must protect against interference with incumbent operations, including T-Mobile’s.<sup>37</sup> No provider *other than* T-Mobile, therefore, could use these overlay licenses to support nationwide or even large regional deployments so long as T-Mobile retains rights to the incumbent license areas.<sup>38</sup>

Nonetheless, a Commission majority rejected proposals by AT&T and others to conduct a double-sided 2.5 GHz auction featuring robust competition for all relevant spectrum licenses in a given area.<sup>39</sup> In then-Commissioner Rosenworcel’s words, the auction rules thus “structurally advantage[d] a single nationwide carrier,” T-Mobile, by ensuring that no T-Mobile competitor could benefit from this spectrum.<sup>40</sup> And that is how T-Mobile managed to “win” this auction, and add massive new spectrum assets to its already formidable mid-band war chest, by bidding only \$304 million. That figure is a tiny fraction of the amounts bid in genuinely competitive

---

(WTB Dec. 3, 2020) (rejecting spectrum aggregation concerns on the ground that the Commission “is in the process of making available,” among other spectrum, “additional rural 2.5 GHz spectrum for mobile wireless use—the largest swath of contiguous spectrum in the country below 3 GHz”).

<sup>37</sup> Public Notice, *Comment Sought on Competitive Bidding Procedures for Auction 108*, FCC 21-14, AU Docket No. 20-429, ¶ 2 n.1 (Jan. 13, 2021).

<sup>38</sup> *See 2.5 GHz Order*, 34 FCC Rcd. at 5474 ¶¶ 78-79 (observing that the percentage of population covered by the vacant and available EBS is only slightly over 15%, and that almost all of the incumbent EBS licenses are encumbered by long-term leases, most of which are with Sprint (now T-Mobile)).

<sup>39</sup> *Id.* at 5525 (statement of Comm’r Jessica Rosenworcel approving in part and dissenting in part).

<sup>40</sup> *Id.*

spectrum auctions, and it equates to a paltry two cents per MHz-POP, compared to 94 cents per MHz-POP for the C-Band auction.<sup>41</sup>

## **II. THE COMMISSION SHOULD WITHHOLD ANY ADDITIONAL MID-BAND LICENSES FROM T-MOBILE UNTIL IT AGREES TO AN EFFECTIVE DIVESTITURE REMEDY.**

Under Section 309(a) of the Communications Act, the Commission may not grant T-Mobile’s long-form application, and unconditionally grant T-Mobile yet more spectrum rights with no corresponding divestitures, unless it finds that doing so would somehow promote the public interest.<sup>42</sup> The Commission has a long-standing analytical framework for conducting that analysis. It adopted its current “spectrum screen” to flag and guard against exactly the type of spectrum-aggregation strategy that T-Mobile has undertaken here. A provider with a sizable share of any essential spectrum input may seek to enlarge its holdings of that input “not because it will put the spectrum to its highest use, but because it is motivated to engage in a foreclosure strategy” in which it “keep[s] spectrum out of the hands of potential competitors.”<sup>43</sup> As discussed, T-Mobile has not only engaged in that strategy, but also publicly touted it to investors.

The Commission’s spectrum aggregation rules provide for heightened scrutiny when the prospective licensee seeks to aggregate spectrum for mobile telephony/broadband services and its attributable spectrum holdings would exceed (or further exceed) about one-third of usable spectrum; that threshold is currently 385 megahertz in the vast majority of U.S. counties.<sup>44</sup>

---

<sup>41</sup> See Alan Weissberger, *FCC Auction 108 (2.5 GHz) ends with total proceeds << than expected; T-Mobile expected to be #1 spectrum buyer*, IEEE Commc’ns Soc’y Tech. Blog (Aug. 29, 2022), <https://techblog.comsoc.org/2022/08/29/fcc-auction-108-2-5-ghz-ends-with-total-proceeds/>.

<sup>42</sup> 47 U.S.C. § 309(a).

<sup>43</sup> *Spectrum Holdings Order*, ¶¶ 62, 64.

<sup>44</sup> See, e.g., Memorandum Opinion and Order, *T-Mobile License LLC Cellco Partnership Applications for 3.7–3.98 GHz Band Licenses*, 36 FCC Rcd. 11486, ¶ 3 (2021) (“*Post-Auction C-Band Order*”) (“Since 2004, as part of its mobile spectrum holding policies, the Commission has employed an initial spectrum screen to help identify for further competitive analysis those local markets where an

According to its long-form application, T-Mobile already exceeds the screen in one or more counties within 181 Cellular Market Areas (“CMAs”).<sup>45</sup> And according to that long-form application, a grant of the licenses won in Auction 108 would cause T-Mobile to exceed (or further exceed) the screen in one or more counties within 70 CMAs.<sup>46</sup> According to Census Bureau data, the CMAs where T-Mobile would exceed the screen if this application is granted account for *nearly two-thirds of the U.S. population*.<sup>47</sup>

When the screen is exceeded, as it is here, the Commission “carefully examine[s] each local market” and “take[s] appropriate action where necessary to preserve or protect competition.”<sup>48</sup> That analysis requires consideration of various competitive variables, including “the total number of rival service providers; the number of rival firms that can offer competitive service plans; the coverage by technology of the firms’ respective networks; the rival firms’ market shares; the applicant’s market share; the total amount of spectrum available; the amount of spectrum suitable for the provision of mobile telephony/broadband services controlled by the applicant; and the spectrum holdings of each of the rival service providers and licensees.”<sup>49</sup> The Commission often also requires the applicant to submit a detailed analysis of the competitive

---

entity would hold approximately one-third or more of the total spectrum ‘suitable and available’ for the provision of mobile telephony/broadband services.”).

<sup>45</sup> See Appx. A (identifying 39 CMAs where T-Mobile already exceeds the screen and granting this application would increase that exceedance); Appx. B (identifying an additional 142 CMAs where T-Mobile already exceeds the screen).

<sup>46</sup> See *id.*

<sup>47</sup> Specifically, the CMAs listed in Appendices A and B cover 63 percent of the total U.S. population, based on 2010 census data.

<sup>48</sup> See, e.g., *Post-Auction C-Band Order*, 36 FCC Rcd. 11486, ¶ 29.

<sup>49</sup> *Id.* ¶ 28.

picture in each triggered CMA and explain how the acquisition will benefit the public interest rather than harm competition.<sup>50</sup>

Here, although all major U.S. wireless providers have the spectrum assets they need to compete in the near term, T-Mobile's unprecedented spectrum aggregation creates a major imbalance in the mid-band assets needed for effective competition over the long-term. Again, anyone looking for substantiation of that point need look no further than T-Mobile's own investor presentations, which repeatedly stress that T-Mobile's outsized mid-band assets will enable it to dominate mobile broadband "for the next decade, if not beyond," and certainly "for the entirety of the 5G era."<sup>51</sup>

---

<sup>50</sup> See, e.g., General Information and Docket Request for T-Mobile, *Applications of T-Mobile U.S., Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197 (Aug. 15, 2018); Data Request for T-Mobile, *Applications of T-Mobile U.S., Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197 (Sept. 10, 2018); Application, *T-Mobile License LLC Spectrum Manager Lease Arrangements*, ULS File No. 0009021213, at Exhibit 4, "Spectrum Aggregation Analysis" (June 23, 2020).

<sup>51</sup> *Investor Day Presentation, supra*, at 4-7 (CEO Sievert: because AT&T and Verizon cannot "close the mid-band spectrum gap," "T-Mobile is poised to lead [5G] for the next decade, if not beyond. ... [O]ur advantage will last for the entirety of the 5G era."); *accord Wells Fargo Presentation, supra*, at 7 (CTO Ray: "[W]e're north of 300 megahertz of spectrum in the Sub-6, so mid- and low-bands. And that's ... a 3x multiple on Verizon's holdings.... [It's a] 2x turn on AT&T. ... [O]ur competition doesn't have a path to match us for some time."); *Goldman Sachs Presentation, supra*, at 16 (Ray: "[W]e have a strong [spectrum] asset base. ... [O]ur competition is in desperate straits."); *id.* (Sievert: AT&T and Verizon are "stuck and they're way behind us"); T-Mobile, *FQ2 2021 Earnings Call Tr.*, at 6 (S&P Glob. Mkt. Intel. July 29, 2021) (Sievert: "We're well ahead in our 5G leadership. But what I hope, is also becoming increasingly clear, is that T-Mobile is positioned to maintain our 5G leadership for the duration of the 5G era, thanks to our superior spectrum portfolio, our unprecedented deployment momentum and our synergy-backed model."); *id.* at 14 (Ray: T-Mobile's spectrum assets "set us up for an incredible leadership position that AT&T and Verizon will spend many years trying to match"); T-Mobile, *FQ3 2021 Earnings Call Tr.*, at 16 (S&P Glob. Mkt. Intel. Nov. 2, 2021) (Sievert: "I don't think that AT&T and Verizon have the wherewithal ... to compete with us on the quality of the 5G network that we're building."); T-Mobile, *FQ1 2022 Earnings Call Tr.*, at 14 (S&P Glob. Mkt. Intel. Apr. 27, 2022) (Ray: "I almost want to say we've got to give the competition a chance. We're so far in front."); T-Mobile, *FQ2 2022 Earnings Call Tr.*, at 11 (S&P Glob. Mkt. Intel. July 27, 2022) (Sievert: it "has been under-discussed ... how much spectrum we have against this leading mid-band 5G footprint"); T-Mobile, *FQ3 2022 Earnings Call Tr.*, at 11 (S&P Glob. Mkt. Intel. Oct. 27, 2022) (Sievert: "And so years ago, I said we were 2 years ahead in this 5G race. And in 2 years, we'd still be 2 years ahead. That continues to appear to be the case, even though our competitors are now in rapid deployment of their C-band assets.").

As part of the competitive spectrum analysis triggered by the spectrum screen, the Commission also considers “whether current service providers can access additional spectrum in the market either through auction or on the secondary market.”<sup>52</sup> Again, there are no major new sources of mid-band spectrum in the auction pipeline. That leaves only secondary market transactions as a means for T-Mobile’s competitors to achieve significant new mid-band assets. The problem is that, apart from AT&T and Verizon, there presently is only one company with major mid-band spectrum assets potentially useful for nationwide mobile broadband services. That company is T-Mobile. And it has no incentive to sell at competitive prices because it wishes to go on earning “extraordinary shareholder returns”<sup>53</sup> on the basis of its grossly disproportionate mid-band assets. More generally, no company that is engaged in a successful spectrum foreclosure strategy has any incentive to help its rivals obtain the spectrum inputs they need to compete effectively, even if it receives fair value in return. That is why this Commission must and does play an essential public-interest role in avoiding excessive aggregations of spectrum.

When the results of a spectrum auction would enable a winning bidder to obtain—or, as here, deepen—an anticompetitive advantage in critical spectrum inputs, the proper context for taking action is on review of the bidder’s long-form license application.<sup>54</sup> Critically, the remedies in such cases are not confined to denial of the specific licenses at issue in the application. Instead, “in the event that a divestiture is required before issuing any new licenses, an applicant would have greater flexibility to choose which spectrum to divest *among its existing spectrum*

---

<sup>52</sup> *Post-Auction C-Band Order*, 36 FCC Rcd. 11486, ¶ 28.

<sup>53</sup> *Investor Day Presentation*, *supra*, at 4.

<sup>54</sup> *C-Band Order* ¶ 89.

*holdings* already in the screen, in a manner that nevertheless would address competitive concerns.”<sup>55</sup>

Structuring divestitures to “address competitive concerns” presents different issues today, however, than it did ten years ago. Piecemeal divestitures of spectrum were sufficient in a 3G or LTE environment because, as noted, providers could adequately serve their customers’ needs with 10 or 20 megahertz blocks in particular geographic areas. In that context, it was economically efficient to give the divesting party maximal discretion to choose what to divest and to whom. But the Commission needs to play a greater role in structuring efficient spectrum divestitures in a 5G environment, where providers require wide blocks of contiguous spectrum, often across expansive geographic areas. The objective of spectrum-aggregation remedies is not to strip a market leader of assets, but to preserve and enhance competition. That objective requires giving a divesting party’s rivals the spectrum tools they need to compete effectively.

Although most secondary market spectrum transactions should be presumed efficient, that presumption does not hold for a spectrum-rich provider such as T-Mobile faced with a divestiture obligation. If left to its own devices, T-Mobile would have every incentive to effect required reductions in its mid-band assets by breaking them into small pieces incapable of supporting high-quality 5G functionality; alternatively, it might sell them to non-competing third parties that would simply warehouse them in hopes of selling years later to spectrum-poor providers at inflated holdout values. The Commission should therefore remedy T-Mobile’s undue aggregation of mid-band spectrum by ensuring that its divestitures of such spectrum are sufficient to allow a credible purchaser to compete effectively.

---

<sup>55</sup> *Id.* ¶ 89 n.273 (emphasis added).

Finally, the Commission should impose a “fix it first” approach to this long-form application. Specifically, it should condition its approval of any new mid-band assets to T-Mobile—including the overlay licenses sought here—on its approval of an acceptable divestiture transaction between T-Mobile and appropriate buyers. That approach would allow the Commission to review the structure of the divestiture and the identity of the purchasers to ensure that the end result is competitively effective.

### CONCLUSION

The Commission should deny this application or condition its grant on competitively effective and Commission-approved divestitures of mid-band spectrum currently held by T-Mobile. The Commission should also promptly put AT&T’s rulemaking petition out for public comment and, as urged there, adopt a mid-band-specific spectrum screen. Finally, it should view with great skepticism any future efforts by T-Mobile to increase its mid-band advantage with additional spectrum acquisitions.

Respectfully submitted,

/s/ Jessica B. Lyons

Jessica B. Lyons

Alex Starr

Michael P. Goggin

David J. Chorzempa

David L. Lawson

AT&T SERVICES INC.

1120 20th Street, N.W.

Washington, D.C. 20036

(202) 457-2100

Jonathan E. Nuechterlein  
Christopher T. Shenk  
SIDLEY AUSTIN LLP  
1501 K Street, N.W.  
Washington, D.C. 20005  
(202) 736-8000

November 7, 2022

## **Contact Information**

Pursuant to 47 C.F.R. § 1.47(d), the address for receiving electronic service is as follows:

Jessica B. Lyons  
Assistant Vice President – Senior Legal Counsel  
AT&T Services, Inc.  
1120 20th Street NW, Suite 1000  
Washington, DC 20036  
jessica.lyons@att.com

## Certificate of Service

I, John Meehan, certify that on this 7th day of November 2022, I have served a copy of the foregoing by email on the following:

Josh Roland  
T-Mobile  
601 Pennsylvania Ave., NW, Suite 800  
Washington, DC 20004  
[Joshua.roland6@t-mobile.com](mailto:Joshua.roland6@t-mobile.com)

Madelaine Maior  
Wireless Telecommunications Bureau  
Federal Communications Commission  
45 L Street NE  
Washington, DC 20554  
[Madelaine.Maior@fcc.gov](mailto:Madelaine.Maior@fcc.gov)

Nadja Sodos-Wallace  
Wireless Telecommunications Bureau  
Federal Communications Commission  
45 L Street NE  
Washington, DC 20554  
[Nadja.SodosWallace@fcc.gov](mailto:Nadja.SodosWallace@fcc.gov)

/s/ John Meehan

John Meehan

**Appendix A: CMAs Where T-Mobile’s Spectrum Aggregation Will Trigger or Further Exceed the Initial Screen in at Least One County**

Application of the Commission’s spectrum screen on a county-by-county basis indicates that T-Mobile’s winnings in this auction would cause it to meet, exceed, or further exceed the Commission’s spectrum screen in 70 Cellular Market Areas (“CMAs”). In 39 of these CMAs, T-Mobile’s attributable spectrum holdings exceeded the screen prior to the auction, and the auction caused T-Mobile to exceed the screen even further. These 39 CMAs are indicated by an asterisk (\*). The applicable spectrum screen is 385 MHz except in those markets where C Band and 3.45 GHz were not auctioned. In those markets, indicated with a plus sign (+), the screen is 250 MHz. All data is based on the spectrum aggregation exhibit filed by T-Mobile in connection with this application.

New York	CMA001
Chicago*	CMA003
Dallas*	CMA009
St. Louis	CMA011
Atlanta	CMA017
Salt Lake City	CMA039
Birmingham*	CMA041
Nashville*	CMA046
Northeast Pennsylvania*	CMA056
Allentown*	CMA058
Oxnard – Ventura*	CMA073
Little Rock*	CMA092
Corpus Christi*	CMA112
Santa Rosa – Petaluma*	CMA123
Salinas - Seaside – Monterey*	CMA126
Atlantic City*	CMA134
New London*	CMA154
Mayaguez, PR*+	CMA169
St. Cloud	CMA198
Aguadilla, PR*+	CMA204
Clarksville	CMA209
Vineland*	CMA228
Glens Falls	CMA266
Kankakee*	CMA273
Joliet*	CMA304
AL 3 - Lamar	CMA309
AL 4 – Bibb*	CMA310
AL 6 – Washington*	CMA312
AZ 1 – Mohave*	CMA318
AR 2 – Marion*	CMA325
AR 3 – Sharp*	CMA326
AR 6 – Cleburne*	CMA329

AR 7 – Pope*	CMA330
AR 8 - Franklin	CMA331
CA 6 - Mono	CMA341
DE 1 - Kent	CMA359
FL 6 – Dixie*	CMA365
FL 7 – Hamilton*	CMA366
FL 8 – Jefferson*	CMA367
GA 2 - Dawson	CMA372
GA 4 - Jasper	CMA374
GA 5 - Haralson	CMA375
GA 6 - Spalding	CMA376
GA 13 - Early	CMA383
HI 1 – Kauai+	CMA385
HI 2 – Maui*+	CMA386
IL 6 - Montgomery	CMA399
KY 2 - Union	CMA444
KY 7 – Trimble*	CMA449
KY 8 - Mason	CMA450
LA 2 – Morehouse*	CMA455
LA 3 - De Soto	CMA456
LA 4 - Caldwell	CMA457
MA 2 - Barnstable	CMA471
MI 9 – Cass*	CMA480
NJ 3 - Sussex	CMA552
NY 2 - Franklin	CMA560
NY 4 - Yates	CMA562
OH 2 – Sandusky*	CMA586
OH 8 - Clinton	CMA592
OR 4 - Lincoln	CMA609
SC 7 - Calhoun	CMA631
TX 10 - Navarro	CMA661
TX 19 – Atascosa*	CMA670

TX 20 – Wilson*	CMA671
VA 9 - Greenville	CMA689
VA 12 – Caroline*	CMA692

PR 1 – Rincon*+	CMA723
PR 2 – Adjuntas*+	CMA724
PR 6 – Vieques*+	CMA728

## Appendix B: Additional CMAs Where T-Mobile Already Meets or Exceeds the Screen

To provide necessary context to this submission, AT&T is providing a list of the 142 CMAs<sup>56</sup> where T-Mobile meets or exceeds the Commission’s spectrum screen in at least one county, but T-Mobile’s aggregation exhibit indicates that its overall spectrum holdings will not increase in those counties as a result of Auction 108. The applicable spectrum screen is 385 MHz except in those markets where C Band and 3.45 GHz were not auctioned. In those markets, indicated with a plus sign (+), the screen is 250 MHz. All data is based on the spectrum aggregation exhibit filed by T-Mobile in connection with this application.

Los Angeles	CMA002
Philadelphia	CMA004
Detroit	CMA005
Boston	CMA006
San Francisco	CMA007
Washington	CMA008
Houston	CMA010
Miami	CMA012
Minneapolis	CMA015
Cleveland	CMA016
San Diego	CMA018
Seattle	CMA020
Tampa	CMA022
Cincinnati	CMA023
Kansas City	CMA024
Buffalo	CMA025
Phoenix	CMA026
San Jose	CMA027
New Orleans	CMA029
Portland	CMA030
Columbus	CMA031
Hartford	CMA032
San Antonio	CMA033
Sacramento	CMA035
Memphis	CMA036
Louisville	CMA037

Providence	CMA038
Bridgeport	CMA042
Norfolk	CMA043
Albany	CMA044
Greensboro	CMA047
Toledo	CMA048
New Haven	CMA049
Honolulu+	CMA050
Jacksonville	CMA051
Syracuse	CMA053
Gary - Hammond	CMA054
Worcester	CMA055
Orlando	CMA060
Charlotte	CMA061
Springfield	CMA063
Grand Rapids	CMA064
Greenville	CMA067
Flint	CMA068
Wilmington	CMA069
Long Branch	CMA070
Raleigh	CMA071
West Palm Beach	CMA072
Austin	CMA075
El Paso	CMA081
Tacoma	CMA082
Mobile	CMA083

<sup>56</sup> This analysis excludes the Florence, AL CMA (CMA226), in which T-Mobile’s aggregation exhibit lists its total holdings as 386.2 MHz, as well as the Alaska 2 – Bethel CMA (CMA316), in which T-Mobile’s aggregation exhibit lists its total holdings as 252 MHz (and the screen is 250 MHz). It appears that these totals include up to 4 MHz of non-attributable 2.5 GHz spectrum. Specifically, T-Mobile’s aggregation exhibit provides a maximum BRS total of 70.5 MHz and a maximum EBS total of 117.5, notwithstanding the fact that only 67.5 MHz and 116.5 MHz, respectively, count toward the Commission’s screen. *See Spectrum Holdings Order* ¶ 118 (setting the attributable total of BRS spectrum at 67.5 MHz); *T-Mobile/Sprint Merger Order*, n. 228 (noting that the attributable total of EBS spectrum will be 116.5 MHz under the new rules for that band). These two CMAs are the only markets where, based on T-Mobile’s calculations, subtracting 4 MHz from its total holdings would make a difference vis-à-vis the screen.

Harrisburg	CMA084
Canton	CMA087
Wichita	CMA089
Charleston	CMA090
San Juan – Caguas, PR+	CMA091
Las Vegas	CMA093
Columbia	CMA095
Bakersfield	CMA097
York	CMA099
Newport News	CMA104
Lancaster	CMA105
Stockton	CMA107
Augusta	CMA108
Vallejo - Fairfield - Napa	CMA111
Reading	CMA118
Huntsville	CMA120
Santa Barbara - Santa Maria - Lompoc	CMA124
Mcallen - Edinburg - Mission	CMA128
Lorain	CMA136
Melbourne	CMA137
Modesto	CMA142
Salem	CMA148
Provo	CMA159
Killeen	CMA160
Brownsville - Harlingen	CMA162
Galveston	CMA170
Reno	CMA171
Santa Cruz	CMA175
Houma	CMA184
Boise City	CMA190
Gainesville	CMA192
Jackson	CMA207
Fort Pierce	CMA208
Pittsfield	CMA213
Chico	CMA215
Tuscaloosa	CMA222
Athens	CMA234
Anniston	CMA249
Bellingham	CMA270
Gadsden	CMA272
Yuba City	CMA274
Pine Bluff	CMA291
Aurora	CMA303
AL 1 - Franklin	CMA307
AL 2 - Jackson	CMA308
AL 5 - Cleburne	CMA311
AR 1 - Madison	CMA324
AR 5 - Cross	CMA328
CA 3 - Alpine	CMA338
CA 5 - San Luis Obispo	CMA340

A 8 - Tehama	CMA343
CA 10 - Sierra	CMA345
CA 11 - El Dorado	CMA346
CT 1 - Litchfield	CMA357
CT 2 - Windham	CMA358
FL 1 - Collier	CMA360
FL 2 - Glades	CMA361
FL 3 - Hardee	CMA362
FL 4 - Citrus	CMA363
FL 5 - Putnam	CMA364
FL 11 - Monroe	CMA370
HI 3 – Hawaii+	CMA387
ID 4 - Elmore	CMA391
IN 1 - Newton	CMA403
IN 9 - Decatur	CMA411
LA 7 - West Feliciana	CMA460
LA 8 - St. James	CMA461
LA 9 - Plaquemines	CMA462
MA 1 - Franklin	CMA470
MS 1 - Tunica	CMA493
MS 2 - Benton	CMA494
MS 11 - Lamar	CMA503
MO 14 - Barton	CMA517
NV 3 - Storey	CMA545
NJ 1 - Hunterdon	CMA550
NY 5 - Otsego	CMA563
NY 6 - Columbia	CMA564
OH 1 - Williams	CMA585
OH 5 - Hancock	CMA589
OR 1 - Clatsop	CMA606
PA 11 - Huntingdon	CMA622
PA 12 - Lebanon	CMA623
SC 3 - Cherokee	CMA627
SC 8 - Hampton	CMA632
SC 9 - Lancaster	CMA633
TN 6 - Giles	CMA648
TX 21 - Chambers	CMA672
WA 1 - Calam	CMA693
WA 6 - Pacific	CMA698
PR 5 – Ceiba+	CMA727

**Appendix C:**

**AT&T's Petition for a Rulemaking to Establish a Mid-Band Spectrum Screen**



**TABLE OF CONTENTS**

INTRODUCTION AND SUMMARY ..... 1

DISCUSSION..... 7

I. Any Provider Can Deliver on the Promise of 5G Performance Only If It Can Obtain Access to Wide and Contiguous Mid-Band Spectrum Channels..... 7

    A. The Limitations of Legacy Mobile Spectrum..... 8

    B. The Limitations of High-Band Spectrum. .... 11

    C. The Indispensability of Mid-Band Spectrum..... 12

II. The Commission Should Adopt a Spectrum Screen Specific to Mid-Band Spectrum..... 15

    A. Spectrum Foreclosure Dynamics..... 17

    B. The Foreclosure Threat to Mid-Band Spectrum. .... 19

III. A Mid-Band Screen Should Incorporate Provider-Specific Review and Competitively Effective Remedies. .... 23

    A. The Benefits of Provider-Specific Review. .... 23

    B. Structuring Divestitures to Ensure Competitive Outcomes..... 25

CONCLUSION..... 28

## **PETITION FOR RULEMAKING**

Pursuant to 47 C.F.R. § 1.401, AT&T Services, Inc., on behalf of itself and its affiliates (collectively, “AT&T”), respectfully petitions for a rulemaking to fill a critical gap in the Commission’s current spectrum aggregation rules. The Commission has already adopted separate mechanisms to address aggregation of low-band and high-band spectrum, respectively. But it has not yet adopted rules to address undue aggregation of mid-band spectrum, which—as all acknowledge—is a uniquely indispensable asset in any 5G provider’s spectrum portfolio. Such rules are needed to ensure that every provider has a fair and efficient opportunity to acquire the mid-band spectrum it needs to provide consumers with high-quality 5G services, free from anticompetitive foreclosure strategies. Such rules are likewise needed to answer the President’s call for measures “designed to help avoid excessive concentration of spectrum license holdings in the United States, so as to prevent spectrum stockpiling, warehousing of spectrum by licensees, or the creation of barriers to entry.”<sup>1</sup> The Commission should thus ensure continued mobile competition in the 5G era by conducting enhanced review of spectrum acquisitions that would cause a provider to hold more than one-third of unpaired mid-band spectrum.<sup>2</sup>

### **INTRODUCTION AND SUMMARY**

Like the 3G and 4G/LTE transitions before it, the 5G revolution will exponentially increase the scope and volume of wireless communications in America. Acting Chairwoman

---

<sup>1</sup> Exec. Order No. 14,036, [Promoting Competition in the American Economy](#), 86 Fed. Reg. 36,987, § 5(I)(ii) (July 14, 2021).

<sup>2</sup> AT&T does not propose to apply these rules to aggregations that might result from Auction 110. That auction is underway, and the Commission has already adopted an *ex ante* auction-specific cap in lieu of a post-auction spectrum-aggregation analysis. See Second Report and Order, *Facilitating Shared Use in the 3100-3550 MHz Band*, 36 FCC Rcd. 5987, ¶¶ 103-04 (2021) (“3.45 GHz Order”). AT&T does not propose to change that or any other aspect of the Auction by this filing. All discussion of future auctions in this document is intended to exclude Auction 110 unless it is explicitly referenced by name.

Rosenworcel has observed that, “[w]ith speeds as much as 100 times faster than present networks and much lower latency, these networks will kickstart the next big digital transformation.”<sup>3</sup> But she added that “to lead in this next generation of connectivity, we need smarter spectrum policy”—and, in particular, a sharper focus on building a strong and competitive “ecosystem in *mid-band airwaves*.”<sup>4</sup>

The Commission has used varying definitions of “mid-band” in the past, depending on the spectrum needs of each successive generation of wireless technologies. In a 5G environment, mid-band spectrum is properly categorized as the expanse from 2.5 GHz to 6 GHz. Unlike legacy mobile spectrum between 600 MHz and 2.5 GHz, mid-band spectrum is unencumbered by licensing policies designed for prior-generation technologies: it is both unpaired and available in the wide contiguous swaths needed for the highest-performance 5G functionality. Its shorter wavelengths also permit greater use of capacity-enhancing “massive MIMO” antenna arrays. And unlike spectrum above 6 GHz (such as millimeter wave), mid-band spectrum has the propagation characteristics needed to support wide-area networks covering urban and suburban neighborhoods. As the Commission has found, this mid-band spectrum is “critical” to any provider’s “5G buildout due to its desirable coverage, capacity, and propagation characteristics.”<sup>5</sup>

The Commission has begun taking much-needed steps to unlock the full potential of mid-band spectrum for commercial 5G uses, including the C-Band (3.7 GHz) auction completed

---

<sup>3</sup> Statement of Jessica Rosenworcel, *Industries of the Future: Hearing Before the S. Comm. on Commerce, Sci., & Transp.*, 116th Cong. at 1 (2020), <https://docs.fcc.gov/public/attachments/DOC-361933A1.pdf>.

<sup>4</sup> *Id.* at 2 (emphasis added).

<sup>5</sup> Report and Order and Order of Proposed Modification, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, 35 FCC Rcd. 2343, ¶ 3 (2020) (“*C-Band Order*”).

earlier this year and the upcoming 3.45 GHz auction. But the Commission’s 5G strategy has a blind spot: in addition to its overall spectrum screen, it applies separate granular reviews of spectrum aggregation for low- and high-band spectrum but *not* mid-band.

Specifically, the Commission announced in 2014 that it would apply “enhanced review” to any provider’s aggregation of more than one third of spectrum below 1 GHz.<sup>6</sup> AT&T opposed that approach because in its view—then and now—available spectrum below 1 GHz is essentially fungible with other legacy mobile spectrum below 2.5 GHz.<sup>7</sup> But the Commission adopted enhanced review of sub-1 GHz spectrum anyway, erring on the side of more granular review of spectrum assets. In 2016, the Commission similarly determined that *high*-band spectrum in the 28 GHz, 37 GHz, and 39 GHz bands collectively represents a sufficiently unique product market that application of a spectrum screen specific to that spectrum is warranted.<sup>8</sup>

Whatever the merits of these individual screens for low- and high-band spectrum,<sup>9</sup> it makes no sense to maintain them and *not* apply a similar screen for *mid*-band spectrum. Mid-

---

<sup>6</sup> See Report and Order, *Policies Regarding Mobile Spectrum Holdings*, 29 FCC Rcd. 6133, ¶¶ 44-55 (2014) (“*Spectrum Holdings Order*”); Memorandum Opinion and Order, *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations*, 34 FCC Rcd. 10578, ¶ 94 (2019) (“*TMO/Sprint Merger Order*”).

<sup>7</sup> See *Spectrum Holdings Order* ¶ 64 (noting and dismissing AT&T’s position).

<sup>8</sup> See Report and Order, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, 31 FCC Rcd. 8014, ¶¶ 184, 186-87 (2016) (“*2016 mmWave Order*”). Specifically, in 2016, the Commission adopted an *ex ante* one-third auction screen for millimeter wave spectrum, *see id.*, which it transitioned to an *ex post* case-by-case one-third screen in 2018, *see* Third Report and Order, *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, 33 FCC Rcd. 5576, ¶ 34 (2018) (“*2018 mmWave Order*”). In 2017, the Commission adopted a one-third screen for millimeter wave in secondary market transactions. *See also* Second Report and Order, *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, 32 FCC Rcd. 10988, ¶¶ 70, 74 (2017).

<sup>9</sup> The low- and high-band spectrum screens are not identical in function. The former is applied as a supplement or enhancement to the “traditional” spectrum screen and involves a more stringent standard of review. *See Spectrum Holdings Order* ¶ 44. The latter is a separate, stand-alone screen with essentially the same standard of review as the “traditional” screen. *See 2018 mmWave Order* ¶ 34. As explained below, mid-band spectrum is a unique and critical input for the provision of 5G services, and thus a mid-band screen should require the same enhanced standard of review as the low-band screen.

band licenses are the most important input in any wireless provider’s portfolio of 5G spectrum assets—and, not coincidentally, are also the most likely to become the subject of anticompetitive foreclosure strategies. As the Commission has found, a provider with a sizable share of any essential spectrum input may seek to enlarge its holdings of that input “not because it will put the spectrum to its highest use, but because it is motivated to engage in a foreclosure strategy” in which it “keep[s] spectrum out of the hands of potential competitors.”<sup>10</sup> The risk of that anticompetitive outcome is far greater for mid-band spectrum than it was for low- and high-band spectrum holdings when the Commission imposed individualized screens for them.

Yet the current rules do little to prevent that outcome. Instead, they apply only the highly diluted overall spectrum screen to acquisitions of additional mid-band spectrum, inaccurately treating that spectrum as though it were fungible with other spectrum, while applying more granular scrutiny to acquisitions of spectrum below 1 GHz even though that spectrum actually *is* fungible with other bands (*e.g.*, PCS and AWS).

Although all major U.S. wireless providers have the spectrum assets they need to compete in the near term, there is already a substantial imbalance in the mid-band spectrum holdings of leading 5G providers, the result of historical accident and past Commission policies. T-Mobile holds a vast percentage of such spectrum because, over the years, its corporate predecessors Sprint and Clearwire quietly accumulated enormous EBS/BRS assets in the 2.5 GHz band. They did so outside of any auction context and downplayed that band’s utility to keep it out of the spectrum screen.<sup>11</sup> The Commission then approved T-Mobile’s acquisition of Sprint without requiring *any* spectrum divestitures. In so doing, the Commission both abandoned

---

<sup>10</sup> *Spectrum Holdings Order*, ¶¶ 62, 64.

<sup>11</sup> *See Memorandum Opinion and Order, Sprint Nextel Corp. & Clearwire Corp.*, 23 FCC Rcd. 17570, ¶¶ 56-59 (2008).

its previous commitment to maintaining four genuine nationwide providers<sup>12</sup> and trivialized its overall spectrum screen, which the combined T-Mobile/Sprint far exceeds in large swaths of the country.<sup>13</sup> The Commission also designed an upcoming “auction” for the remaining 2.5 GHz assets that, in then-Commissioner Rosenworcel’s words, “structurally advantages a single nationwide carrier”—T-Mobile.<sup>14</sup> As the beneficiary of all this regulatory largesse, T-Mobile openly boasts to Wall Street that it plans to dominate the wireless market by exploiting this “winning hand,” which will confer (in its words) a “lasting advantage” over its rivals and enable it to “grow ... at a pace that can’t be matched.”<sup>15</sup>

Nothing stops T-Mobile—or any other provider that gains a substantial percentage of mid-band spectrum—from overpaying for yet more mid-band spectrum as part of the foreclosure strategy the Commission foresaw in 2014. Although the Commission’s traditional spectrum

---

<sup>12</sup> See Michael J. de la Merced, *Sprint and SoftBank End Their Pursuit of a T-Mobile Merger*, N.Y. Times (Aug. 5, 2014), <https://dealbook.nytimes.com/2014/08/05/sprint-and-softbank-said-to-abandon-bid-for-t-mobile-us/> (“[A] proposed combination of Sprint and T-Mobile, uniting the third- and fourth-biggest carriers in the United States, had been fiercely questioned by officials at both the Federal Communications Commission and the Justice Department. In 2011, AT&T’s attempts to buy T-Mobile for \$39 billion failed after the Obama administration sued to block the deal.”).

<sup>13</sup> See *TMO/Sprint Merger Order* ¶ 97 & Appx. D.

<sup>14</sup> Report and Order, *Transforming the 2.5 GHz Band*, 34 FCC Rcd. 5446, at Statement of Commissioner Jessica Rosenworcel Approving in Part, Dissenting in Part, at 1 (2019) (“*2.5 GHz Order*”). That auction thus provides no opportunity for competitors to catch up, despite the Bureau’s recent suggestion to the contrary. See Memorandum Opinion and Order, *T-Mobile License LLC Cellco P’ship Applications for 3.7-3.98 GHz Band Licenses*, Auction No. 107, ULS File Nos. 0009446137, 0009446983, ¶¶ 4, 30 (WTB July 23, 2021) (“*Auction 107 Order*”). T-Mobile already controls most 2.5 GHz assets by virtue of its acquisition of Sprint. The residual 2.5 GHz licenses available in Auction 108 are “overlay” licenses for use in the generally non-populous “white space” areas between incumbent license areas, and any operations using those overlay licenses must protect against interference with incumbent operations, including T-Mobile’s. Public Notice, *Comment Sought on Competitive Bidding Procedures for Auction 108*, FCC 21-14, AU Docket No. 20-429, ¶ 2 n.1 (Jan. 13, 2021). No provider other than T-Mobile, therefore, could use these overlay licenses to support nationwide or even large regional deployments. See *2.5 GHz Order* ¶¶ 78-79 (observing that the percentage of population covered by the vacant and available EBS is only slightly over 15%, and that almost all of the incumbent EBS licenses are encumbered by long-term leases, most of which are with Sprint (now T-Mobile)).

<sup>15</sup> Neville Ray, *The Current State of 5G*, T-Mobile Blog (Apr. 19, 2021), <https://www.t-mobile.com/news/network/the-current-state-of-5g>.

screen scrutinizes the percentage of *all* available spectrum any given provider can acquire, that traditional screen treats all spectrum assets as fungible even though they are not: legacy mobile (below 2.5 GHz), mid-band, and high-band spectrum are *each* essential inputs for any provider in a 5G environment. The traditional screen therefore cannot prevent providers with outsized mid-band assets from engaging in a foreclosure strategy designed to keep rivals from obtaining the mid-band assets they need.<sup>16</sup> Just as the Commission has addressed analogous concerns by adopting more granular restrictions on any provider’s accumulation of low- and high-band spectrum, it should now do the same for mid-band spectrum.

The Commission should also enforce any mid-band spectrum screen with flexible but competitively effective divestiture remedies. It should act through provider-specific review of post-auction long-form license applications, not through *ex ante*, provider-agnostic caps on spectrum acquired in any given auction; such caps are simultaneously over- and under-inclusive as mechanisms for preventing undue spectrum aggregation. And the Commission should ensure that any divestitures required as part of its case-by-case review actually promote competition in a 5G environment. That will require divesting providers to sell excess spectrum assets to credible rivals in forms they can use to create wide channels of mid-band spectrum over large geographic regions.

---

<sup>16</sup> The Bureau relied on this flaw in the rules when rejecting a recent challenge to the long-form applications of T-Mobile and Verizon in Auction 107. The Bureau noted that “enhanced factor” review applies only to “below-1-GHz spectrum,” and it thus analyzed those two providers’ mid-band holdings only under the overall screen, *Auction 107 Order* ¶ 27, whose large denominator grossly understates the competitive significance of those mid-band holdings. The Bureau then allowed T-Mobile and Verizon to exceed the diluted overall screen on the grounds that other providers have significant spectrum holdings today, *id.* ¶ 30, even though most of *those* assets are not, and are not fungible with, mid-band spectrum.

## DISCUSSION

### I. ANY PROVIDER CAN DELIVER ON THE PROMISE OF 5G PERFORMANCE ONLY IF IT CAN OBTAIN ACCESS TO WIDE AND CONTIGUOUS MID-BAND SPECTRUM CHANNELS.

If equipped with adequate spectrum resources, 5G networks will leapfrog LTE networks in performance, slashing latency and boosting speeds by orders of magnitude.<sup>17</sup> Yet the promise of 5G depends critically on the availability of suitable spectrum assets. Similar transitions in the past—from analog to 2G, from 2G to 3G, and from 3G to LTE—enhanced network performance mainly by implementing more efficient radio standards to squeeze more capacity out of available spectrum. To some extent, the 5G transition will rely on such efficiencies as well: for example, 5G will operate with a lower control-signaling overhead and a somewhat higher bandwidth utilization. But the improvements 5G will achieve in speed and throughput will derive largely from each network’s access to superior spectrum resources—in particular, sub-6 GHz channels that are wide, unpaired, contiguous, and capable of supporting Massive MIMO technologies.

Such channels can be found today only in mid-band spectrum, which, in the Commission’s words, “is essential for 5G buildout due to its desirable coverage, capacity, and propagation characteristics.”<sup>18</sup> To be sure, any successful 5G network will also need access to legacy mobile spectrum below 2.5 GHz for in-building penetration and coverage in rural areas

---

<sup>17</sup> See, e.g., *5G Technology and Networks (Speed, Use Cases, Rollout)*, Thales Grp., <https://www.thalesgroup.com/en/markets/digital-identity-and-security/mobile/inspired/5G#:~:text=5G%20technology%20offers%20an%20extremely,1%2F1000%20of%20a%20second> (last updated Apr. 5, 2021) (5G offers “10 to 100x speed improvement over 4G and 4.5G networks” and “an extremely low latency rate . . . From 200 milliseconds for 4G, we go down to 1 millisecond (1ms) with 5G”) (emphases omitted); Josh Fruhlinger, *What Is 5G? Fast Wireless Technology for Enterprises and Phones*, NetworkWorld (Apr. 1, 2019), <https://www.networkworld.com/article/3203489/what-is-5g-fast-wireless-technology-for-enterprises-and-phones.html> (“5G wireless is an umbrella term to describe a set of standards and technologies for a radically faster wireless internet that ideally is up to 20 times faster with 120 times less latency than 4G, setting the stage for IoT networking advances and support for new high-bandwidth applications.”).

<sup>18</sup> *C-Band Order* ¶ 3.

and to millimeter-wave spectrum for targeted capacity enhancements in unusually dense environments (*e.g.*, sports stadiums). But neither sub-2.5 GHz nor high-band holdings are a substitute for holdings of what T-Mobile aptly calls “the ‘goldilocks’ of spectrum” in the 5G era—mid-band spectrum between 2.5 GHz and 6 GHz.<sup>19</sup>

#### **A. The Limitations of Legacy Mobile Spectrum.**

Legacy mobile spectrum between 600 MHz and 2.5 GHz has excellent propagation characteristics, and all three nationwide providers have relied on it as they deploy the first phases of their 5G networks. But this legacy spectrum comes with a major disadvantage: it was allocated over the past four decades in non-contiguous pairs with limited channel sizes. That spectrum-allocation approach was well-tailored to accommodate legacy mobile technologies such as 2G, 3G, and LTE. Those technologies were designed for less demanding bandwidth needs and rely on frequency-division duplexing (“FDD”), which requires separate uplink and downlink bands separated by a duplex gap. But these narrow, paired, non-contiguous bands are not ideal for 5G technologies, which are optimized for time-division duplexing and need wider and contiguous spectrum bands to provide the fastest speeds and greatest capacity.

In particular, a contiguous channel of at least 80-100 megahertz of unpaired spectrum is likely to be table stakes for 5G network operators, given the unprecedented demands 5G will place on network capacity.<sup>20</sup> Wide, contiguous, and unpaired spectrum blocks are essential in a

---

<sup>19</sup> Neville Ray, *The Current State of 5G*, *supra*.

<sup>20</sup> See, *e.g.*, GSMA, *3.5 GHz in the 5G Era*, at 2, 6, 8 (Apr. 2021), <https://www.gsma.com/spectrum/wp-content/uploads/2021/04/3.5-GHz-for-5G.pdf> (“For the 3.3-4.2 GHz frequencies, channels of 80-100 MHz are required for each operator to maximise the efficiency and affordability in the first phase of roll out. More capacity will be required as demand increases.”); Comments of Nokia, *Expanding Flexible Use of the 3.7-4.2 GHz Band*, GN Docket No. 18-122, at 5 (Oct. 29, 2018) (“Nokia C-Band Comments”) (noting that China and other nations have allotted each provider “between 80 MHz to 130 MHz of [3 GHz] spectrum, providing the abundant bandwidth required for the feature sets, speed and performance to fuel the full potential of 5G. It is through these first-to-market, robust spectrum initiatives that these other countries seek to lead the ‘Race to 5G.’”).

5G environment for two basic reasons. First, they “will allow for gains in statistical multiplexing”: “[a]s the size of a radio channel increases, the available routes for communication traffic to flow increases more than proportionally due to the uneven nature of the traffic load.”<sup>21</sup> Second, “[w]ider channels lower network density” and require fewer base stations; for example, “[d]ecreasing channel size from 100 MHz to 60 MHz in the 3.5 GHz range will require increasing the number of cell sites by 64%.”<sup>22</sup> And those per-cell cost savings will translate into more cost-efficient and expeditious deployments of 5G networks across America.

It will not be feasible within the foreseeable future to refarm legacy mobile spectrum below 2.5 GHz to create the wide, contiguous, unpaired channels needed for optimal 5G performance. First, in most legacy sub-2.5 GHz bands, many different wireless providers hold narrow licenses on a locality-by-locality basis. The Commission has announced no plans to clear legacy mobile spectrum and repack existing licensees into more efficiently configured spectrum blocks—an enormous undertaking that would take many years to complete.

Meanwhile, in the absence of repacking, no individual provider could plausibly acquire all of the third-party licenses needed to create a contiguous 80-100 megahertz contiguous block of sub-2.5 GHz spectrum for its own use. To begin with, the third-party licensees typically need their existing slivers of spectrum to serve their own existing customers. And even if all incumbent licensees in this prospective 80-100 megahertz block were willing to sell, each could charge an inefficiently inflated price for ceding any narrow slice of spectrum that the buyer needs to assemble a wide contiguous block; such transactions would feature the same hold-out

---

<sup>21</sup> Public Interest Statement (“TMO-Sprint P.I.S.”), *Applications of T-Mobile US, Inc. and Sprint Corp. for Consent to Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Appx. B, ¶ 46 (June 18, 2018) (declaration of T-Mobile Chief Tech. Officer Neville Ray).

<sup>22</sup> GSMA, *3.5 GHz in the 5G Era*, *supra*, at 6.

dynamics familiar from the real estate industry. Finally, any 5G provider will need to continue devoting much of its own sub-2.5 GHz spectrum for LTE technologies using traditional paired blocks, in part to supplement its nascent 5G network and in part to support the millions of consumers with non-5G-capable devices.

Even apart from the complications caused by legacy spectrum allocation, simple physics creates another limitation for the use of sub-2.5 GHz spectrum for 5G. The long wavelengths associated with low-band frequencies can make it impractical to use Massive MIMO technologies, a key 5G innovation that uses multiple-antenna arrays to increase speed and capacity. In such arrays, the length of an antenna is directly proportional to the wavelength at issue and thus inversely proportional to the corresponding frequency. Antenna arrays designed for mid-band spectrum are “compact enough to be placed on ubiquitous items like utility poles.”<sup>23</sup> In contrast, Massive MIMO antenna housings for low-band spectrum below 1 GHz are “prohibitively large for deployment on typical supporting structures.”<sup>24</sup> As T-Mobile has explained, “smaller wavelengths mean that antennas optimized for that frequency can be smaller—meaning that more antenna elements can be placed in a given area or form factor,” producing “[g]reater efficiency gains.”<sup>25</sup>

In addition, the unpaired nature of mid-band spectrum optimizes 5G performance because it allows the same frequency to be used for both uplink and downlink transmissions. That feature, known as “reciprocity,” enables network engineers to improve channel estimation and thus enhance signal reception. In contrast, channel estimation for FDD transmissions is generally

---

<sup>23</sup> Voqal Petition to Deny (“Voqal Pet. to Deny”), *Applications of T-Mobile US, Inc. and Sprint Corp. for Consent to Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Ex. A, ¶ 31 (Aug. 27, 2018).

<sup>24</sup> *Id.*

<sup>25</sup> TMO-Sprint P.I.S., *supra*, at 35.

less accurate and entails significant efficiency losses. Finally, because paired spectrum is non-contiguous, it typically involves the use of spectrum more distant from the center frequency of the antenna than unpaired spectrum does, and it is thus less conducive to Massive MIMO enhancement.<sup>26</sup>

## **B. The Limitations of High-Band Spectrum.**

In the contexts for which high-band spectrum is most often deployed, it offers enormous advantages. It can be used in wide, contiguous channels to provide breathtaking performance; for example, AT&T's 5G+ service uses mmWave spectrum to deliver download speeds of up to 1 Gbps in high-traffic areas.<sup>27</sup> But propagation limitations constrain the use of mmWave technologies to small-cell deployments in concentrated areas with unusually dense demand, such as city blocks, campuses, and stadiums.

Outside of those areas, deploying mmWave spectrum is generally cost-ineffective because of its short-range propagation characteristics. In particular, providers could not possibly deploy everywhere the dense web of countless microcells that would be needed to support ubiquitous coverage using only mmWave spectrum. The costs of such deployment would exceed by orders of magnitude the costs of less dense cellular infrastructure based on spectrum with better propagation attributes, and local zoning approvals for the millions of new microcell sites would take years to obtain in any event. Indeed, the Commission has relied on these “unique technical characteristics” in deciding not to include mmWave holdings in its traditional spectrum screen.<sup>28</sup>

---

<sup>26</sup> Voqal Pet. to Deny, *supra*, Ex. A, ¶ 31.

<sup>27</sup> AT&T, *AT&T Announces Availability of Super-Fast 5G+ Service in Parts of Downtown Chicago* (Dec. 14, 2020), [https://about.att.com/story/2020/5g\\_chicago.html](https://about.att.com/story/2020/5g_chicago.html).

<sup>28</sup> *2016 mmWave Order* ¶ 180.

### C. The Indispensability of Mid-Band Spectrum.

For all of these reasons, the Commission has correctly determined that mid-band spectrum (2.5-6 GHz) is “essential” to a provider’s “5G buildout due to its desirable coverage, capacity, and propagation characteristics.”<sup>29</sup> Mid-band is, in the words of T-Mobile CTO Neville Ray, “the ‘goldilocks’ of spectrum.”<sup>30</sup> Because foreign policymakers have concluded the same thing, mid-band is also “the global sweet spot for 5G,” around which the worldwide network and device ecosystem is coalescing.<sup>31</sup>

T-Mobile stressed the must-have nature of mid-band spectrum when it persuaded the Commission to approve its acquisition of Sprint. It argued then that “[h]aving a diverse mix of spectrum assets is the foundation for implementing a robust 5G network” and that, without Sprint’s extensive mid-band spectrum assets, “[i]ts ability to roll out a robust 5G network [was] further challenged by its lack of available mid-band spectrum.”<sup>32</sup> As T-Mobile contended, the 600 MHz spectrum it had recently deployed “provides superior coverage” but is otherwise inferior to mid-band spectrum because it is “constrained by its relatively low bandwidth and limited ability to efficiently support applications that require high data rates.”<sup>33</sup> Similarly, T-Mobile added, millimeter wave spectrum has inferior propagation characteristics that will confine its deployment to “limited areas,” and such spectrum thus “do[es] not address the need

---

<sup>29</sup> *C-Band Order* ¶ 3.

<sup>30</sup> Neville Ray, *The Current State of 5G*, *supra*.

<sup>31</sup> *Id.*; see also p. 13-14, *infra* (noting East Asian initiatives); Comments of Ericsson, *Expanding Flexible Use of the 3.7-4.2 GHz Band*, GN Docket No. 18-122, at 6 (Oct. 29, 2018) (“Ericsson 3.7 GHz Comments”) (describing mid-band as “the sweet spot of spectrum innovation”).

<sup>32</sup> TMO/Sprint P.I.S. at 32.

<sup>33</sup> *Id.* at 21.

for mid-band spectrum to support many of the consumer benefits that New T-Mobile would be able to provide.”<sup>34</sup>

In his supporting declaration, Neville Ray confirmed the same points. He singled out “[m]id-band spectrum” as an essential input because, compared to low-band spectrum, “there is more capacity that can be delivered from a single cell site,” and thus acquisition of Sprint would enable T-Mobile “to deploy a capacity layer of 2.5 GHz spectrum to provide much higher 5G data rates to consumers.”<sup>35</sup> Without these extensive mid-band holdings, he explained, T-Mobile would face major competitive limitations: “Our lack of access to significant amounts of available mid-band spectrum that is not encumbered by LTE subscribers ... will significantly limit our ability to provide a nationwide 5G system that can handle the most demanding high capacity 5G applications.”<sup>36</sup> He also noted that the value of mid-band spectrum is far more pronounced in 5G networks than LTE networks: “low-band spectrum will achieve a 19 percent improvement in average spectral efficiency (2.1 bps/Hz to 2.5 bps/Hz),” whereas “mid-band spectrum will achieve a 52 percent improvement in average spectral efficiency (2.5 bps/Hz to 3.8 bps/Hz) moving from LTE to 5G.”<sup>37</sup>

Foreign regulators likewise recognize the indispensable role of mid-band spectrum in the 5G transition, and their policy choices have made mid-band the focus of the emerging global ecosystem for 5G equipment and devices. For example, China and other east Asian countries have assigned each licensee within their jurisdictions “between 80 MHz to 130 MHz of [3 GHz] spectrum, providing the abundant bandwidth required for the feature sets, speed and performance

---

<sup>34</sup> *Id.* at 22.

<sup>35</sup> *Id.*, Appx. B, at 18.

<sup>36</sup> *Id.*, Appx. B., at 10.

<sup>37</sup> *Id.*, Appx. B., at 26.

to fuel the full potential of 5G. It is through these first-to-market, robust spectrum initiatives that these other countries seek to lead the ‘Race to 5G.’”<sup>38</sup> And as mid-band spectrum becomes the “global sweet spot” for 5G deployments,<sup>39</sup> scale economies will lower the per-unit costs of 5G devices and equipment designed for mid-band operation, and international roaming agreements will likewise focus on reciprocal use of mid-band network assets.

Against this international backdrop, federal policymakers must enable America’s own commercial providers to tap the full potential of mid-band spectrum in the United States. In particular, they must not only free up additional mid-band spectrum for exclusive licenses,<sup>40</sup> but also ensure that each provider has a fair opportunity to obtain the wide contiguous channels it needs to compete effectively. As discussed below, only T-Mobile—by virtue of inheriting Sprint’s (and previously Clearwire’s) rights to the vast majority of 2.5 GHz spectrum—currently has access to mid-band spectrum suitable for 5G, and those holdings are substantial. No other provider will have access to significant mid-band spectrum until December 2021, when some of the recently auctioned C-Band spectrum becomes available, and even that spectrum will not become fully available until 2023 at the earliest. And the auction-specific cap in the 3.45 GHz auction, while well-intentioned, will prevent any provider from obtaining more than 40 MHz in that auction, far less than the 80-100 megahertz channels needed to achieve the high-end network

---

<sup>38</sup> Nokia C-Band Comments, *supra*, at 5. GSMA has likewise observed that Asian countries “have led the world in assigning 500 [megahertz] or more spectrum to mobile operators in the 3.5 GHz range.” GSMA, *3.5 GHz in the 5G Era*, *supra*, at 2.

<sup>39</sup> Neville Ray, *The Current State of 5G*, *supra*.

<sup>40</sup> Unlicensed spectrum—or practically unlicensed spectrum such as CBRS (3.5 GHz)—is no substitute for exclusive licenses in building out 5G networks, given the low-power and other restrictions necessary to accommodate competing use of the same spectrum by multiple network operators. *See, e.g.*, Ericsson 3.7 GHz Comments, *supra*, at 9 (noting that FCC rules—a “sharing arrangement, lower transmit power, and narrower channelization” “continue to limit the 3.5 GHz band’s utility for macro 5G deployments”).

performance that consumers increasingly enjoy in peer nations abroad and will come to expect in the United States.<sup>41</sup>

## **II. THE COMMISSION SHOULD ADOPT A SPECTRUM SCREEN SPECIFIC TO MID-BAND SPECTRUM.**

The Commission should promptly ensure that, as new mid-band spectrum becomes available, rival wireless providers can bid for it on a level playing field, free from anticompetitive foreclosure strategies undertaken by one or two providers with the most such spectrum. To that end, the Commission should adopt a mid-band-specific screen before additional auctions of mid-band spectrum are scheduled to avoid the complex challenges associated with unraveling the spectrum positions of particular providers after the fact. Specifically, the Commission should keep unpaired mid-band spectrum in the overall screen but apply “enhanced review” to any acquisition of unpaired mid-band spectrum that would cause a provider to hold more than one-third of the total amount available.<sup>42</sup> And the Commission should apply even greater scrutiny to acquisitions of unpaired mid-band spectrum by an entity that already holds more than one-third of unpaired mid-band spectrum in a particular area, as the Commission now does for low-band spectrum.<sup>43</sup>

The Commission has adopted two types of spectrum screens in response to Congress’s mandate to promote competition “by avoiding excessive concentration of licenses.”<sup>44</sup> First, the

---

<sup>41</sup> See Section III, *infra*.

<sup>42</sup> Such enhanced review historically has involved requiring applicants to complete a General Information Request and provide, among other things, detailed deployment plans for the spectrum to be acquired, shapefiles showing the geographic coverage of all existing spectrum holdings in the market, and a detailed accounting of how existing spectrum holdings are being used. See, e.g., General Information Request Regarding the AT&T/Bluegrass Transaction, Questions for AT&T, *Applications of New Cingular Wireless PCS, LLC, Bluegrass Cellular, Inc., and Bluegrass Wireless LLC for Consent to Assign Licenses*, WT Docket No. 15-225 (Oct. 5, 2015).

<sup>43</sup> See *Spectrum Holdings Order* ¶ 287.

<sup>44</sup> 47 U.S.C. § 309(j)(3)(B).

Commission has long applied a general screen to overall holdings of spectrum deemed “‘suitable’ and ‘available’” for commercial services.<sup>45</sup> Second, as noted, the Commission has adopted more band-specific mechanisms for scrutinizing accumulations of spectrum that it deems to have unique technical characteristics and/or competitive importance—specifically, sub-1 GHz and mmWave spectrum. Those mechanisms reflect the Commission’s determinations that spectrum assets in each of those two categories are substitutable with other assets in the same category but not with assets in other spectrum bands.<sup>46</sup>

Yet the Commission has adopted no analogous mechanism to scrutinize aggregation of mid-band spectrum, even though, as discussed, *that* spectrum is an essential input in any 5G provider’s spectrum holdings and is not fungible with spectrum below 2.5 GHz or above 6 GHz.<sup>47</sup> Simply lumping mid-band frequencies into an overall screen that includes non-fungible bands, with no other means of scrutinizing aggregation of mid-band spectrum *specifically*, is no safeguard against anticompetitive foreclosure. The Commission should promptly fill that gap in its rules. Mid-band spectrum is as technologically unique and essential to 5G as the Commission found low-band spectrum to be for 4G. As such, aggregation of mid-band frequencies above one-third of available spectrum should be subject to its own form of “enhanced factor” review. Although each major provider can handle 5G demand with its existing spectrum assets in the near term, the Commission should act to prevent any breakdown in competitive equilibrium, given the importance and relative scarcity of mid-band spectrum.

---

<sup>45</sup> *Spectrum Holdings Order* ¶ 71.

<sup>46</sup> *Id.* ¶ 286; *Spectrum Holdings Order* ¶ 3; *TMO/Sprint Merger Order* ¶ 94; *2018 mmWave Order* ¶ 34; *2016 mmWave Order* ¶ 186.

<sup>47</sup> *See C-Band Order* ¶ 3 (“Mid-band spectrum is essential for 5G buildout due to its desirable coverage, capacity, and propagation characteristics.”).

### A. Spectrum Foreclosure Dynamics.

As a general rule, market forces, expressed through spectrum auctions and secondary market transactions, present the most efficient way to allocate scarce spectrum inputs among downstream wireless providers. The main exception to that rule arises when one or two providers obtain such a large percentage of a necessary spectrum input that they have an incentive to overpay to acquire still more—not because they need it to serve their customers, but because they would benefit from the downstream advantage they accumulate if they keep it out of the hands of their rivals.

The Department of Justice raised this precise concern with the Commission in 2013. It explained:

[D]ue to the scarcity of spectrum, the Department is concerned that carriers may have incentives to acquire spectrum for purposes other than efficiently expanding their own capacity or services. Namely, the more concentrated a wireless market is, the more likely a carrier will find it profitable to acquire spectrum with the aim of raising competitors' costs. This could take the shape, for example, of pursuing spectrum in order to prevent its use by a competitor, independent of how efficiently the carrier uses the spectrum.<sup>48</sup>

Put differently, “the private value for incumbents in a given locale includes not only the revenue from use of the spectrum but also any benefits gained by preventing rivals from improving their services and thereby eroding the incumbents’ existing businesses. The latter might be called ‘foreclosure value’ as distinct from ‘use value.’”<sup>49</sup> This dynamic, when it occurs, harms not only the foreclosed rivals, but also consumers in general because it reduces competition for high-

---

<sup>48</sup> *Ex Parte* Submission of the United States Dep’t of Justice, *Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, at 10 (Apr. 11, 2013) (“DOJ Spectrum Aggregation *Ex Parte*”) (footnote omitted).

<sup>49</sup> *Id.* at 10-11.

performance services and thus increases quality-adjusted prices.<sup>50</sup> DOJ further noted that the longstanding spectrum screen broadly applicable to a provider’s overall spectrum holdings cannot defeat a foreclosure strategy aimed narrowly at a given category of spectrum bands if each provider needs spectrum in that category to compete effectively.<sup>51</sup>

In the *Spectrum Holdings Order*, the Commission “agree[d]” with DoJ that “there is a risk of foreclosure in downstream wireless markets.”<sup>52</sup> It explained that a provider with the most assets in any essential spectrum category might be the “highest bidder” for any newly available spectrum in that category “not because it will put the spectrum to its highest use, but because it is motivated to engage in a foreclosure strategy.”<sup>53</sup> The Commission thus imposed what it called an “enhanced factor” for transactional review that imposes heightened scrutiny on any transaction that would enable a provider to accrue more than one-third of available spectrum below 1 GHz.<sup>54</sup> The Commission later adopted a separate screen for mmWave spectrum, “limiting an entity’s holding to approximately one-third” of available spectrum across “the 28 GHz, 37 GHz, and 39 GHz bands.”<sup>55</sup>

---

<sup>50</sup> See *id.* at 10 (“The result is that spectrum may not be put to its most efficient use, which harms all consumers of wireless services and can have an exclusionary effect on the carrier’s competitors.”).

<sup>51</sup> See *id.* at 13 (“[I]t is important to consider the differing characteristics of spectrum in determining its contribution to a carrier’s competitive position.”).

<sup>52</sup> *Spectrum Holdings Order* ¶ 62.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* ¶¶ 283, 286. As noted, AT&T opposed any specific screen for sub-1 GHz spectrum on the ground that such spectrum is largely substitutable with *other legacy mobile spectrum* below 2.5 GHz. That position comports with our position here—that legacy mobile spectrum as a whole is not substitutable with mid-band spectrum because the latter is unencumbered by legacy spectrum-allocation decisions and its shorter wavelengths are necessary for many Massive MIMO arrays.

<sup>55</sup> *2016 mmWave Order* ¶¶ 186-87; see also *2018 mmWave Order* ¶ 34; see generally notes 8-9, *supra*. This distinct treatment of high-band spectrum is appropriate not only or even primarily because of foreclosure concerns, but because such spectrum is not fungible with legacy or mid-band spectrum and is available in such large quantities that to include it in the *overall* screen would grossly inflate the denominator and deprive that screen of any value in identifying aggregations that require close scrutiny.

A similar approach is needed for mid-band spectrum. Foreclosure strategies are far more likely to succeed today, and are thus far more likely to arise, because of two basic developments: the industry has become “more concentrated”<sup>56</sup> with the merger of T-Mobile and Sprint, and every provider now needs access to wide but scarce mid-band channels to compete successfully in the 5G era. Ten years ago, providers such as MetroPCS and Leap could provide competitive, high-performing mainstream wireless services with 20 megahertz of paired spectrum in just a few markets. Today, as discussed, providers will need 80-100 megahertz of contiguous mid-band spectrum to provide the full benefits of 5G to their customers. And demand for more such spectrum will only escalate as the new 5G ecosystem generates more bandwidth-intensive applications. In the words of T-Mobile’s Neville Ray, “[e]ach generational transition in wireless technology (*e.g.*, 3G to 4G) has led to a dramatic increase in wireless data consumption,” and “[g]iven the transformational changes that 5G will bring, I anticipate this pattern to continue—and at a greater pace due to an expected tsunami of new data-intensive use cases enabled by 5G. ... All these new 5G applications will dramatically accelerate the increase in capacity demands on the wireless network.”<sup>57</sup>

## **B. The Foreclosure Threat to Mid-Band Spectrum.**

T-Mobile holds an overwhelming portion of the mid-band spectrum needed to handle this coming “tsunami” of demand. It occupies that position not because it outbid others at auction, but because it purchased Sprint, which for years had accumulated massive interests in legacy

---

<sup>56</sup> DOJ Spectrum Aggregation *Ex Parte* at 10.

<sup>57</sup> TMO-Sprint P.I.S., Appx. B, ¶¶ 10-11, 15.

EBS and BRS spectrum in the 2.5 GHz band outside of any auction context and before the Commission recognized the enormous competitive significance of that band.<sup>58</sup>

Having thus acquired the lion's share of mid-band spectrum, T-Mobile now brags to Wall Street that its spectrum portfolio gives it a wide and growing advantage over its rivals. Neville Ray boasts:

[E]veryone in the industry is playing the same game – building out optimal mid-band spectrum to deliver the perfect combo of speeds and coverage. Often called the “goldilocks” of spectrum for this reason, mid-band spectrum is clearly the global sweet spot for 5G. ... *T-Mobile has a winning hand and a lasting advantage.* Verizon and AT&T have very limited mid-band deployments to date while T-Mobile started preparing for the Sprint merger well over two years ago and began work in earnest last year. ... *And we'll only continue to grow from there at a pace that can't be matched.*<sup>59</sup>

Ray not only observes that T-Mobile has *more* mid-band spectrum than its rivals in absolute terms, but also asserts that it has *better* mid-band spectrum, given the physical properties of its 2.5 GHz assets. “[S]pectrum,” he says, “obeys the immutable laws of physics. The higher the frequency, the shorter the distance it can travel and the more easily it is blocked by objects. C-band is 3.7 to 3.98 GHz. T-Mobile’s existing mid-band 5G network uses 2.5 GHz spectrum. Higher banded spectrum cannot travel as far.”<sup>60</sup> As a result, he claims, “C-band will require 50% more cell sites for meaningful and continuous coverage, and in some areas, for example in-building, the required densification can be 4x higher than 2.5 GHz,” thus imposing major costs on providers that, unlike T-Mobile, must rely on C-Block spectrum for 5G.<sup>61</sup>

---

<sup>58</sup> See *Spectrum Holdings Order* ¶¶ 107-25 (discussing EBS and BRS assets acquired by Sprint and its corporate predecessor Clearwire and their historical treatment for spectrum aggregation purposes).

<sup>59</sup> Neville Ray, *The Current State of 5G*, *supra* (emphasis added).

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

<sup>61</sup> *Id.*

Despite T-Mobile’s disparagement of C-Band airwaves, and despite its already commanding lead in mid-band spectrum, T-Mobile participated in the C-Band auction, bid up prices by placing substantial bids of its own, and ultimately obtained 40 megahertz in many markets. Again, in DOJ’s words, “the private value for incumbents in a given locale includes not only the revenue from use of the spectrum but also any benefits gained by preventing rivals from improving their services.”<sup>62</sup> And some portion of the \$9.3 billion that T-Mobile paid for this substantial chunk of C-Band spectrum may well reflect “‘foreclosure value’ as distinct from ‘use value.’”<sup>63</sup> Indeed, T-Mobile CEO Mike Sievert suggesting that raising his rivals’ costs was a major factor driving T-Mobile’s C-Band bidding strategy: “[W]e are incredibly pleased with our clear success in this auction. Our competitors had no choice but to go all in with a break-the-bank attempt to remain relevant in the 5G era.”<sup>64</sup>

In short, anticompetitive mid-band spectrum strategies are not only a theoretical possibility; they are likely a present-day reality. And they call out for adoption of a mid-band-specific screen that applies heightened scrutiny to any provider seeking to aggregate more than one-third of available mid-band assets.

T-Mobile currently exceeds that screen by a wide margin. Roughly speaking, there will be 564 megahertz of mid-band spectrum available for commercial uses once C-Band (280 megahertz) and 3.45 GHz (100 megahertz) spectrum is added to the 184 megahertz of currently-attributable 2.5 GHz band spectrum. A one-third screen would thus require close scrutiny of aggregations of more than about 188 megahertz of mid-band spectrum. In many areas, however,

---

<sup>62</sup> DOJ Spectrum Aggregation *Ex Parte* at 11.

<sup>63</sup> *Id.* at 10-11.

<sup>64</sup> Christine Torralba, *T-Mobile’s C-Band Auction Win Further Solidifies Company as 5G Leader*, TMO News (Mar. 10, 2021), <https://www.tmonews.com/2021/03/t-mobiles-c-band-auction-win-solidifies-company-5g-leader/> (quoting Sievert).

T-Mobile will boast 224 megahertz of attributable mid-band spectrum—nearly 40% of the total available—once its C-Band winnings are added to its 2.5 GHz holdings.<sup>65</sup>

In 2014, the FCC adopted special rules for the 600 MHz auction to “reserve” certain spectrum for T-Mobile and other providers that, at the time, had significantly less low-band spectrum than their competitors.<sup>66</sup> Indeed, T-Mobile argued that those rules were essential to its future competitiveness.<sup>67</sup> Large, contiguous channels of mid-band spectrum are far more important to the success of any 5G provider today than was the subset of legacy spectrum subject to the “reserve” rules. Yet although the Commission recognizes the unique properties and critical importance of mid-band spectrum, its current regime imposes an “enhanced factor” analysis for certain aggregations of legacy spectrum while anomalously lumping mid-band spectrum in with legacy spectrum. T-Mobile already has far more mid-band spectrum than any other provider—and could easily accumulate more unless the Commission adopts and enforces reasonable spectrum-aggregation policies.<sup>68</sup>

In short, further acquisitions that bestow an even greater mid-band advantage on T-Mobile—or that carry any other provider beyond one-third of available mid-band spectrum—

---

<sup>65</sup> Even this calculation understates T-Mobile’s holdings, as T-Mobile essentially controls (and could use) the entire 2.5 GHz band even though not all of it is included in the spectrum screen.

<sup>66</sup> *Spectrum Holdings Order* ¶¶ 153-54.

<sup>67</sup> See, e.g., Letter from Trey Hanbury (T-Mobile) to Marlene H. Dortch (FCC), GN Docket No. 12-268, WT Docket No. 12-269, AU Docket No. 14-252, Attachment at 5 (July 6, 2015) (an inadequate “spectrum reserve risks seriously endangering the economic viability of smaller MNOs and harming consumers without offering a compensating benefit”).

<sup>68</sup> As T-Mobile expands its already disproportionately large mid-band holdings, it seeks to subvert the purpose of any spectrum screen by arguing—despite clear Commission rules to the contrary—that Commission review is discretionary when a screen is exceeded and that acquisitions of greenfield spectrum should never count against a screen in the first place. AT&T has asked the Commission to reject those and other implausible arguments on reconsideration of a Bureau order approving T-Mobile’s lease of substantial 600 MHz spectrum from Dish Networks. See AT&T Pet. for Recon., *T-Mobile License LLC and ParkerB.com Wireless L.L.C. De Facto Transfer Lease Arrangements*, ULS File No. 0009217476 (Jan. 29, 2021).

should be carefully reviewed for their competitive implications (with the exception of Auction 110, *see* note 2, *supra*). Otherwise, given the scarcity of spectrum generally and contiguous mid-band spectrum in particular, such mid-band incumbents could essentially pull up the ladder behind them with a few strategic acquisitions designed to prevent rivals from acquiring the spectrum assets they need to compete effectively.

### **III. A MID-BAND SCREEN SHOULD INCORPORATE PROVIDER-SPECIFIC REVIEW AND COMPETITIVELY EFFECTIVE REMEDIES.**

#### **A. The Benefits of Provider-Specific Review.**

Generally speaking, the Commission has followed two alternative approaches to implementing spectrum-aggregation limits in the auction context. First, it might apply a “bright-line *ex ante* limit” on the spectrum that any provider can obtain in a given auction.<sup>69</sup> The Commission has adopted that approach for the upcoming 3.45 GHz auction, imposing on each participant “a limit of 40 megahertz out of the total of 100 megahertz” available.<sup>70</sup> Under the alternative approach, the Commission imposes no *ex ante* limits on any firm’s acquisition of spectrum in a given auction but instead “perform[s] case-by-case review of the long-form license applications filed as a result of the auction,” accounting for each winning bidder’s preexisting spectrum holdings and potentially leading to spectrum divestitures.<sup>71</sup>

This *ex post*, provider-specific approach is far preferable to any “bright-line *ex ante* limit” on spectrum gained at specific auctions. Auction-specific caps can be well-intentioned but often create more competition problems than they are intended to solve because they implicitly assume that all participants enter an auction on a level playing field with respect to their existing

---

<sup>69</sup> 3.45 GHz Order ¶ 103.

<sup>70</sup> *Id.* ¶ 104.

<sup>71</sup> C-Band Order ¶ 83.

spectrum holdings. That assumption, of course, is false. As a result, any auction-specific, provider-agnostic cap is at once over- and under-inclusive as a means of combatting anticompetitive spectrum aggregation.

First, it is *over*-inclusive because it prevents spectrum-poor providers and new entrants from obtaining the spectrum they need to catch up to the most spectrum-rich provider, which in this case obtained a disproportionately large share of spectrum through accidents of history. The Commission’s application of its spectrum screens illustrates this risk. When the Commission permits a provider to exceed a spectrum screen, it typically justifies its decision by highlighting upcoming auctions as a factor mitigating what might otherwise constitute an anticompetitive aggregation of spectrum.<sup>72</sup> The Commission’s premise is that the potential harm caused when a spectrum-rich provider exceeds the screen is blunted by the opportunity of spectrum-poor providers to make up the difference in those auctions by significantly outbidding the spectrum-rich provider. But auction-specific spectrum caps impair the ability of rival providers to take advantage of that essential opportunity.

Second, any auction-specific, provider-agnostic cap is also *under*-inclusive in that it permits anticompetitive conduct that should be prohibited. In particular, as the Commission has applied it, such a cap forecloses the possibility of post-auction spectrum-aggregation review and

---

<sup>72</sup> See, e.g., *Auction 107 Order* ¶ 30 (“We also note that additional spectrum bands will be available for flexible use. For example, the Commission has adopted service rules for 100 megahertz of spectrum in the 3.45-3.55 GHz band, and it has slated it for auction in October 2021. The Commission also has revised the service rules for spectrum in the 2.5 GHz band.”) (footnotes omitted); *TMO/Sprint Merger Order* ¶ 99 (“Moreover, the Commission continues to work to make additional spectrum available for mobile wireless, having for instance recently freed-up additional rural 2.5 GHz spectrum for mobile wireless use in recognition of the importance of mid-band spectrum to 5G innovation. Further, beginning on June 25, 2020, the Commission intends to auction Priority Access Licenses in the 3.5 GHz band.”) (footnotes omitted). As discussed above (at p. 5 & note 14), AT&T strongly disagrees that the upcoming auction for 2.5 GHz spectrum presents a competitive opportunity for any provider except T-Mobile.

thus allows a spectrum-rich provider to engage in anticompetitive foreclosure strategies by overpaying to acquire yet more spectrum so long as it stays within that cap.<sup>73</sup>

Fortunately, the Commission has suggested that *ex ante*, auction-specific caps may be the exception rather than the rule. As it explained in the *3.45 GHz Order*, “the Commission has come to somewhat different conclusions about the application of pre-auction, in-band spectrum aggregation limits to different bands at different times,” and it chose such limits for the 3.45 GHz auction in large part because of “the importance Congress assigned to rapid deployment of *this particular band* and the timetable set forth in the Beat China to 5G Act.”<sup>74</sup> AT&T disagrees with the proposition that provider-specific review necessarily or even generally introduces undue delay into the assignment and deployment of spectrum assets. For example, the Commission just issued C-Band licenses to T-Mobile and Verizon after conducting provider-specific review, well in advance of the December 2021 availability date.<sup>75</sup> But it welcomes this indication that provider-agnostic spectrum caps will not be used in other future auctions.

#### **B. Structuring Divestitures to Ensure Competitive Outcomes.**

For secondary market transactions that implicate the mid-band screen, the Commission should obviously apply a provider-specific, case-by-case approach as part of its review of the proposed license transfers. For spectrum auctions (or other sales of newly allocated spectrum), spectrum-aggregation scrutiny would apply after the fact, as the Commission reviews winning bidders’ long-form applications. “[I]n the event that a divestiture is required before issuing any

---

<sup>73</sup> The Commission could mitigate these concerns if, instead of a simple *ex ante* cap, it adopted an approach similar to the one it chose for the 600 MHz auction: a “spectrum reserve . . . to ensure against excessive concentration” of any given spectrum input. *Spectrum Holdings Order* ¶ 143; *see 3.45 GHz Order* ¶ 104.

<sup>74</sup> *3.45 GHz Order* ¶ 103 (emphasis added).

<sup>75</sup> *See Auction 107 Order*.

new licenses, an applicant would have greater flexibility to choose which spectrum to divest among its existing spectrum holdings already in the screen, in a manner that nevertheless would address competitive concerns.”<sup>76</sup>

Structuring divestitures to “address competitive concerns,” however, presents different issues today than it did ten years ago. Piecemeal divestitures of spectrum were sufficient in a 3G or LTE environment because, as noted, providers could adequately serve their customers’ needs with 10 or 20 megahertz blocks in particular geographic areas. In that context, it was economically efficient to give the divesting party maximal discretion to choose what to divest and to whom.

The Commission may need to play a greater role in structuring efficient spectrum divestitures in a 5G environment, where providers require wide blocks of contiguous spectrum, often across expansive geographic areas. The objective of spectrum-aggregation remedies is not to strip a market leader of assets, but to preserve and enhance competition. That objective requires giving a divesting party’s rivals the spectrum tools they need to compete effectively.

Although most secondary market spectrum transactions should be presumed efficient, that presumption does not hold for a spectrum-rich provider engaged in an anticompetitive foreclosure strategy. Such a provider, if faced with a divestiture obligation, would have every incentive to break its spectrum assets into small pieces incapable of supporting high-quality 5G functionality or to sell its assets to third parties that cannot or will not use them. For example, a speculator with no plans to provide service might well agree to buy narrow slivers of spectrum from a spectrum-rich provider in hopes of a windfall years later, when it can sell the assets at inflated hold-out values to a spectrum-poor provider that needs those slivers to create a wide and

---

<sup>76</sup> *C-Band Order* ¶ 89 n.273 (cleaned up).

contiguous spectrum block. That strategy would harm competition not only by imposing inefficiently high costs on the ultimate buyer, but also by making the spectrum unavailable for consumer uses during the multi-year interim.

The Commission should therefore remedy undue aggregations of mid-band spectrum by ensuring that divestitures are sufficient to allow a credible purchaser to compete. The remedy might vary with the circumstances of the parties involved. Suppose that a provider with dominant spectrum holdings acquires a few additional licenses in an auction and, in the process, spoils a rival's chance to assemble a wide contiguous channel across its geographic footprint. Sound competition policy might require the spectrum-rich provider to divest a wide mid-band channel—including spectrum not in the auction, if necessary—to replace the rival's lost opportunity. Of course, depending on the auction results, the winning bidder might alternatively rectify the competitive harm it has caused by selling some of the new licenses it won to a provider that can combine them with its own winnings in that auction to create the wide channel it needs.

Finally, the Commission should consider a “fix it first” approach to mid-band spectrum remedies. Under that approach, the Commission would condition its approval of a new spectrum acquisition by a spectrum-rich provider on its approval of a divestiture transaction that would remedy the competitive risk otherwise posed by that acquisition. That approach would allow the Commission to review the structure of the divestiture and the identity of the purchaser to ensure that the end result is competitively effective and not an anticompetitive measure by the spectrum-rich provider to foreclose spectrum-poor rivals.

## CONCLUSION

The Commission should adopt a spectrum screen specific to mid-band spectrum, apply it when reviewing secondary market transactions and long-form applications in auctions or other government sales, and ensure that any required spectrum divestitures are sufficient to protect competition.

Respectfully submitted,

/s/ Jessica B. Lyons  
Jessica B. Lyons  
Alex Starr  
Michael P. Goggin  
David J. Chorzempa  
David L. Lawson  
AT&T SERVICES INC.  
1120 20th Street, N.W.  
Washington, D.C. 20036  
(202) 457-2100

Jonathan E. Nuechterlein  
Christopher T. Shenk  
SIDLEY AUSTIN LLP  
1501 K Street, N.W.  
Washington, D.C. 20005  
(202) 736-8000

September 1, 2021